

# A Life Beset with Problems

**Donald Bullock**

There's nothing quite like a birthday to get you down. Not when you're regarded, by the more polite people anyway, as mature. Even aged-in-the-wood. There was a time when the approaching prospect sparked weeks of blissful, patient anticipation. Each day hung still. It was fun looking forward to the joyous day. But all this is no more.

Nowadays if you're in my boat you simply wake up one day to find that Father Time has jabbed you yet again with his trident thing. It makes you think. You know you're older, so you feel older. Your salad days have long since passed. You've enjoyed a spell on the flat: now dottage looms ahead over the next fence – if you can clear it!

And if you're a self-employed TV engineer, as kindly folks have described me over the years, extra confirmations of the ageing process are liable to occur almost hourly.

## **Mr Prattle's Hitachi**

I now know that I should have slipped out the back way when I saw Mr. Prattle struggling from his car under the weight of a large, square-screened monster I didn't recognise. He kicked open the door, plonked the set down, belched and stifled a yawn. I yawned too, but more successfully.

"Went off like a gun" he announced. "I 'spect a valve's gone. Or a condenser!"

"I poisoned my pen over the pad. "Let's have your phone number" I said. "I'll look at it and phone you later." With that he went.

The set turned out to be an Hitachi CPT2178 – the G6P chassis. I gradually realised that the panel suspended in space to the right of the tube housed the power supply and quickly discovered that the mains fuse had blown. So I accused the nearby mains bridge rectifier of its downfall. But it cried honour bright and sure enough was o.k. Then I

noticed that a nearby resistor, R906, had also failed. Time to look at the circuit diagram. This showed that R906 is  $68\Omega$  and is part of the feedback network connected to the base of the self-oscillating chopper transistor. With great presence of mind I checked the associated  $2.2\mu\text{F}$  electrolytic capacitor C911. Sure enough it punished the meter. So out it went and a nice new one was fitted. I checked around for anything else amiss but everything, including the nearby ceramic module that does the regulating bit, seemed to be o.k.

Time to switch on. The set cut the air with an anguished gasp and a little puff of blue smoke curled along the bench. As soon as the yellow lights cleared from my vision I noticed a black hole in the module, where there'd previously been a printed transistor. CP901 said the service sheet, so I ordered one from Wizard.

When it arrived I noticed that the printed transistor had been modified in favour of something more bulky, soldered on. Good thing too I thought. I fitted the module, switched on and the transistor blew asunder.

At this I decided that it was time to try logical thought, as instilled in me at Gloucester technical college some forty years ago. I checked the chopper transistor Q901, a big, silent rogue strapped to the chassis by the module. It had expired. Spurred on, I checked the line output transistor. This was also in an unhappy condition. At last I'd got to the bottom of the problem. The strain was beginning to tell, so I lurched out of the workshop towards the house. Perhaps there'd be a cup of tea.

I ran straight into Mr. Prattle. "Got 'im done, 'ave yuh?" he cried. "Nothing much wrong, was there?"

## **Faces**

I was never much good at remembering faces. Nowadays I'm even worse. This explains why newly made

friendships sometimes have a short life when someone who meets me a while later receives the old fish-eye in response to their greeting of familiarity. It happened again this afternoon. Mr. Beamer poked his head around the workshop door and winked.

"Did you manage it, Mr. Bullock?"

"Er . . . manage what?"

"The little matter we discussed yesterday. Remember?"

I modulated my troubled brow and pressed my knuckle under my nose. Was this the chap who'd pestered me to advertise on the football fixtures poster, or was it the specialist I'd met and discussed an old trouble? "Er . . ." was about all I could manage.

Beamer's features faltered. Then, his grin hovering on the brink of recovery, he squared up to me and spoke with emphasis – as though I was not only deaf but slow on the uptake.

"You know. My folks lived next door to yours during the war. My sister had one brown eye and one blue! Married that podgy Yank GI and found that his Ohio ranch was a bedsitter over a condemned pork butcher's shop in the Bronx. Remember?"

I snapped into life and beamed. "Of course! With you now. Let's see – which of these is yours?" I turned to the shelf of repaired videos and surveyed them as though I knew which was his.

"It was the telly, Mr. Bullock. That one on the floor there, with all the videos on top, I think. Wasn't much, was it?"

### **Timers and Search Tuners**

Then there's the problem of not being able to set up VCR timers or TV set search tuners. I usually put the job on one side until after school and get my ten-year old lad to do it. Takes him about fifteen seconds usually. The other day he came home late with a capful of apples, having torn his jacket in the process. Boasted he'd got them from the vicar's garden. As I was about to remonstrate the phone rang. It was Mr. Quick. Said he'd be round in ten minutes to collect his Pye TV set into which I'd soldered a memory battery. I'd no choice but to give up any idea of chastisement and enlist the boy's help in order to get the Pye tuned and set up. So much for parental dignity.

### **A 1500 Chassis**

Three months ago I virtually gave a second-hand HMV 2809 – one of the 1500 chassis models – to Mr. and Mrs. Trew. They're a parsimonious couple who say they've no interest in colour. However that might be here it was back again.

"The picture's gone unsteady" said Mr. Trew. "My wife's afraid it'll cost us money. Only we're pensioners, see." With that they went off.

I plugged the set in and reached for a 47k $\Omega$  resistor – R44 in the sync separator's screen grid circuit used to be a stock fault with these sets. But it wasn't that. The picture was largely absent, flashing on now and then. I tapped the tube's neck and the picture danced on and off in sympathy. How was I going to get out of this one?

Then I spotted the light blue plastic spigot cover that peeps through the tube base and recalled how these become dry and brittle with age. As a result the built-in wire ring spark-gap arrangement earths some of the pins. Quick as a flash I hooked it off, replaced the tube base and switched on. Up came a surprisingly good and stable

picture that remained on despite the punishment I had given the tube's neck. Another successful repair! I'm getting pretty good I thought.

### **Where are the Knobs?**

But I'm out of my depth with the modern sets and videos that have been coming in lately – the ones without knobs, accompanied by aeroplane cockpit type consoles. And because I'm becoming increasingly cantankerous and impatient with "progress" I get nasty.

One of these sets came in the other day. I put it on the bench and raised my hand towards the top right-hand part of the screen, extending my index finger in search of the usual well-disguised, flush on/off button. There wasn't one. Then I picked and pressed at the horizontal strips underneath in search of the vital control, all to no avail.

Some comedians amongst the design boys hide the control under the front underside of the cabinet to make viewing more fun, so I ran my fingers along here. No luck. It was then that I noticed an enormous collection of buttons in a nasty plastic slot behind the set. I surveyed it with increasing incomprehension. Who on earth would know what the huge variety of symbols meant? I smacked it back and yanked the set off the bench.

"You said you wouldn't use that word again!" It was Greeneyes poised in the doorway with a mug of tea. "It's no good your getting angry. That won't get the set mended, will it? I'm off to my Spanish lessons for an hour. Is it any good asking you to turn on the microwave grill at four and set the dish washer? Then there's that letter to fax and the new central heating timer to programme."

I looked at her blankly . . .

# What a Life

**Donald Bullock**

One of the good things about our old house is that it's roomy enough to have a bar. And a friendly place it becomes as the evening wears on. The other night I was getting comfortable when the phone trilled. Out rang the crisp, authoritative tones of one of my retired military customers. It was unmistakably Major Hagger.

"Hello Donald, old boy. Moving house don'tcha know. To one of those retirement homes where they wetnurse a chap whilst fleecing him! Wife's idea but there you are. Got a pair of youngsters moving in here. Teachers. Think they're intellectual and want the aerials taken down. Frightened of lightning or the programmes? Anyway, see to it will you?"

At that there was a click. So next morning I asked Mario the contractor to attend to the aerial job. He doesn't speak much English, nor does his brother. But they're as nimble as cats and make do with a minimum of ladders. Then I put the first set on the bench.

## **The Waltham TV600**

It was a Waltham TV600 colour portable. The sound was o.k. and there was a rustle of e.h.t., but no raster. I seemed to recollect having had this problem before with a Waltham. So I flicked through my card index, where I keep a record of any noteworthy faults, and pulled out one labelled Waltham TV600. "No brightness, sound o.k." it said. Wow! With quickening pulse I read on. "Turn up A1 voltage (lower line output transformer potentiometer) to reveal field collapse." I did and it did. "Check R122, 3.3 $\Omega$ , white ceramic case" it continued, "at back left near line output transformer for being open-circuit." Again spot on. In no time the set was off the bench.

## **An Akai VS240**

The next job was an Akai VS240 VCR with remote control. Its symptoms were no results with a display that showed only the letter L. I took the covers off and checked for obvious things but got nowhere. An hour spent carrying out checks in the power supply produced no further progress. I didn't have the manual and was toying with the idea of sending off for one when Ernie called in. He's chief cook and bottle-washer at a nearby guest-house and drops in when he has a bit of spare time. Always takes an interest in what's going on.

He took a look and commented "same as ours. See you've 'locked him up'. We do that. Stops people using it without our say-so."

"I haven't locked it up" I said. "It's faulty and I have to fix it. Only I don't know how."

"Pick up that remote control" said Ernie. "Point it at the recorder and press it six or eight times."

I did as I was told and the L disappeared in favour of

other cyphers. I put in a tape and the machine worked beautifully. This did wonders for Ernie's ego but little for mine. But Ernie's wife knows where to find him. The phone rang and after a brief exchange he scuttled off.

## **Solavox NVCR5000**

The next job had me flummoxed again. It was a Solavox NVCR5000 VCR that was devoid of life apart from a few bits of incomplete gibberish in the display area. Working on the basis that I had a brain while the recorder only thought it had one I settled down to crack the fault. A long time was spent, then I retired to the house worn out and defeated.

Greeneyes was having a fair old time playing one of her Spanish language cassettes on my audio system. Wearing some strange gear too. Just then the phone rang. It was my Solavox customer wondering how I was getting on with his video.

"I'm not" I said. "We've taken an acute dislike to each other. Where did you buy it?"

"Comet" he replied.

"I'll see if they can help" I said.

So I phoned the Bristol branch and was put through to their helpful technician Peter Ambrose. He was not only familiar with the fault but came up with the solution. "Add a 4.7k $\Omega$  resistor between the positive of the 5.5V back-up 'battery' C821 and the base of transistor Q809 next to it" he said. "It'll never come back with that fault. It's a Nikkai chassis. There's an Alba model that uses it, and a Questor one as well I think."

I did the modification and sure enough the machine burst into life. Curiously, the next job on the bench turned out to be the Alba version. It was as dead as could be – not even a segment of display. But the same modification fixed it.

## **Those Military Men**

That evening I was safely settled in the bar when the phone rang. It was Major Hagger. Hopping mad too.

"What do you mean by having my practically new aerials hacked down by some foreigners? When I asked they said you'd sent them. You'll answer for this. If you know what's best you'll get my aerials replaced forthwith – then send me an apology."

Greeneyes had heard every word and wanted to know what was going on. "Probably asked me to do it without referring to his wife" I said. "You know how it is. Then wants to pass on the blame."

"Do you really think so?" she said.

"Of course I do. It's obvious. He'll probably call to apologise in due course."

The phone went again. Greeneyes took the call – it was Captain Hodder. When she'd put the receiver down she called over "wants to know what happened to the aerial riggers. Said he called you the other night and he's still waiting. He's off to the old folks home in the morning. Why can't you take proper notes when you get these calls? Especially when you've been in this bar for a while."

“No” I pronounced. “Nobody at all in there. Not a soul.”

The old man shuffled off and I put the radio on the bench. It was an R404, dating from many years back, and was dead. The batteries were down a little but were still good enough for the set to oscillate all right. Then I remembered that the four-legged AF117 transistors had an earthed screen within them and that this would sometimes short to the base. I snipped the first i.f. amplifier transistor's earthed lead-out wire and switched on. The radio sprang to life.

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# What a Life

**Donald Bullock**

One thing we're not short of around here is unusual people. Pleasant enough, most of them, though there can be awkward moments.

## Mr Fussie's Fisher

“This video's never been right since you did it” said Mr. Fussie as he placed his Fisher FVHP905K on the bench. “You say you fitted a new idler thing in it six months ago, but it's still faulty. If you put a tape in and press the play button the motor thing whirrs then stops and the video switches off.”

“Then why didn't you bring it back before?” I asked.

“Because it happens only occasionally. The rest of the time it's o.k.”

He left it with me and I moved it to the end of the bench, where I tried it now and again whilst working on other jobs. Eventually it did as he said. So I fitted a new idler. It's the one that looks like an elliptical halo with a black wheel orbiting at one end. Then I switched on, inserted a cassette and pressed play. It failed at the first try. As the idler spring seemed to be slack I fitted another. This time the machine worked perfectly. It continued to do so on soak test over the next few days. So I pronounced it fit and in due course Mr. Fussie called for it.

“I hope it's all right now” he said as he took it away. Just then the phone rang. It was the elderly Miss Briske.

## A Dead Roberts'

“Mr Bullock? My Roberts radio's gone dead dear. I've sent my father along with it. You won't get much sense out of him so you'll have to phone me about it. He looks all right but there's nothing upstairs dear.”

Lumme I thought. Miss Briske must be a hundred. What must her father look like? Then he appeared. He was old all right, and stocky, but fresh-faced with sparkling eyes and a bushy white waxed moustache.

“Hello Mr. Pillock” he said, holding the radio aloft. “Won't go. Think there's anyone in there?”

“I wouldn't think so.”

“Best have a look eh?” he said, pointing to the car aerial socket.

“No need for that. I hardly ever find anyone in radios like these.”

“Better have a quick look through here” he insisted, holding the radio up with the aerial socket close to my eye. I decided to humour him and peered into the aerial socket carefully.

## Crackling Sound

The next call was from Mrs. Bustler, who lives up the street. Her TV sound was crackling. I slipped along to find her having a row with her husband, who had just returned from the local and had managed to knock her clothes-horse over, sending the freshly ironed washing all over the place.

I joined the mound of shoes amidst the miles of cable behind her Philips G11, plugged the iron in and took the back off. Sure enough the BD131 audio output transistors were footloose. I resoldered them and switched on. Up came the sound minus the crackle, and Mrs. Bustler grinned. An easy one that.

## A Curious Display

A colour portable awaited me when I got back. It was an ITT set fitted with the CVC801 chassis. When I switched it on and plugged in the aerial four horizontal strips of picture, separated by blank strips, appeared on the screen, each with a conical squiggle in its centre. I looked around the line output stage for a likely looking open-circuit electrolytic, but my eye was drawn to the mains bridge rectifier's reservoir capacitor C658 (200 $\mu$ F, 385V). It might be causing some of the trouble at least I felt, so best to check it first. When a test capacitor was connected across it there was a perfect picture. Another easy one. But my joy soon turned to sadness as Mr. Fussie came into view with his Fisher FVHP905K.

“Worse than ever” he declared, “worse than ever.”

## Battle with the Fisher

He departed and I tried the machine. The take-up spool kept stopping and starting and the machine then switched off. Since the fault was now more definite I felt that the idler I'd fitted, not being a manufacturer's spare, might have been outside the tolerance limit. So I ordered some Fisher idlers and springs and put the job to one side.

When they came I fitted a new idler and a new spring. The recorder now worked all right. Feeling optimistic, I put it back on the soak test bench. A while later it started to play up again.

Operating it repeatedly with a servicing cassette inserted I noticed that when play was pressed the pinch wheel didn't always press the tape firmly against the capstan. In fact it was sometimes possible to pull the tape through by hand quite easily. I couldn't see any signs of wear then, whilst studying the mechanism, I noticed a tiny cross-headed adjusting screw near but below the pinch wheel. To adjust it I had to take out the tape deck. After doing this I found that turning the screw moved the pinch wheel towards the capstan. Progress! When I'd adjusted it the grip was firm and consistent and I reassembled the machine, with a sigh of relief.

On soak test it behaved perfectly every time for days.

But since it had given me so much stick I was wary. Sure enough it eventually failed to start when play was pressed, though the motors whirred.

I turned the machine upside down and studied the mechanics as I pressed play and stop time after time. It worked perfectly for days, then did it again. This time I thought I noticed that the loading belt slipped ever so slightly at the very end of its cycle. I wanted to be sure, so I put a white spot of typewriter correction fluid on it. This proved the point beyond doubt, a new belt curing the trouble. Why hadn't I thought of this first?

### ***Abe's Sets***

Then Abe called. He's a yokel who lives in a riverside woodman's hut together with two ageing Ferguson monochrome portables, a car battery and a screwdriver. Small and emaciated, he foresakes shaves and haircuts and looks like a hopelessy overdressed scarecrow. The idea of the two sets is that if one fails he can resort to the other one. While watching the working set he gently pulls the other one to pieces, then tries to put it back together. If this doesn't get it going he wraps it in a blanket, ties it up with binder twine and walks it the five or six miles to me. He's polite and pays his way. Perhaps that's why I play along with him and try to unravel the various faults he introduces in his sets.

This time along with the set in a blanket he had a couple of old canes, an old-fashioned seaside bucket, and a spade in a second, plastic bucket. And one of his overcoat pockets was bulging. He unpacked the set and my first surprise was to find that it wasn't one of his Fergusons. It was an old Bush BM6004 colour portable.

"Worked at first" he said, "then 'e stopped altogether an' I opened 'un up."

I put the set on the bench and unscrewed the back. Now this set has a Saba chassis, with modules galore. It was dead. I homed in on the horizontal deflection module (no. 11) and checked the supply voltage at pin 3 - this is the supply to the line driver stage. It was well down. I removed the module and checked the heavyweight diodes on it. D687, an SKE4F1/10, was short-circuit. When I replaced it the set sprang to life. But with its own aerial the picture was noisy.

"Set's working" I said to Abe, "but the picture's snowy."

"Thank 'ee sir" Abe replied, "it'll be all right with my aerial plugged in."

He went outside and filled the little buckets with soil, pushed in the canes and slung a length of ancient black-covered copper aerial wire between them on the first pair of porcelain-egg insulators I'd seen for thirty years. Then he came in and approached the set with a gnarled wander plug on the end of yards of feed-in aerial wire.

"What's all this, Abe?" I asked.

"A gentlemun gave me the set for diggin' his garden, then said I could have his old aerial if I took it down. This is how I puts it."

"Abe, that aerial wire is as old as me. It was made for early wireless sets before they ever invented television receivers. Throw it away."

But Abe had reached the set. He unplugged the loop aerial and connected his contraption. It transformed the picture to perfection.

I put the back on and reached for a pen as Abe dismantled and packed his aerial kit. Then he came back in, pulling at his overcoat to get at his jacket pockets.

"For mending your set" I said, "£15 less £5 for educational entertainment. £10 to pay."

"Thank you Mr. Bullock. See you again, you'm kind."

"Right on both points, Abe" I replied.

# What a Life!

**Donald Bullock**

Comes on then dies said the report with Mrs Laird's Fidelity CTV140 colour portable. And so it did. At switch on there was sound, accompanied by the rustle of e.h.t., then the set expired. I figured that either the h.t. was decaying or a short was dragging it down. So I reached for my new Cirkit TM175 meter – and found that I'd left it switched on over the weekend. A little word looked up at me from the display: "Bat".

Expensive things these PP9s, as I've come to learn in the short time I've had the meter. I've had to buy several of them. They used to be ten pence – ten old pennies, four pence in today's joke money. Now they are a couple of quid. I'd had enough, so I set to work and knocked up a little 9V power pack. The meter is now mains driven.

I soon found that the trouble with the Fidelity CTV was that the h.t. faded away, which is not unusual in these little sets. So I disconnected the set from the mains supply, dived in and checked the bits and pieces that I suspected in the power supply. An hour later I was no further forward. It was then that Greeneyes breezed in.

"I bought an Elvis Presley CD record at the village hall sale" she announced. "Can't wait to hear it, but every time I put it in the Sony player and press the drawer in it comes back out. It's been doing this for quite a while."

"Perhaps the machine's got it's pride!" I said. "It's been used to proper singers like Bing and Ella."

"What's wrong with the player though" she persisted.

"Can't imagine" I said, "at first it did it only occasionally but now it refuses to accept a disc at all – not even if I hold the drawer shut."

"Shall I take it to Snoddies then?"

I made a mental note to swot up on the machine as I switched the Fidelity set on again. It surged into power then died. Greeneyes gave it a look. "That set needs a new switch" she said before leaving.

I left it plugged in and checked a few voltages in the power supply. Only there weren't any. Then I moved over to the switch. There was a.c. at the input, nothing at the output. Why hadn't I tried the switch first? Prejudice of course.

## **McTurdey's TX100**

Just as I'd finished it a builder's labourer bowled into the drive with a set in a wheelbarrow.

"Me name's McTurdey and it's driving me mad" he said. "In the first place there's a big bite outa each side of the picture, and even the bit I got left keeps cutin' out for an hour. Then it's o.k. for the evenin', only I'm not, it gets me all wound up."

The set was a Ferguson one fitted with the TX100 chassis, 110° version. As I put it on the bench McTurdey scooped up his wheelbarrow and waltzed off in a cloud of dust.

Sure enough there was no EW correction then, after a few minutes, the set reverted to standby with the channel indicator displaying only a dash. When the back was taken off the set started to work again and stayed on. So I refitted the back and got a repeat performance. After several minutes of this I took the chassis out and scanned the

power supply and line output sections, hoping to see a dry-joint or two. As every joint looked perfect I plugged the set in again, connected the meter across the mains bridge rectifier's reservoir capacitor and discovered that the cause of the trouble was in the power supply. I then tried to locate it by using freezer and the workshop hairdryer. As this didn't do me any good I started to trace through the voltages, starting with the a.c. input. Now and again the set sprang to life, giving me moments to reflect upon the possibility of a different job ... Then suddenly it died again. I'd got as far as R134, a 1.2k $\Omega$ , 5W resistor that's part of the snubber circuit. There was lots of voltage at one end but nothing at the other. Wagging it not only produced the intermittent fault but allowed me to lift it clean out of the panel, leaving the joints underneath looking good and solid.

Cleaning off the resistor and resoldering it cleared the intermittent power failure fault. I then looked into the lack of EW correction and discovered that the little correction panel by the line output transformer was bathed in a pool of tacky brown liquid. A clean up put that right.

## **The Philips Saga**

The next set, a Philips 21CE1250/05B (CP90 chassis), would provide only a snowy raster. It's owner, Mr Dropins, explained that it had been all right before his fortnight's holiday. This news filled me with pleasure. I smiled in anticipation of a fast buck and told him it would be ready in a couple of hours' time.

I found the orange battery or, since it's a condenser, I'd better call it a capacitor! It was at the front of the set. I then embarked on the problem of extracting the chassis board from its inscrutable plastic grip-runners. I couldn't find the bits to lift or depress, push or pull or squeeze and, try as I might, it wouldn't budge. As time went by my brain kept telling me to remain scientific and rational but my instinct was to yank it out by force. Eventually the panel was freed. I changed the battery and switched on. This time the set was dead. What had I done? Why hadn't I been gentler, and how was I going to get out of the mess I'd got myself into in the time I'd allowed?

I reached for my giant magnifier and scanned the panel at length for wicked breaks or disturbed joints, but found none. There was plenty of h.t., so I checked the line output transistor and several other items in this area. No good. Perhaps Philips Service could help?

I phoned through and a wonderfully relaxed and detached expert advised me to change diode D6665 (1N4148) and resistor R3665 (4.7 $\Omega$ ) then, if still no luck, to replace the CNX63 optocoupler. I had no CNX63 but the other items tested o.k. with both my meter and component tester. As the set remained as dead a doornail I wrote out an order for an optocoupler and wondered how I was going to tell the customer that the live set he'd brought in was now dead.

## **Handsets Galore**

Then Mr. Dropins showed up, reached into his pocket and pulled out a remote control unit which he thrust into my hand. "Forgot to leave this with the set" he said, "see you later." He smiled and left.

I stood at the bench reflecting on how slowly the sets come off it these days compared to twenty-five years ago. Then I noticed the Magic Mirror IR detection card that had recently arrived. I stood it against the mirror at the back of the bench, picked up the remote control unit and

fired it at the Magic Mirror. The set burst into life and frightened me no end. Recovering, I hurriedly plugged in the aerial and, since the set had no proper channel selector knobs, danced my fingers around the dreaded search-tune buttons. Up came a perfect picture with sound. My relief was enormous. Then I noticed that something else was wrong. There was no colour – on any channel.

The set had no colour control, nor much else, and no matter how I pummelled the remote control unit I couldn't get a trace of colour. So it was into the chroma circuitry. Checks here did no good. Time passed, and I was feeling weary. Then Mr. Dropins turned up again.

"I don't know what's the matter with me" he said. "I meant to leave this instruction booklet with you – oh, and you might as well have the right remote control unit. The one I brought in was for my father's old set. We use it

because it's smaller and handier.

After he'd gone I read through the instruction book, hoping to find something under the heading "how to restore colour after giving the chassis a mauling"... No hints of course, so I returned to the house for tea and sympathy. Anyway, there was tea.

Back in the workshop I picked up the set's proper remote control unit, pointed it at the black-and-white picture and pressed colour control. Up came the colour.

Mr. Dropins was soon back on the scene. I tuned his set in, fitted the back, accepted his cheque and waved him and his set towards his car.

"I'm glad it didn't give you any trouble Mr. Bullock" he said. Then he was gone. I returned to my stool drained. How can all these things happen to just one person? And why does it have to be me?

# What a Life!

**Donald Bullock**

"My wife accidentally upset a little fairy last night Mr. Bollard" said the hesitant young man at the door. "Can you have a look at it?"

I followed him out to his car. As he stopped I touched his elbow. "Look, it might just be me" I said, "I feel a bit odd today. Every day come to that. I don't quite..."

## **A Saisho CT141X**

He took a Saisho CT141X colour portable from the boot and handed it to me. "It went in there" he said, pointing to a slot near the tube neck.

I eyed him closely. "The fairy went in there because your wife upset him, or maybe her?" I asked. "And you want me to coax her out. Is that it?"

"I'm talking about washing-up liquid" he said. "My wife upset some into the set. We'd like you to see what you can do."

"I don't feel too optimistic" I said "but I'll have a go. I hope it's kind to my hands." Laughing at my little joke, I took the set back to the workshop.

The liquid must have gone in some while before since the chassis looked quite dry and some of the jumpers were corroded. The STR50103 power chip was soapy, so I took it out, cleaned it and compared its resistance readings with a new one. Shedding a tear I fitted the new one. Before doing so I cleaned this part of the panel and got to work with the hairdryer. Then I checked the bridge rectifier diodes and found that one of them was short-circuit. In went a new BY127. The 5-6Ω, 5W surge limiter next door had laid down its life in sympathy, so this was also replaced.

## **The Switch On**

Feeling uncertain if not actually afraid, I crouched back and switched the set on. It came to life but there was no field scan. The obvious thing to do was to replace the UPC1378H field output chip IC402. This restored the raster but there was a sizzling from the tube base panel, followed by a whisp of smoke. It was damp. I discarded the tube's socket, cleaned up the panel, fitted another socket and tried again. This time there was a picture of sorts, but with no sync and flaring, distorted colour. The huge 48-legged UPC1420CA chip IC401 contains the colour decoder and the sync and timebase generator stages. After cleaning this area of the panel I fitted a replacement. This restored the sync but did nothing for the colour.

So it was now a question of checking through the chroma circuit. My Mastercare manual is a rather poor photocopied affair with no waveforms. Nevertheless I found that the waveform at pin 5 of IC401 looked decidedly dodgy. This pin feeds the 2SA733 chroma delay line driver transistor Q602. A check showed that the latter had a collector-base leak, but the colour was still far from right when it had been replaced. Further time-consuming checks revealed corrosion across C609's leadout wires. It's a 2.2μF, 50V electrolytic that decouples pin 4 of the chip. Cleaning the board and fitting a new capacitor restored the

colour, and in fact the picture was now of excellent quality. However the time I'd spent on the set was out of all proportion to any charge I could make. I replaced the back and put the set on soak test (ha ha!).

An hour later there was field collapse. After withdrawing the chassis and switching the set on again the raster was back. I searched for a dry-joint around the new field output chip. The joints looked satisfactory, but I did some resoldering here and there. All now seemed to be well, so I returned the set to the soak test bench and got on with the next job.

## **Dead Ferguson FV31R**

This was a Ferguson FV31R VCR that was dead – its mains fuse had come to a violent end. The cause was failure of the BA159 start-up supply rectifier DP11. When I replaced it the machine sprang to life. It's a flimsy model with panels that have those nasty little resistors tacked all over the print side. A never-soldered one was dancing about loose inside the case. A free bonus, I supposed. The screws that secure the top panel to its frame are minute, almost watch screwdriver jobs. So are the top cover fixing screws. An unattractive recorder to work on, though the results are excellent: after recording and playing back bits of live television I had, on one occasion, to press the pause button to check that I was in fact watching a recording and not a live transmission.

## **A Call from Greeneyes**

As I finished the FV31R Greeneyes gave me a call on the intercom.

"First, can I give your old brown suit to the jumble? Secondly I've just phoned Davey Ruggles about some little glass tables. Thirdly he's got a TV that needs repair. He's coming round."

"No, o.k. and blast" I replied.

I gave the Saisho another glance. Field collapse, so I opened it up and started off once more. When the little service switch was wiggled sideways the field scan was restored. I pirated a similar switch from another set, fitted it, and got a solid raster. I was growing tired of the Saisho, the fairy and the hesitant young man. In fact I was getting hungry and had a slight headache. The screwdriver boxed up the set with minimal help from me and I put it back on soak test.

## **Davey Ruggles' TX10**

Then Davey Ruggles' van pulled into the drive, its tyres down to the canvas. He pulled a Ferguson set from amongst the mats on board and we put it on the bench. I opened it up to see the TX10 chassis, with the focus control cracking up as they do. There was a set under the bench just like Davey's. I'd had to tell its owner that the tube had gone, so he'd left the body with me for spares. In no time I'd fitted its focus control in Davey's set. Having set up the picture I took the set back to the van. Couldn't really charge for that.

As Davey left I saw that the Saisho's raster had once more collapsed. No amount of violence towards the cabinet would get it back up, so I told the set what I thought of it and took it apart again. When I switched the set on the raster was all right. Twenty minutes later it collapsed. It took me quite a time to establish that the set did this consistently when boxed up but behaved perfectly when it was out of its cabinet. I put it aside as Mrs. Ruff

came in with her Akai VS112EK VCR.

“Sometimes it just wouldn’t start up, Mr. Billhook” she said. “At other times it worked perfectly for weeks. Then old Pukey had a go and now it won’t work at all.”

“Who’s old Pukey?” I asked.

“The lodger of course” she said. “If he’s messed it up he’s out.”

As I put the machine on the bench I heard something rattling inside. When I took the bottom off I found that the drive mechanism had been got at. The securing plate, with its microswitch, had been taken off and among the bits adrift were two large white channelled cogs, a pair of smaller ones, a couple of shaped metal pieces and a couple of plastic mouldings. I also found a few circlips and a pair of coiled springs about an inch long.

I studied the manual and followed the well-illustrated procedure for reassembling it all. At the end I’d the two springs left over and the mechanism jammed as the machine began to initiate. After puzzling for an hour over where the two springs should go I telephoned Akai. I was told that they should be curled around inside the channels in the underside of the two smaller gear-loading cogs. Having done this I set up the timing and found that the machine worked well – sometimes. At other times it seized half way through loading. I was back with the original fault.

Akai knew about this when I contacted them again. The fault arises as the machines age. The large plastic cogs get tired and misshapen and then sometimes prevent operation. They are surprisingly cheap from Akai. Fitting replacements completed the job.

When Mrs. Ruff returned I told her that the time her machine had taken to be put right would have to be reflected in the charge, which would be enough to buy several bottles of Spanish whisky. At this her eyes narrowed. She paid up and, clutching the machine, made for the door. “Start packing Pukey” she muttered.

I turned to the dreaded Saisho and took a more careful look at the circuit. The field drive comes from the large UPC1420CA chip I’d replaced at the start of the saga. Pins 21-24 are associated with the vertical deflection. So I resoldered these four legs, boxed the set up and put it on test again.

## ***End of the Saisho Saga***

It was still working merrily next day when the young man returned, this time with his wife. I showed them the picture, which was excellent, and told them that the charge would be £45.

“Lotta money” she said. “We won’t bother. Crubbs Foodstore has new colour sets for ninety five quid. Put it as it was”. And off they went.

I limped back to the house and found that Greeneyes was on the phone. She turned to me as I went in.

“There’s someone on the phone who’s upset a cup of coffee into their portable TV” she said. “Smoke came out of the back before it went bang. They don’t want to spend much on it. Want to know if you’ll see whether it’s worth doing.”

I pulled a face and patted the air in front of me. “I’m not quite myself at the moment. When I’ve simmered down I’ll tell you why I want to become a traffic warden.”

Greeneyes mentioned Davey. “What did you charge him?” she asked.

“Nothing” I said, “he’s an old friend and needs all he’s got for some new tyres on his van. It’s his living.” Then I noticed that we were sitting around a large new mat. On top of the original.

“From Davey” said Greeneyes.

“But you didn’t need a mat” I said, “you wanted a couple of glass tables.”

“I saw his tyres too – oh, and I gave him that old brown suit you didn’t want.”

# What a Life!

**Donald Bullock**

I get a lot of sets from countryfolk. Last week a smallholder, Mr. Nutt, phoned from Woodbury. His problem gave me the chance to exercise the wealth of psychological insight I've gained from my years in the TV servicing trade.

"My neighbour has a supersonic alarm system, Mr. Bullock. He's using it to detect, in conjunction with my television set, my every thought and movement. I want the Post Office to vet this system, but first of all they want you to check and clear my set and aerials".

I asked him to bring his set along to start with and half an hour later he arrived with a Sanyo 12T280 monochrome portable.

"I've got a thick, tall evergreen hedge all around my acreage, yet my neighbour knows everything I do. His dogs bark at me when I go down my garden each evening to water it, and there are other things. I can tell when they are doing it. The set here picks up their signals, moans softly then groans, and a spectre comes up on the screen."

After he'd departed I switched the set on. An hour later it began to grate and hum intermittently. Operating the tuner had an effect on the trouble, reminding me of a similar symptom with Thorn mechanical tuners when their earthing plates "floated" because of a build-up of green gunge between them and the tuner's body. So I carefully cleaned the ones in the Sanyo tuner and tried the set again. It made no difference. Bridging the r.f. and i.f. decoupling electrolytics got me nowhere, so I tried adding suitable electrolytics in the power supply and then the line output stage. Half an hour later I was no further forward, so I boxed the set up and kept an eye on it whilst tackling the next job.

## **Intermittent Timer**

This was a Ferguson 3V35 with intermittent timer trouble. It could be set up all right, but sometimes failed to

come on at the appointed time. Because of this intermittency, I felt that the cause of the trouble was possibly a poor contact somewhere. Careful inspection revealed no obvious dry-joints, so I cleaned the plugs and sockets at both ends of their harnesses and, for good measure, went over the joints on the timer chip under the clock. Then I put it all together again and set it to come on repeatedly every ten-fifteen minutes throughout the day. As it worked every time I pronounced it fit.

Greeneyes then brought the tea along and asked, sweetly, for Snoddie's phone number.

"Come on" I said, "Let's have the funny".

"Nothing much" she said, "but the video in the bar has been dead for over a week and I'd like it repaired."

## **A JVC HRD180**

I got it and put it on the bench. When powered it lit up all right but was otherwise dead. It's a Ferguson 3V30. The obvious thing to do was to busy myself in the power pack. The fuses were all intact and I couldn't find anything wrong. But it refused to work. Eventually I put it to one side and picked up a JVC HRD180. Its "operate" light didn't come on yet it worked. But pressing the buttons brought on the wrong functions - pressing eject for example got the spools rotating. The trouble was caused by the notorious STK5481 chip in the power supply. I noticed that it was new, devoid of heatsink paste and clear of the chassis on one side. Whilst fitting a new one, with heatsink compound, I noticed that one of the securing threads had been stripped because of overtightening. So I fitted a suitable nut to both screws and tightened the chip to chassis. That cured the trouble.

When the customer came to collect it he said "let's hope it's third time lucky. Snoddies have done it twice for the same trouble."

"I don't think it will go again for a while" I told him.

"Done our recorder?" asked Greeneyes.

"Not yet. It's tricky. I've had to put it on one side for a bit."

She went over and looked into the mechanism as though she was as clever as I. After switching it on and off she said "shouldn't that little cassette light flash on when you switch on the video? It doesn't, you know."

"I wondered how long you'd take to spot that" I said as

brightly as I could. A new lamp cured it of course. I think my brain cells are thinning out.

I put Mr Nutt's portable back on the bench and wondered how I was going to exorcise its ghost. Whilst I was listening to the set's moans, the ghost rose up on the screen and gave me an agonised groan. As I studied the set, the phenomenon occurred again. It was caused by a rapid and wide stretching of the frame, so that a central strip of the picture was momentarily stretched vertically to fill the screen. It was obvious that raw a.c. was briefly modulating the display. Recalling a similar effect experienced with the old Decca Gypsy and a particular KB/ITT portable, I gently warmed the bridge rectifier diodes. This proved that they were responsible. So I replaced D701 and D702 (two three-legged devices each with a back-to-back pair of diodes), using four BY127s. The result was a complete remedy and I was able to tell Mr. Nutt that I'd cured his neighbour's tricks.

"I'm very grateful, Mr. Bullock" he said when he came to collect it. "But my troubles aren't over. He's now got a big dish near the top of his house, pointed straight at my place. It's a sound detector, like they used during the war."

### **The Crazy FV21R**

As he departed, Victor Smallpiece eased this thin face round the door. "My video's gone crazy" he said.

"Then step in with it. This is where it belongs" I replied.

It was a Ferguson FV21R, the annoying one with the tiny Phillips securing screws and the top panel that hangs about awkwardly instead of hinging back. All the buttons produced each other's functions.

"Well Mr. Smallpiece" I said, "we've great experience of this fault and can approach it in one of two ways. We can either relabel all the buttons or we can fit a new STK5481 chip – if I haven't run out of them."

"Which would be quickest and cheapest?" he asked.

"That was a *joke*" I screamed.

Mr. Smallpiece left after a new STK5481 had been fitted. At the same time Mrs. Forthright strode in with a Philips VR6463 VCR.

### **And a Mental VR6463**

"What's up with it?" I asked. "Not jammed with a cassette in?"

"No, it's gone mental. You'll see."

When I tried the machine I found that it was unstable in the E-E, record and playback modes. I'd a different scrap machine with a similar r.f. panel, so I found it and swapped over the r.f. panel. The instability was much improved, but the screen gradually became heavily patterned. Then the sound began to break up.

Thinking of the troubles caused by the power supply chip in the last repair, I wondered whether swapping over the power panel would help. After making this swap I had perfect E-E results on all channels. Delighted at my diagnostic skill I inserted a cassette and selected play. The sound was perfect, but instead of a picture I had the test signal and couldn't move it.

I tried to think logically. It was obvious that the original panel was faulty as the swapped one seemed to have cured all the faults – though I couldn't be sure about the playback picture since I didn't have one. And where was the permanent test signal coming from?

I put the original panel back. This cleared the test pattern on playback but the other faults rang the changes as before. I took the panel out and studied it. All three

chips had been rather messily changed – the joints were heavily fluxed. I looked at the circuit and found that the correct chips had been fitted, so I decided to change them all again, using those from the scrap board. This made no difference. Since most of the board is obscured by daughter boards and the machine has no removable baseplate, checking voltages while the machine is in operation is difficult. I took the panel out again and examined it carefully. I could find no print breaks but decided to clean off the tacky flux still present. After ten minutes with the surgical spirit I refitted the panel.

The results with all functions were now stable and quite good – except that the playback picture looked a little bleached. It seemed that the flux which had been used, perhaps plumbers' flux, had been conductive.

I then noticed that transistor 7002 had been changed and was without its heatsink clip. It was also very hot and was a BD138 instead of a BD678. When the correct type had been fitted the last of the faults had been cleared. As I put the recorder together I reckoned that I'd earned the rest of the day off, so I retired to my chalet to write.

As I began Mrs. Forthright rang. "Did you manage to mend the video Mr. Bullock?"

"I did Mrs. Forthright."

"Well I never" she said. "Snoddies had it for months then gave it back to me."

### **Amstrad PCW9512 Printer**

In the September issue I mentioned my problem with an Amstrad PCW9512 printer and asked whether anyone could suggest a remedy. A number of offers came in, and I've now got it working again. If you recall, the original trouble was that a first attempt at printing a letter resulted in apparently normal behaviour of the printer except that nothing appeared on the paper. Asking it again produced faint printing, much of it gibberish. A third try improved matters and the fourth try gave me a perfect letter.

Eventually however the fault worsened, until the printer would work only after a blast of hot air from a hairdryer. Finally not even this helped, so I decided to have a go. I removed the mechanism and examined it closely. As I couldn't see anything obviously wrong I felt that a general clean and lubrication might help. I brushed it and gave it a spray of Servisol, then I put it back together carefully and found that it didn't work at all now. It wouldn't even accept a sheet of paper. That was when I asked for help.

Amstrad do have a technical department that offers advice to those in the trade. I was advised to fit a new print hammer which CPC supplied by return for less than £2. I fitted it, but since the printer no longer worked I couldn't try it. Back to Amstrad Technical.

Various causes were suggested and tried, but the printer steadfastly declined to work. I borrowed one like it and swapped over the single printed panel. No difference. Then I swapped over the mechanism and transferred the fault. At least I now knew that the mechanism was the cause of the trouble, but my efforts at tracking down the cause of the fault came to nothing. Back to Amstrad Technical again.

I told them that the cause of the trouble was in the mechanism and asked them what they thought. "Try the sensor" I was told, "it's a little bead-like device beside the print hammer." I found it, and tiny it was. I looked at it through my magnifier. It seemed to have a cataract, so I gave it a wash with surgical spirit and a rub with a cotton bud. On reassembly it worked a treat.

Moral: never squirt a printer mechanism in the eyeball!

# What a Life!

**Donald Bullock**

The lady brought this 20in. set along and explained that it was her husband's. "E said to let you do it" she added. The label said it was a Goodmans CVT2T, which was a new one on me. When I switched it on there was a rustle of e.h.t. but the set was otherwise dead. After a brief bout of meditation I increased the first anode supply, using the potentiometer on the line output transformer. This produced brightness on the screen, but nothing I did got me any further. Nor could I find any reference to Goodmans Television anywhere amongst my papers and data. So I rang my valued friend Peter Ambrose at Comet. He's a technical wizard who sounds like twenty five but is, he assures me, as ancient as I am.

## **A Nikkai Chassis**

"It's actually a Nikkai chassis" he said. "On the left-hand side, close to the on-off switch, you'll see a small transformer designated EM104. Its windings are bound with yellow ticky-tacky tape. The secondary winding feeds a rectifier diode, D102, which should have 11V at its cathode to feed the front panel control circuitry. But you'll find that this voltage is missing because the fuse in the transformer's primary section is open-circuit."

"Well, thanks" I said, "now where do I get a replacement?"

"You'll have a job" he replied, "they're like gold dust." I checked for 11V at the cathode of the diode and, as he predicted, it was absent. So I took out the transformer and checked across its primary connections. There was an open-circuit, again as predicted. When I telephoned Nikkai I was told that they had no stock, so I gingerly picked away the yellow ticky-tacky and found the open-circuit thermal fuse. After replacing it with one from my junk box I switched on again. Up came an excellent picture. I wish I knew as much about these things as Peter – and that I sounded as bright. I dunno what fuel he runs on but wish I could get some. Next day I had a similar set, this time wearing a Solavox jacket. The symptoms were the same and, armed with my new knowledge, I had the transformer out and repaired in no time. Thanks, Peter.

## **JVC HRD520**

Feeling buoyant for once I picked up a JVC HRD520EK VCR. "Severe tracking troubles" said the ticket. Its own recordings played perfectly, but those made on other machines and from video libraries were unwatchable, with the tracking control having no effect. I worked through the tracking circuitry but couldn't find anything wrong then, reluctantly and carefully, I gently adjusted the tape guides. The right-hand one turned easily by hand: setting it up with a first-class tape then sealing it brought perfect results. Why hadn't I tried that first?!

## **Amstrad VCR4600**

An Amstrad VCR4600 had been brought in with a cassette jammed inside. When I tried it the idler seemed to be slipping. So I took it out, fitted another and tried again.

The machine groaned and whirred, but the tape didn't move. The drive belt underneath had flown off its pulley wheel. After cleaning and refitting it I got a repeat performance. So I took out the cassette manually and tried another one. This time the machine worked perfectly. When I examined the cassette I saw that it had jammed solid because one of the tape pillars had broken. When the owner called I told him that the cassette had caused the trouble and would do so again if he tried to play it.

## **Fault Indexes**

I've had on one side recently for the purpose of reviewing them some of the advertised TV Fault Indexes, and have referred to them from time to time to see how helpful they are. The answer is very. Recently I had a Solavox NVCR5000 with a strange fault. It was dead, with only the standby beacon lit. When I looked it up I found a reference to a similar fault in this model, only this time the symptom was a muddled clock display. The Indexes referred me to page 288 of the February 1991 issue of *Television*. I looked this up and found that a modification involving a 4.7k $\Omega$  resistor would bring about a cure. Then I noticed that the article was one of mine. Good thing I write these things down! The modification had already been done, but the resistor was far smaller than any that I use, and it was open-circuit. Then I recalled the correspondence that followed my article. The general consensus was that replacing the "battery" capacitor was a better solution. I did this and found that it worked. It will be interesting to see whether this provides a lasting cure.

## **Sony KV2060**

The next job was Mr Moggie's Sony KV2060UB TV set. "The picture went into a line" he piped, "it can't be the tube because the sound's all right." As the field had collapsed I homed in on the UPC1378H field output chip IC551 and checked its voltages. The supply voltage was correct and the others weren't too far out. There was also a healthy input from the timebase generator chip IC501, via R515. So I phoned J.J. Components for a replacement UPC1378H. When it arrived next morning I fitted it. Up came the field, but there was no field hold. None of the pretty preset potentiometers were labelled hold, and I feared that there wasn't such a thing. But the circuit told me that there was. It's grouped with the brightness, contrast and colour controls under the front plinth of the tube surround. Adjusting it produced solid locking, in fact an excellent picture. Super set, but flimsy cabinet.

## **Ferguson TX90 Chassis**

The next set was another case of field collapse, but there were oddities this time. It was a Ferguson TX90 – the 20in. version. After ensuring that the field output transistors weren't footloose I checked them. As they were o.k., without further ado I removed the line output transformer to gain access to R268, the 22 $\Omega$  fusible resistor cunningly concealed within the line output stage screening box. It's in the 100V feed to the field output transistors, and was open-circuit. A replacement brought back the field scan, but there was a dark horizontal line across the centre of the picture, as though the tube's screen had been burnt by being left in the field collapse condition. But I wasn't sure about this. So I applied my degaussing wand to the tube's neck and moved the picture about on the screen. The line moved with it. After some searching I found that R203

(10Ω) was open-circuit. A replacement cured this odd fault.

## ***Stuck on Channel 1***

Major Crust came in reeking of hair oil, with his hair smoothed flat and his moustache tweezed to a pair of points. He brought with him a 22in. Hitachi CPT206 and complained that it was stuck on channel 1.

“I’ll spend up to forty quid on it” he announced in his military voice. “If it’s any more I’m off to Ripoffs for one of their reconditioned ones.”

I’d no room on the bench but made some and then plugged in his set. His diagnosis was correct.

“Two things bother me, Bullock. First, why has this blasted thing packed up, and the other is why are we here? On this Earth I mean...”

“Just a minute Major” I said, before throwing a fat old catalogue on the floor. I stood on it and tried the touch-tune buttons again. The situation was no better, and I saw the Major’s eyes narrowing. So I returned the catalogue to the shelf and took down the bottle of surgical spirit. This made his eyes narrower still. I gave the buttons a brisk wash, dried them then tried again. They all now worked perfectly.

“Good God” spluttered the Major, “you’ve got a magic touch.”

“It’s nothing” I said modestly. “But you were asking why your set had packed up, and why we’re here. I’ve the answers for you. Your set packed up because you changed channels while your hands were soaked in hair oil, I’m here to put it right for you and you’re here to pay up and take it away.”

“But you didn’t even take the back off” he said, “how

much are you going to charge me for that dab of spirit?”

“Tuppence will cover it, Major – but for knowing where to dab it, £9.98. A tenner to you.”

He paid up and carried the set towards the door, muttering about why we’re here...

## ***Hitachi CPT1476***

I then picked up a 14in. Hitachi CPT1476 and wondered whether I had any STR4211 power chips left. But this one had a field fault – cramping at the top. In such cases I suspect passive causes, like dry-joints or dried out electrolytics. One way of stressing the field circuit in this model is to press the plastic handle of my dusting brush between the power chip heatsink and the UPC1378H field output chip IC601. When I did this normal field linearity was restored. Out came my magnifying glass and I saw that a couple of the chip’s pins were working loose. Resoldering them put matters right.

## ***Philips KT3 Chassis***

The final set that day was brought in by Warder Phil. It was a Philips 16CT3015 – the KT3 chassis – and was dead. As I was taking the back off Phil started to tell me about his job looking after “the bad, the mad and the sad”. Whilst he was on about them I noticed that one of the main fuses had blown. So I checked the diodes in the bridge rectifier circuit. One of them, D6295, was leaky. So I replaced it, fitted another fuse and switched on. The fuse went again, but not before I’d spotted a glow through the white plastic skin of the posistor in the degaussing circuit, R6292. When I opened it I found that it was a pot of black grit. Fitting another, plus a new fuse, cured the trouble.

# What a Life!

**Donald Bullock**

Some days I'd do better if I pulled on my old clothes and slunk off to fish for tench. Anyone who's done as much of it as I have knows instinctively when they'll be biting. You can smell it in the air.

The feeling came over me the other morning, but when the postman arrived with a packet of Sharp idlers I decided instead to have a go at Mr Twopp's VC9100. Then something about the postman struck me. Wasn't he old Ribby Ellis, the company debt collector I'd worked with years ago at the multiple TV firm where I spent my salad days? I asked him and he immediately became the bouncy joker I'd then known, with a thousand ways of repossessing sets from bad payers. We swapped yarns for half an hour before he chortled his way from the drive, leaving me with fond memories and Mr. Twopp's VCR.

## **Mr Twopp's Sharp VC9100**

I pulled it on to the bench. The ticket said no play, fast forward or rewind. It was right, though I could hear the reel motor singing. Now I like these quick money makers, so I unpacked the idlers and got to work. The approved way of replacing them is something I don't know. What I do is to fold the bottom board open, drop out the motor, change the idler then do battle, wishing I had three hands or multi-jointed arms, until I've got it all together again. Whilst I was so engaged the phone rang. Greeneyes answered it in the house, then brought me the message.

"Mr. Wheeze phoned about his B and O teletext set. Said you'd had it a month and wants you to phone him. Sounded nasty."

"Later" I said, turning back to the Sharp. What worried me as I worked was that I could remember neither Mr. Wheeze nor his B and O. Then I finished fitting the idler and tried the machine with a cassette. It was just the same. I concluded that there had to be grease on the spool platforms or the motor drive. So I cleaned them, also the new idler. For good luck I changed the idler spring. When I tried the machine again it worked, but in a faltering way. I tried a stronger spring, then cut it short. Results were eventually much better but not right, and I knew that my doctoring of the spring wasn't acceptable. In desperation I went through the palaver of fitting another idler. It was no better, and I then spent a long time looking for obscure reasons for the trouble. A glance at my watch brought Mr. Wheeze's B and O back to mind, and I reluctantly left the bench to look for it before he phoned again. I couldn't see it anywhere. Just as panic was beginning to set in Mr. Twopp called about his Sharp VCR.

"Still on it" I said. "It's proving a bit tricky."

"Can't you mend it?" he growled. "Trust you won't charge any more than you said. I'll be back in an hour." So I put the B and O out of my mind and went back to the Sharp video. Feeling stumped, I fitted another reel motor just in case. But it was still no better. Let's see, new motor, new idler, everything degreased – why wasn't it working? Then I noticed that the idlers I'd bought were unbranded. Could there be something wrong with them? After all, I'd tried everything else. I grubbed about in my waste bin and recovered the original idler. Using the workshop vice as a gauge, I compared the new ones with the original one. The new ones were undersized – and I had only this batch. Then I remembered the idler tyres I'd recently bought from J. J. Components, looked out a suitable one and fitted it to the body of the original idler. When it was fitted it worked a treat. Still in shock, I finished the job just as Mr. Twopp called back.

"Took you long enough" he said. "Been doing this job long?"

I thought about Mr. Wheeze's lost B and O. What with the teletext and all, it must have cost him plenty. He'd expect it to be replaced if I'd lost it. Then he telephoned. I was desperate. Perhaps he had the make wrong, or Greeneyes had got his name wrong? I groped for a way of asking a few tactful questions.

"Er . . . are you certain it was a B and O set?"

"I certainly am" he rasped.

"It's Mr. Wheeze now, isn't it?"

The earpiece produced a strangled cry. "Are you trying to be funny? I want that set and I'm on my way to see you."

## **Salora J Chassis**

Oh dear. I hoped he wasn't as big as his voice. Half an hour passed, and no Mr. Wheeze appeared. So I went back to an Hitachi CPT2060 (Salora J chassis) with a horizontally frilled picture and a whining note from the speaker. I'd no circuit and wondered whether there was a decoupling fault in the supply to the line oscillator or driver. There was a 1,000 $\mu$ F, 35V electrolytic near the Ipsalo transformer. When I took it out and checked it I discovered that it had zero capacitance and a resistance of 0.8 $\Omega$ . Also it had been hiding a burnt out fusible resistor. When these two items had been replaced there was an excellent picture and no whining note. Something had gone well at last. And although over an hour had now gone by, there was no Mr. Wheeze. Perhaps he'd confused me with another dealer? It's happened before.

## **Ted Bright's Nikkai Portable**

Then my neighbour Ted Bright brought in a Nikkai colour portable. It was an MG002R and was dead. As he waited I opened it and found a chassis I'd never seen

before. I tried it again with my ear close to the chassis. There was no degaussing clunk, in fact no life at all. I saw that there was a small power/degaussing panel beneath the mains switch, and noticed that R801 on this panel was baked and cracked. It's a 1.5Ω, 5W resistor and when taken out for test was open-circuit. A replacement was soon fitted and the set was then switched on again. Up came an excellent picture.

### ***Tamira's Panasonic NV370***

As Ted left, Tamira from Honolulu swayed in with her Panasonic NV370 VCR. " 'E keeps flashing at me" she said. The clock did the flashing but the on (VTR) LED wasn't lit, nor was there any channel display. The only other sign of life was a to-and-fro movement of the idler. A quick check showed that the 12V supply was missing – because R1101, a fusible resistor on the power panel, was open-circuit. A replacement provided a cure and made Tamira think I'm very clever. A bonus, that.

### ***A Dead Fidelity CTV140***

The Scratchers arrived shortly after with a dead Fidelity CTV140. He looked glum while she beamed.

"We think the tube's gone Mr. Bookie" she chortled. "I think we'll have to have a new set."

"Not so fast, Mavis" her spouse said, "new sets cost money."

I slipped the back off and saw that the negative tags of the mains switch sat in little carbonised holes. Shorting them together brought the set to life with an excellent picture. Mrs. Scratcher's face fell, but her husband

beamed. "Fit a new 'un please" he said. It didn't take long. "Twelve pounds to you" I said, passing the set back to him. He handed me a fiver and a tenner. "Keep the change" he said, "that's saved me a lot."

### ***Matsui 1440A***

A Matsui 1440A had been waiting a while. It was dead. I reached for a 5-6Ω, 5W wirewound resistor, an STR50103A power chip and a BY127 rectifier. Then I removed the back and replaced R501, IC501 and D508. I checked fuse F501 which was all right – sometimes it blows as well. This repair is becoming routine.

### ***Mr Wheeze Revealed***

By now over two hours had passed and there was no sign of Mr. Wheeze. Suddenly I thought of Ribby Ellis. Tricks were his stock-in-trade. I recalled that one of his wheezes when repossessing a set was to press a pin through the aerial downlead before be knocked on the door for the arrears. It always worked.

So I phoned Ribby and said "what's all this about your B and O Mr Wheeze?" There were peals of delighted laughter. "Good, wasn't it?" he wheezed, "what a scream. Do you remember the night I got you to push a pin through that downlead at Swamp Meadow whilst I banged at the door for the arrears, and you got the mains to earth 'cos their isolation condensers had failed? What a laugh that was. Then to cap it . . ." I put the phone down. We could send him the deaf-aid man, the maternity wear woman and the wig people. But I'd rather not bother. I'm not up to it now.

# What a Life!

**Donald Bullock**

The other day I answered a knock on the workshop door to find Greeneyes entertaining a cove who looked like the Pied Piper in a scarecrow outfit. I took an instant dislike to him – perhaps because he was carrying a Fidelity CTV14S colour portable.

“This is Mr. Flighty” she said. “He wants you to look at his set.”

“Thought you’d be a younger man” he said, surveying me. I gave him a look and he minced off.

## The Dead Fidelity

With his set on the bench and the back removed I saw that the 2A mains fuse had died violently. A check on the BU508A chopper transistor TR13 showed that it was dead short. So I replaced both items and tried again. The new fuse immediately departed this life. Further checks were clearly needed. It didn’t take long to find that one of the bridge rectifier diodes, D19, had reverse leakage. When this had been replaced and another fuse had been fitted the set came to life. I put it on soak test.

## A Monochrome Portable

A smart chariot then pulled into the drive. Its owner had long legs and long blond hair – also a Ferguson 3845 monochrome portable (1690 chassis).

“Is your son, the television engineer, in? I want this set mended.”

“Just leave it with me” I said. “I’ll see that it’s done. Name and address please.”

On investigation the set was dead with only 2.4V at the 2A fuse in the feed to the series regulator transistor. Full of prejudice, I peered nastily at the T6006V line output transistor VT17. An in situ measurement gave a base-

emitter short-circuit reading. It’s difficult to get the transistor out, so I consulted the circuit diagram to see whether there was a reason for this reading. There is. The emitter is earthed and the base goes to earth via the secondary winding on the driver transformer. Furthermore there’s an efficiency diode connected across the transistor. So for a certain check it had to come out. This proved that it was all right. So was the diode. Other checks were made, but no shorts could be found.

I decided to adopt a different approach and went back to the supply source. This took me to the battery input socket. Was it I wondered open-circuiting the input to the regulator? Shorting across tags 31-2 would prove the point, and when I did this the set sprang to life. A replacement socket put matters right.

As I put it all together again I glanced at myself in the bench mirror. I looked ever so young. What was getting into people?

## Uncontrollable Brightness

Suddenly the picture on Flighty’s Fidelity clicked off, leaving a brilliant screen. I checked the voltages around the TDA1365 colour decoder chip. They were way out. Since the chip had clearly failed, I wondered whether there was a particular reason for this, such as arcing in the line output stage. The transformer was corroded where the core projects from the windings. As I had a known good transformer I fitted it. Then, to make it easier, I slipped out the signals panel, replaced the TDA1365, refitted the panel and switched on. Would all now be well? No it wouldn’t! In addition to uncontrollable brightness I now had no sound. After further tests I was no further forward and put the set to one side.

## Stuck in Standby

The next set awaiting attention was a Panasonic TC2205 (U2 chassis) that was stuck in standby. I looked through the *Television* faults indexes and found a reference to the problem on page 745 of the August 1988 issue. Check

rectifier diodes D852-3 it said. The latter diode, a BY298, was very leaky. It provides the 25V supply. I fitted a replacement and got a purr of life, but there was no brightness. The BU208A line output transistor Q551 was short-circuit. A new one restored the set to full health.

## Severe Patterning

Then the workshop door opened and a tubby little woman came in with a 20in. Triumph CTV8402 colour set.

"This set's faulty, I claim" she said, lifting her chin and shutting her eyes as she spoke.

When she'd gone I switched the set on and plugged in an aerial. Up came a picture that was covered with severe herringbone patterning. The sound was perfect. I spent some time checking through the r.f. and i.f. sections to no avail, then recalled a similar fault I'd had with a Toshiba set. Looking through my home-made card index (I no longer rely on my memory) I found that the set had been a Toshiba C2020, which is identical to the Triumph receiver. I'd cleared the fault by replacing the 120 $\mu$ F electrolytic C807 in the power supply. Sure enough this worked again. Why hadn't I remembered it in the first place?

It wasn't long before Mrs. Tubby returned. She walked up to me, lifted her chin, shut her eyes and spoke. "It wasn't much, I claim" she said while fumbling for her purse. "This repair is guaranteed, I claim" she said as she left.

## A Toshiba V83B

I glanced at Mr. Flighty's Fidelity and quickly turned my attention to something else – a Toshiba V83B VCR. The ticket said it did what it liked. I inserted a tape and pressed the play button. Instead of a picture there was a screenful of thick, horizontal lines. Then I pressed the record button and got a screenful of mush and noise. Were there several faults or just one? I decided to start by replacing the TDA6360 processor chip IC501. Fortunately this did the trick.

## Dead Ferguson TX100

Heaving a sigh of relief, I glanced again at Flighty's Fidelity and quickly picked up a Ferguson 22G3 (TX100 chassis). It was dead, and when I checked through the TDA4600-2 chopper power supply circuit I found that the charging resistor R115, connected to pin 4 of the chip, had risen in value from 270k $\Omega$  to 1.2M $\Omega$ . But a replacement failed to bring the set back to life. I next checked that the third pair of contacts on the mains on/off switch were providing the start-up pulse. They were. So I moved to the isolated part of the circuit and checked the 119V and 20V lines. Both were o.k. When I checked at the collector of the BC372 line driver transistor TR8 I found that the voltage was missing. The supply comes from the 15V regulator IC9. The voltages were o.k. here, but there was no voltage at either side of the feed resistor R143. Examination of the print between IC9 and R143 revealed an open-circuit. When this was repaired however there was still no voltage at the collector of TR8. I took it out and fitted a TIP110, which I prefer in this position. The set then came to life. For good measure I resoldered the joints around the line driver transformer T2.

## Mr. Reeve's Colour Portable

It was then that Mr. Reeve brought in his Hitachi

CPT1476 colour portable. "I've got a bit of trouble with it – keeps going off. It's done it again. Gumboils and Snoddies have had a go during the last six months. Reckon it's now your turn!"

When he'd departed I soon found that the STR4211 power chip, which had been replaced before, had failed. So had the BU508A line output transistor Q703. Replacing these two items restored normal operation. The set performed perfectly on soak test before Mr. Reeve called and took it off.

## Back to the Fidelity

Flushed with success, I decided to tackle Mr. Flighty's Fidelity again. Uncontrollable brightness and now no sound as well. If only I could go back to the start, when at least I had the sound.

Looking around the chassis for clues, I noticed that there was something odd about plug A and its socket on the signals board. While the female half, moulded on to a ten-core ribbon cable, was clearly a ten-pin one the male half, part of the signals panel, had eleven pins. This meant that they could be connected together in either of two positions, and in one of these positions all ten connections would be wrongly made. I'd pressed them together so that from my viewpoint they fitted snugly and properly. What would happen if I parted them and reconnected them one pin along? When I did this a perfect picture, with sound, came up.

As I boxed the set up I thought about the possibility of ending up with a severely damaged set because of this. I remembered that I had a similar scrap set in the next room and fished it out so that I could see if the plugs and sockets were the same. They were both ten-pin types. I wonder whether anyone else has come across this production quirk?

## Logik VR960A

A Logik VR960A VCR was soon dealt with. It was dead except that the display lit up. I checked the voltages at the STK5332 power supply chip and found that they were all haywire. A new chip restored normal operation.

## Return of Mr. Reeve

I was just thinking of calling it a day when the door opened and a disgruntled looking Mr. Reeve bowled in with his Hitachi CPT1476. "You put a faulty part in this set" he announced. "It lasted only an hour."

I waved him out, put the set on the bench and plugged it in. Up came a perfect picture. Half an hour later it failed, and no amount of heating and freezing would bring the fault under control. I eventually resorted to minute examination of the panel through my giant magnifying glass, while probing about. None of the solder joints looked dry, but one or two were sitting in little circles of brittle looking flux. While scraping at one of these with a watchmaker's screwdriver it lifted away from the panel, though it remained perfectly soldered to the component leadout wire. The connection was to the cathode of D950. Closer examination showed that there was a film of grey dust between the panel and the solder blob. I cleaned off and resoldered the joint, then similarly treated a few other nearby joints just in case. After a soak test I pronounced the set fit.

"I hope it's all right this time" Mr. Reeve said when he returned, looking at me straight in the eyes.

# What a Life!

**Donald Bullock**

Steve Beeching and his charming wife popped in the other day. They came in a station wagon that made our Ford look a bit utility. "Some car!" I said. "It's the wife's" Steve replied. Seeing that Greeneyes was paying careful attention I changed the subject.

We had a pleasant hour's chat in the bar, much of it spent in mutual sympathy over the lives we lead. Then Steve told us about the items of electronic wizardry that he and his son service as a matter of course. Things that I've heard about though scarcely seen, let alone tackled. Steve has a decided advantage over lesser mortals like me – an extremely fine brain. He also has an enthusiasm that's good to see, dedication to his work and a fine sense of humour. He needs all these in dealing with things like camcorders. I'm reasonably certain that I never want to have to open one of them up!

Thanks for calling in, Steve. We had a good hour or two. Call again sometime – I forgot to tell you how big I am on G11s!

## **Mrs Whelp's Panasonic NV370**

During Steve's visit Mrs. Whelp called with a Panasonic NV370. Next day I put it on the bench. When I switched on there was no channel number display and no LED was alight but the clock flashed merrily and the idler quivered a bit before losing interest. I decided to take a look at the power supply and soon found an open-circuit fusible resistor – R1101. Not a bad start I thought: maybe I'm about to get a run of easy little moneyspinners.

## **Saisho CT142RX**

The next job was a Saisho CT142RX colour portable. I seem to get a lot of Saisho/Matsui sets. This one was dead though the channel 1 LED was alight. The mains fuse F501 (2.5AT) and the 5-6Ω, 5W surge limiter resistor R501 were both open-circuit while the STR50103 chopper chip IC501 had expired. I replaced these three items then checked the line output transistor, which was o.k. So I switched on. No difference!

There was plenty of h.t. at the mains bridge rectifier's output, but no 103V output from the chopper chip. A further check showed that there was no start-up voltage at pin 2. A check on the two feed resistors R502/3 indicated that they were o.k., but how did I know whether they were up to passing current? I've been had before with that one. So I fitted replacements. Still no start-up voltage. My earlier hopes about a run of moneyspinners were fast evaporating. Could the two transistors Q107/8 in the power switching circuit be faulty? In went two new ones, again to no effect. Perhaps the line output transformer, which is also linked to this point, was damping things? The connection is made via the RH1 diode D508 which turned out to be dead short. Why hadn't I tried that first?

## **A Luxor SX9**

The next patient was a 26in. Luxor set, Model 18067349 (SX9 chassis) which was also dead. It's not a set I know, and I didn't have a circuit diagram. There was h.t. about,

and the two BU208A transistors in the line output stage and the power supply were all right. Bearing in mind the last set, I decided to go round the diodes with a component tester. No luck this time however. Then, while examining the print side of the board, I saw that some of the joints looked less than healthy. So I went round those on the line linearity coil and the line driver transformer. This brought results, though of an intermittent nature. I then found that the two large copper heatsinks that bridge parts of the copper print were dry-jointed. Resoldering these cured the trouble.

## **Philips CTX-E Chassis**

As I was refitting the back a bearded fellow pulled into the drive. There was a Philips 20CT2026/05 colour set (CTX-E chassis) on the back seat of his car.

"I've brought this set all the way from Lancashire" he said. "Well over a hundred miles. It belongs to my mother who's down here on a visit. Thought I'd bring it along as well as it's intermittent and you did my own set recently."

I plugged it in, took the back off and gazed at the print under the line output transformer. What I expected to see was there – dry-joints. Attention to these and, a few minutes later, all was well.

"Marvellous" he said, "too good to be true!"

"S'nothing" I said, blowing on my nails.

## **Egbert's Alba VCR6000X**

Just then Egbert Crust bowled into the drive, as though he was pedalling an invisible bicycle up a steep hill against a headwind. He was carrying an Alba VCR6000X video recorder.

"Don, for heaven's sake fix this recorder by tonight" he gasped, "otherwise Marina will pack me in."

After he'd bolted I plugged his machine in. It was haywire, like Egbert. On opening it up I found that the loading belt was badly distended. While fitting a new one I saw why. The mechanism had jammed and the belt was fighting it. I removed all the belts and judiciously applied some WD40 to the mechanism. Then I cleaned the pulleys carefully and refitted the belts. This restored perfect operation.

## **Decca 140 Series Chassis**

My next caller brought in a 16in. Decca set, Model DP1473 (140 series chassis). "The picture's unstable and goes off after a minute" she said. I removed the back and switched the set on. Up came an unstable picture with clattering sound, and after a minute the set went dead. As I turned it on to its side it came on again, and I found that I could make the fault come and go by tapping the chassis. So I switched off and busied myself resoldering some dry-looking joints in the power supply. Suddenly something dropped out and rolled on to the floor. It was a large, heavy ferrite bead. I then found a small loop of wire that had obviously been threaded through it and soldered to the chassis. After putting this right (the circuit designation was L803) I tried the set again.

This time there was no picture and sound disturbance at all, but the set went off after a minute as before. Tapping around plug and socket MC01 brought the set to life briefly, but resoldering it didn't help. I then found that flexing the centre front of the panel controlled the fault. Out came the magnifier and I saw that one of the pins of the TDA4600-2 chopper control chip had never been

soldered. Attending to this provided a complete cure.

### ***Mrs Rabble's Toshiba VCR***

Then Mrs. Rabble brought a Toshiba V309 video recorder along in a pushchair. With her was her precocious little daughter, who immediately went around the room twiddling the controls of every set she saw.

"Do you think you could, er, ask the little girl to stand by the door with you" I asked. "She might get hurt, and we wouldn't want that would we?"

"Oh don't worry about that" snorted Mrs. Rabble. "The point is that you mended this video for us a few months ago and it's never been right since. We haven't had time to bring it back before. My husband says you didn't do it properly. His workmate said you don't know anything about videos. Said we should have took it to Snoddies."

I looked at her and her protege and nodded sympathetically. "They do seem to have all the answers" I replied.

"I'll wait while you do it" she said, adjusting her stance to permanent stay.

I opened the machine and looked inside. A powder compact and a partly nibbled Mars bar were caught up in the mechanism. I took them out and handed the bar to the child and the compact to Mrs. Rabble. "One each" I said. Then I tried the machine, replaced its cover and handed it back. "I haven't the time to do you a bill now" I said, scribbling a few details on my pad. "It'll be only nominal, fifteen pounds or so. I'll drop it in the post to you."

Mrs. Rabble breathed in sharply, smiled weakly and stalked out.

### ***The HRD230 and the Curate's GEC TV***

Just as I pulled a JVC HRD230 VCR on to the bench the door opened and the Reverend Goode beamed in. "I know you don't do house calls" he said, "but if you find yourself in my parish sometime do pop in and look at the curate's massive TV set. The tuning buttons don't work."

Off he went and I concentrated on the JVC video. It was all right in the fast forward and rewind modes, but play was fickle. I turned it upside down, removed the base then took out, cleaned and retightened the screw that earths the mechanism control board print. This didn't help. I noticed an evil-looking STK5481 power supply chip and changed it at once, but again there was no difference. So I fitted an idler. Play seemed to be better, but the take-up spool faltered now and again. Then I saw that the tape was also faltering at the pinch wheel. Cleaning it made no difference, and I noticed that the capstan was stopping. So I took out the motor and treated it with WD40. The machine worked well for over an hour on soak test and I was about to pronounce it fit when it stopped again. There was nothing for it but fit a new motor, and they're not cheap. The replacement restored the machine to normal operation.

A couple of hours later I had to take Greeneyes into town. I decided to drop in on the curate on the way back. The set was a huge GEC model. I switched it on and, as its lazy tube warmed up, I instinctively took out my handkerchief and gave the buttons a brisk rub. By then the picture had come up and the tuning was perfect.

"Oh" said the curate, "your very presence has made it work. How clever! Thank you, thank you." He opened the door and I walked out. "God be with you" he cooed.

As I walked back to the car I thought there really must be a better way.

# What a Life!

**Donald Bullock**

"Now that we've got a nice new carpet, what about mending our television?" complained Greeneyes the other day. "Not only is it the oldest set in the city, it's been intermittent for over six months."

It's a Philips G11 and the trouble of course is dry-joints on the line panel. The screen keeps going dark and the picture twists into an hour-glass shape: now and again you get line collapse. I really must find time to mend it before she calls in Snoddies.

## **Walter's Philips GR1-AX**

One customer of mine, Walter Wingnut, is a wizened little chap with protruding ears. He called in the other day with his Philips colour portable. It's a 14GR1221/05B, which uses the GR1-AX chassis. Walter had bought it for a song from someone who'd won it, and he wasn't too sure about the guarantee situation. The trouble was that it displayed a bright red screen from switch on. It was the first GR1-AX I'd encountered and I didn't have a manual. I did however notice that it had a TDA3565 colour decoder chip. So I ordered a manual and a TDA3565 from Manchester. The spares arrived that afternoon – delivered by the firm's director. "I just happened to be passing" he said. Then Wingnut phoned to find out how I was doing.

"The spare part has just arrived" I said, "it'll be ready shortly."

## **A Brace of Bush 2020Ts**

Just then a customer I'm always glad to see called in. Old Miss Catchem. She's portly, tweed-clad, full of life and as bright-eyed as a sparrow. Travels around in an old shooting-brake packed with guns, fishing rods, gaffs and waders. As down-to-earth a lady as they come. She hauled out a couple of Bush 2020T television sets and plonked them on the bench. "Dead as doornails, both of 'em" she said. "Try to fix them fast" she added as she departed.

I took the back off the first one and saw that the fuses were all right. So I busied myself around the power supply, which is of the TDA4601 type. The 4-7 $\Omega$ , 5W surge limiter resistor R816 looked groggy and when checked produced a reading of about 500k $\Omega$ . So I fitted a replacement and switched on. Still dead. My next check was on the BU508A chopper transistor Q801 which was short-circuit. Fitting a new one again made no difference. It was time to look out the circuit and do a little thinking. The high-value, low-wattage resistor connected to pin 4 of the chip is of course notorious in TDA4600-type power supplies. In this circuit its value should be 270k $\Omega$ . I made a bee-line for it and found that it had increased in value to almost a megohm. A replacement brought the set back to life and after refitting the back I settled down to the other one.

This one had a heavy short – at switch-on the relay clicked for five or six seconds. I went straight to the line output stage and checked the output transistor and just about every semiconductor device I could find, using the component tester built into my Hameg scope. But I failed to find anything amiss here. Eventually I resorted to the ruse of running the set until the relay stopped clicking, then repeatedly switching off, waiting a second or two and

switching on again, thus achieving some degree of continuous operation. After a few cycles of this I felt the line output transformer. It was hot. Fortunately I had one in stock. Fitting it restored normal operation. I put both sets near the door in anticipation of Miss Catchem's return visit. Then the phone rang.

## **Smoke**

"D'you sell reconditioned sets?" a raucous voice asked. "My old mum's set billowed smoke and frightened her to death. It's finished I think."

"I'd best take a look" I replied, "sometimes there's smoke without fire."

The set was brought in shortly afterwards. I took the back off and peered inside. It was one of the earlier Matsuis, a 1460. The trouble centred around choke L403 in the line output stage. What had started off as dry-joints had progressed to carbonised holes in the PCB. I took out the choke, cleaned off and tinned the contacts, cut away the carbonised parts of the panel and cleaned away the soot. Then I made good the printed wiring with sturdy jumpers and refitted the choke. The result was a perfectly good picture.

"You're magic" the raucous one said when she came to collect it. "Have an extra fiver on me."

## **The G11 Sorted Out**

Just then Greeneyes looked in. "That set of ours has really given up the ghost this time. Do I lift the phone or are you going to mend it?"

So I carted it back to the workshop and spent ages mopping up the dried out solder on the line panel, scraping and retinning the wirewound resistor leads and generally resoldering it back into good shape. This cured the intermittencies and I thought that for good measure I'd set it up nicely. I soon noticed that a half inch strip of the raster pulled to the left and was slowly travelling downwards, kinking the picture as it went. I spent ages checking through the power supply panel, even to the extent of removing the diodes, including the zeners, for testing, but couldn't find anything wrong.

After a while I recalled that I'd had this fault before. Time to refer to the card index I keep on obscure faults. Sure enough there was a reference to it. The cause was listed as the 27V zener diode D4021 in the active smoothing circuit. But I'd tested the power supply diodes, including this one.

I decided to investigate. After removing D4021 I fitted a replacement. This cured the fault. Then I compared the meter readings with the original diode and the new one. Identical. Scope traces using the component tester were then compared. The new zener diode produced a perfect right angle while the faulty one produced a right angle with a very slightly upturned tail at one end.

## **TDA3562A Chips**

While I was reflecting on the vagaries of our trade Alan Humphries of Fast Fix phoned. He's the compiler of the card index system of collated *Television* magazine faults and their remedies.

"Just had a game with a Matsui 1580 colour portable" he said. "Vision was intermittent at switch on. Changing the TDA3562A colour decoder chip made no difference except that when there was a picture it now had a green cast. I spent many frustrating hours before I discovered

that the cause of the fault was indeed to do with the TDA3562A chip. The one I'd taken out bore the legend TFK (Telefunken) whilst the replacement I'd used was of Philips manufacture. There's a difference, and this set wouldn't work properly until I'd fitted a Telefunken replacement."

"I'll pass the tip on in *Television*" I said. "Do get it into future editions of your *Index*: could save hours of soul-destroying searching for some poor soul like me."

I refer to Alan's excellent *Index* almost daily, as I do the *ECS book Index* compiled and produced by Mike Lyons. And dealer Dave of Criccieth TV, Gwynedd, North Wales has sent me an advance copy of a five-year *Television* index he's compiling.

The nature of my business means that I have to try to service just about every make of VCR and TV set under both the Eastern and Western suns (except for Philips VCRs). It's obviously not possible to have a thorough knowledge of them all, nor to have every manual. These indexes not only save me time but often enable me to repair sets that would otherwise prove too daunting. I'm working on an article that describes their usefulness in my workshop of late.

## **A Tube Dodge**

Time to return to Walter's GR1-AX. I fitted the replacement TDA3565 chip and switched on. The screen came up as red as ever. So I worked on from the TDA3565 towards the tube. The red output transistor's collector voltage was of course low – about 12V instead of 115V. When I swapped over the red and green output drives to

the tube the voltage drop was also transferred, which pointed to a short inside the tube. I switched off and checked the resistance between pin 7 (red cathode) and pin 6 (the grid). It was only a few ohms. The tube was useless – or was it?

I recalled a little dodge we used to get up to with monochrome tubes. As there was nothing to lose I took off the tube base, wired pin 6 of the tube to the negative side of the set's h.t. reservoir capacitor C2606 (output from the mains bridge rectifier) and pin 7 to a spare meter probe. Then I switched the set on and dabbed the probe on to the positive side of C2606. Just once. There was an odd noise in the tube's neck. I dismantled my wiring, reconnected the tube base and switched on. Up came one of the nicest, and most welcome, pictures I'd seen.

I phoned Wingnut and told him what had happened. "It's all right now" I said, "come and get it."

## **Nannie's Rank Z718**

There was one further call that afternoon. Nannie Finch squeezed through the door carrying a Murphy MC6301 colour set – the Rank Z718C chassis.

"Wherever did you find that, Nannie?" I asked, "thought I'd long since seen the last of them."

"It's the sound" she said, "quiet, distorted and peaky. A loose wire I 'spex."

I took the back off and gave the audio output stage a tap or two. This brought me to the BD166 transistor 3VT15, which is actually a constant-current source in this rather unusual circuit. I resoldered its legs and up came the sound. Time to bid Nannie goodbye and shut shop.

# What a Life!

Donald Bullock

Carl Pople of Willow Vale called in the other day. His days in the trade started at about the same time as mine, only instead of repairing sets he was a Mazda rep handling valves and tubes. Valves gave way to transistors and, subsequently, TV sets became so cheap that the replacement tube market was no longer viable for either Mullard or Mazda. We talked of the astonishing changes that have occurred in the trade since those early days, and a couple of hours slipped by in no time. Then it was back to the present and as Carl went on his way I turned to a Turkish manufactured Hikona colour portable, Model 1437. The ticket simply said "dead".

## The Hikona Colour Portable

Well we're expected to mend everything that's thrown at us, so I got stuck in. The set has a stylish, well laid out chassis and, unbelievably, there was an equally pleasing service sheet. An isolated power supply is used: it was failing in its task of delivering a regulated 110V h.t. supply.

There was plenty of voltage at the mains bridge rectifier's output. It reached the collector of the chopper transistor Q901 via the transformer, but the circuit wasn't oscillating. Checks showed that the two transistors Q902/3 in the control circuit were starved of voltage while Q901's base was floating. All this was because the 56k $\Omega$ , 3W wirewound resistor R908, which should have supplied 16V, was open-circuit. A replacement brought excellent results, the well-produced circuit sheet and tidy layout having made this set a joy to work on.

## Mrs Tuff's Logik VR950 (Samsung VI611)

As I boxed up the Hikona set Mrs. Tuff, all two hundred-weight of her, came in with a Logik VR950 VCR. She's a welder in a foundry and has a chin like Desperate Dan.

"It's wonky" she bellowed.

"Er, what exactly is the matter with..."

"Told yer, it's wonky."

So I wrote "wonky" on the ticket and, as she left, I put the machine on the bench. It played back all right, so I tried making a recording. After a minute the E-to-E picture started to pattern and pull and the sound became grouchy. Then everything buzzed off. Wishing that it had idler trouble instead, I got to work and soon graduated from the tuner to the power pack where I set out to check the voltage on the 33V zener diode ZD3. Not only did it have a substantial leak, it was running warm. I fitted a replacement, checked its voltage and current conditions and soak tested the machine for a while. As it behaved properly I phoned Mrs. Tuff to ask her to come and collect it.

## A Sharp VCA131HM

Meanwhile Russ Breeze strode in with his Sharp VCA131HM VCR. It had tape transport trouble – play, rewind and fast forward were all unreliable. I've had drive belt and idler trouble with this model and decided to check the belt first. Sure enough it was slack. After cleaning off the pulley wheel I fitted a replacement. This improved the performance, but play was still sluggish. So I took out the idler

and fitted a new tyre. This provided a complete cure. I replaced the cover which, as with so many machines, is secured by four screws: it saves time to remember that they are pairs of different lengths – the short ones secure the sides while the long ones go in the back.

## The Surgeon's ITT CT2600

As Russ was digging into his pocket a smart car with an even smarter driver pulled up. It was Miss Dream, a local surgeon's daughter.

"I've brought dad's television set along for repair" she breathed, "only it's so large. Can anyone give me a hand?" Russ's day was made.

When he got the monster on to the bench it turned out to be a 26in. ITT set, Model CT2600 – CVC1210 chassis. Apart from a ticking noise the set was dead to the world. A quick check showed that there was 330V across the mains bridge rectifier's reservoir capacitor C658, so I frowned at the line output stage. The BU208A line output transistor T501 on its heatsink to the left of the transformer was short-circuit while the BD135 EW modulator driver transistor T562 was wide open. R503 (100 $\Omega$ ) in the scan-correction network had suffered from the effects of heat, but this is often the case. I replaced these three items and switched on, hoping to hear the rustle of e.h.t. But none came. So I applied a finger to the encapsulated line output transformer. It was hot. A new one from Hoopwell completed the repair.

## A Solavox ITT

The very next set to arrive on the bench was fitted with the same chassis, only this time it bore a Solavox badge (Model 22T09). The line output transformer was the problem with this one as well. Meanwhile a Manager's Service Special brochure from CPC offered an HRS version of the transformer at half price. I faxed an order and it arrived the next day. Fitting it put the set to rights.

## An Unpleasant Experience

I was getting on swimmingly the other day when, at about 1 p.m., Mr. Snide phoned from New Close. He said that he'd only just moved into the area and that his large colour set was producing poor pictures on two of the channels. In addition he had a monochrome portable with a dim picture. He didn't know where I was to be found, so could I call along now?

I took his address and telephone number and told him that we'd be along. In fact I rarely do house calls these days, but my son Paul sometimes gives me a hand with them. He said he'd go right away.

"We don't know whether his main set or the aerial is at fault" I said. "He's new to the area. I suggest you use the monochrome portable to test the aerial. If it's o.k., we'll attend to the set. If not I'll give him the telephone number of a good rigger. In any case, I've agreed to look at the portable."

Paul came back an age later to say that the address wasn't right. After I'd phoned and got the correct address Paul set out again. After a good while he came back with the portable and reported that the other problem was due to the aerial.

The portable was a Pye T173 (Philips TS7 chassis). It must be at least twenty years old now, though it's a stylish set. I'd serviced one or two of these sets before and was sure I had the circuit, but finding it took quite a while. The obvious thing to do was to check the tube's first anode voltage. It should be around 200V but was much less. Further checks showed that one of the resistors in the supply network had risen substantially in value. Fitting a replacement cured the

trouble, so I replaced the chassis and set up the picture. It was now nearly tea-time. I decided to phone the customer.

“First your big set. We’ve found that the trouble is due to an aerial fault. I’ve looked out the number of a local rigger and I’m jotting it down to send back with your portable. We’ve done that too. I can get it back now and if you’re happy we’ll charge a total of £25 for our calls, diagnosing the trouble with the big set and repairing the portable.”

“Fine” he said.

When Paul arrived at his house the customer took the portable, refused to pay and phoned me.

“What’s all this business about £25?” he demanded.

“It’s what we agreed” I replied.

“You were talking to my son” he said. “I don’t pay for

service calls, and I’m going to pay you £10 for the portable – that’s all it’s worth.”

I tried to put my case but he would have none of it. I offered to unrepair his set and cancel the bill but he wouldn’t hear of that. I finally offered to accept £15, but he flatly refused to pay. Then I remembered his aerial and the rigger I’d recommended. “The rigger will expect payment if you call him to your house.”

“He won’t get it: where I come from we don’t pay for house calls.”

So I phoned the rigger and warned him. Paul finally came back with £10 and we split it. What a distasteful time we’d spent at the hands of a form of life I’d not come across for a long, long time.

# What a Life!

**Donald Bullock**

A bit of sun is always cheering. So I got up early the other day and raced Greeneyes to the bathroom. "Let's have my Healthybran and fruit" I cried, "and my sugar-free coffee. Let me get to the workshop. I want to get on and work."

## **The JVC HRD230**

With breakfast over I strode to the workshop and put the first job on the bench. It was a JVC VCR – an HRD230. Rewind and fast forward were o.k. but it wouldn't record or play. The tape laced then unlaced and that was that. The head drum was still.

After checking the power circuits I decided to replace the STK5481 just to be sure. As I'd feared, this made no difference. So I carried out some voltage checks around IC601, the 64-leg M50965-628 chip in the mechacon circuit. As some of the voltages were wrong I replaced the chip then switched the machine on and tried it with a cassette. The drum now revolved and the tape loaded satisfactorily, but the take-up spool kept faltering to a stop and the tape spewed into the mechanism. Progress, but there was still something wrong.

Checks in the associated circuitry showed that the voltages around the M54644BL chip IC604 were haywire. Fitting a new one restored the machine to full working order.

Well, I'd had to work for results that time, but I'd won. Perhaps, for a change, I was going to have a good day.

## **Mrs Libber's Sanyo CBP2145**

My next caller put an end to this hope. I wish Mrs. Libber had gone to Snoddies. They can take strident, mouthy women in their stride. She asked for a house call, which wasn't on, even though her set had only a "slight fault". So she sent her husband along with it. The set turned out to be a 22in. Sanyo CBP2145, which is fitted with the E2 chassis. Later that evening she phoned to ask whether it had been done. It hadn't.

Next day I put the set on the bench. There are two channel selector buttons, for up and down, at the front. The trouble was that they didn't work until the set had been on for about five minutes. After a spell with the freezer and hairdryer I decided to take out the front panel to apply a little contact cleaner and resolder the joints, which is faster to say than do. Operation of the set seemed to be better after doing this but it was still not good enough. So I set about obtaining a manual and meanwhile had a word with Sanyo. I was advised to change C398, a 100µF 16V electrolytic across one of the 5V lines. It made no difference, so I decided to wait for the manual.

Then the phone rang again and Mrs. Libber said she was getting impatient. She'd bought the set, at enormous expense, so that they could watch television. They couldn't because I had it. Why was it taking so long to fix such a slight fault? And she hoped it wouldn't cost much.

I should have given the set back to her then and there, but since I'd got involved I decided to press ahead. For the time being I had to work as well as I could without the manual. I changed one or two items in the supply, including the L78M05-RA 5V regulator IC395 and D395 which supplies it. Next day Mrs. Libber came on again and I suggested that she had the set back until I'd received the manual, studied it and

ordered any bits I suspected. In that way she'd have the use of the set until I was ready, hopefully, to have it back and cure the fault quickly.

Her husband, a rather sheepish fellow, came, shook my hand and offered to pay for my trouble so far. I told him that I wouldn't charge until the job was finished. Off he went with the set, smiling away, leaving me to reflect on why such shrews always seem to marry such decent chaps.

Then Greeneyes went to Spain for three weeks, with our eldest offspring, leaving me to look after the three youngest ones. I assured her that I could cope. In no time at all we were all down with flu and I was too ill to work. By the time I'd recovered the house was full of TVs and videos brought in for repair. I hardly knew which way to turn.

My first caller was Mrs. Libber. The set now changed channels perfectly she said. It must have been a bit of dust on the controls, so I needn't attend to that. But I'd obviously done something to the set because there was now sometimes a noise on the sound, accompanied by a faint chirp from within.

"I can't take it anywhere else" she said, perhaps sensing that I was a little less than fond of her, "because since you caused it you'll know at once how to put it right." Her husband brought the set, all apologetically, into the workshop and when he'd gone I put it on test. Within a couple of hours Mrs. Libber was on. "Have you got it right? I miss my television set."

The set behaved itself for hours, then I heard a slight "crr-ing" noise that seemed to come from the line output transformer. I placed a blanket over the set and it was soon chirping enough for me to be able to investigate. The noise definitely came from within the line output transformer, and now the brightness was affected as well.

I had an identical Fisher set awaiting a line output transformer. It arrived as I was working on the Sanyo set. The part numbers matched, so I fitted the new transformer, all £30 worth of it, in Mrs. Libber's set. As a cross-check I installed the chirping transformer in the Fisher set. After a while the Fisher began to chirp, and a few hours later the transformer suddenly warmed up and died. Meanwhile Mrs. Libber's set was behaving perfectly with the new transformer. Then suddenly she was back, with her husband.

"I'm not happy with the time you've taken on our set" she said. "You're still running your little advert, so you can't blame pressure of work. I know that you've been ill, but we can't help that. I came to you because I wanted service. We've been to the Weights and Measures about you."

I glanced at Mr. Libber. "Are you better, Mr. Bullock?" he began, smiling nervously. She glanced at him and his smile went.

The set seemed to be working all right with the new transformer, but I wanted to be sure. I ignored Mrs. Libber and addressed her husband. "If you telephone tomorrow I may have good news about your set." Off she strode, with her husband in tow.

The set continued to work well after being boxed up. So next day I asked him to collect it. While waiting for him I pondered on what to do about charging. I'd spent a lot of time on the set and fitted an expensive line output transformer that I now had to re-order. If I made a charge I'd be stuck with Mrs. Libber in the event of a further fault occurring. Or, come to that, if a passing aeroplane fluttered her picture or the programme went off the air.

When Mr. Libber called I told him that I wasn't happy about my dealings with his wife and didn't want to see or hear from her again, that fitting a new line output transformer had cured the latest trouble and that there wouldn't be a charge.

# What a Life!

**Donald Bullock**

Quiet Norman Glutton hauled himself in the other day with a JVC video (an HRD230E) and an Amstrad TVR3 TV-VCR combination.

"The recorder's from Clarence, governor of The Horsefly" he said. "Do you know that he charges nearly a pound for his home-made pasties?" Out came a pastie and a pocket knife and the demolition began.

"And who's the Amstrad from, Norman?" I asked.

"Ah, that's mine" he said. "The colour goes, but not for hours and hours. Expensive these pasties, but good."

## Initial Checks

I plugged the Amstrad in and threw a blanket over it before getting on with the recorder, which was dead. After perusing the manual and checking around I eventually found that the M50965-628 microcomputer control chip was at fault. Meanwhile all that remained of the pastie was a few crumbs. Fitting a replacement chip restored the HRD230E to normal operation and, glancing at the price of it, I thought of the pies that Clarence would have to sell to pay for the repair. Quiet Norman would help him there.

## The Amstrad TVR3

The Amstrad was temperamental, but after some hours the colour faded away. So I took it from under its blanket and opened it up. When I switched it on again the colour was all right. The obvious thing to do was to reach for the hairdryer and direct the heat on the area of the 48-pin UPC1420CA colour processor chip IC10. After a while the colour faded away, so I gave it a blast of freezer. The colour returned at once. The chances were that the chip was the cause of the trouble, but to make certain I masked off everything else with a thick duster and tried again. This proved the point. A new chip put matters right and after cruelly twisting its legs I consigned the old one to the bin.

How did we cope with such faults before the advent of freezer? Not so badly, I suppose, because we didn't have i.c.s for all that long before before freezer came on to the scene. A case of necessity being the mother of invention no doubt.

## More HRD230E Problems

I pulled the HRD230E on to the bench again. Its clock was alright but there were no channel numbers on nor was there any sign of a beacon light. I moved over to the power supply circuit and found that there were no 5V and 12V outputs from the STK5481 chip. Replacing this restored the voltages, but there were still no results – and the M50965-628 micro was running hot. As its voltages were wrong I took it out and made some comparison tests with a new one. It was dud all right, but another replacement made no difference. So I pulled the machine towards me and settled down to it.

Before removing the chip I examined each of its pins through my giant magnifier. When I got to pins 27 and 28 I thought I saw the finest imaginable silver strand between them. By moving the light around and examining the chip from different angles I was able to confirm that the pins were indeed shorted. Use of a small, fine iron enabled me to isolate

the strand: it was almost too tiny to see. Once it had been removed the machine burst into life. I was never more relieved to get a job off the bench.

Shortly after, Quiet Norman called in again. This time he was tackling a pickled egg.

"Glad they were both quick and easy" he said. "Easy means cheap, and there are other calls on my money."

"You'll have to uncurl a few browns, Norman. Pay up. They'll do me more good than they will you."

## The Sony KV1442

The next set was a 14in. Sony colour portable, Model KV1442, with excellent sound but no brightness. I'd had one in with the same symptoms a few months back and sure enough this one was suffering from the same trouble – the 800V first anode supply was missing. The rectifier for this supply is D852. It takes its feed from the collector of the line output transistor via a 1k $\Omega$ , 1W resistor (R852). As in the previous set it seemed that the diode had tracked along its length on the underside, close to the panel. The result was that R852 had blown open. It's wise to fit the replacement diode well clear of the panel. After carrying out the repair I was rewarded with a really excellent picture.

## Walter's Ferguson TX90

Then nervous Walter called in with his 20in. Ferguson set (TX90 chassis). After the usual trying interview he departed. I plugged the set into the mains and switched it on. Everything seemed to be all right but after a few minutes the set started to whine loudly and the picture frilled. Turning up the brightness made matters worse. I checked the h.t. and found that it was at 115V instead of 120V. In addition the set-h.t. potentiometer RV224 would only reduce the voltage, and it would do this by only about 2V. The voltages around the BD839 transistor TR107 in the regulator circuit were haywire, but the transistor tested o.k. I then found that its driver TR108 (BC338C) was open-circuit. A replacement failed to restore normal conditions and after making a few more tests I found that R267 (12k $\Omega$ , 1W) had gone very high in value. A new one enabled the circuit to be set up correctly, clearing the fault symptoms.

## An Odd Visitor

My next visitor was a decidedly odd, wild-looking character.

"I'm speaking to you with the name of O'Sharp" he announced, "and I'm asking you to look at my Akai."

"Certainly" I said, wishing he'd called at Snoddies, "if you'd care to bring it in." I didn't like the look of him at all.

"You get it out of the car" he continued, "I've got a bad back."

He looked to me to be in the prime of life. The people that pull this one on me! Anyway I struggled in with it and picked up a pen.

"It's the on-off switch" he barked. "This will be the third time it's failed. I want you to take it out, examine it and write me a report on it, saying why it failed. Then I want you to examine the set and say what you think of the servicing so far, what damage it suffered at the hands of the last engineer and how much its value has fallen as a result. I'll pay you well for your trouble."

"No can do" I replied, wishing the set would run back into his car. "I can check the on-off switch and if necessary replace it. That would cost you £25."

"Twenty five pounds!" he screamed. "You're no better

than the others.” Then, bad back or not, he seized the set and flew.

### ***Mr Blunt's Panasonic***

The last set of the day was brought in by a real rustic. It was a Panasonic TC2061. The problem was sound but no brightness. I removed the back and turned up the first anode preset on the line output transformer. This produced chroma but no luminance. Looking around I saw a TDA3562A colour decoder chip. It seemed sensible to change it, but I didn't have any stock left.

I looked around the workshop which was getting full.

People don't seem to collect their sets so quickly these days. If I could get this one done quickly, I thought, he'd probably take it away. These country people like to get their sets back. So I popped into town and bought a chip retail. The price frightened me, but once it was fitted I had a good picture. I gave Mr. Blunt a ring.

“Is it better now?” he asked.

“Sure is” I replied, “now when would you like to collect it?”

“Oh, anytimes like. I comes your way twice a year, sometimes three times. The year before last I came to town four times in all. But that was when I wanted another horse. I'll be along, don't you worry.”

# What a Life!

**Donald Bullock**

The workshop door flew open and a scruffy fellow entered. "Noggs" he said. I spun round, fearing the worst.

"Er grunts but don't go" he wheezed, producing a VCR and tapping its top. "How quickly can you get 'er done? Proper mind, but I can't spend much as I've a bill to pay for the old car. Three hundred quid."

"Perfection and cheapness, that's what we want isn't it? I'll start on it right now. Will that be soon enough?"

## **The Sharp VCA105HM**

It turned out to be a Sharp VCA105HM, the first of its kind I'd seen. A clicking noise came from its main loading block, which is on the top of the deck to the right of the drum. Time to get a manual. A call to Dave Allen at Willow Vale to order one paid extra dividends. He knew the model and the fault well and told me that in addition to the main cam disc I'd almost certainly need a new loading block worm gear. A new mode switch would also probably be a good idea.

The package from Willow Vale arrived next morning. When I'd dismantled the mechanism I found that the cause of the trouble was as Dave had thought. The worm gear sits upright against the cam: its teeth were damaged. Thanks Dave for the manual, the spares and the instant advice. The job was completed in no time. Just like that!

## **Cars and a Panasonic TC2263**

Later, whilst contemplating on the service I'd been able to provide for Noggs and the amount of my charge, I got to wondering where this trade is taking us. I wished I'd gone into car repairs instead. Then a huge Mercedes glided into the drive. Its driver was a brisk and mature gentleman I'd never seen before. He set about removing a 22in. Panasonic colour set from the back seat and soon got red-faced and breathless, as they do. I ran to his aid and as soon as he could speak he told me that the fault was no colour.

"The name's Fryer" he said. "Ring me at my fish and chip shop when it's done."

The set was a Panasonic TC2263. When I got around to looking into it I found that the TDA3562A colour decoder chip had been out recently and that the soldering was terrible. Some of the pins hadn't been resoldered at all. After tidying it up I tried the set again. As the fault was still there I replaced the chip. This time the colour came up.

When Mr. Fryer came back he expressed astonishment at the fact that the set was ready so soon and the charge. "I really thought it would cost much more" he said, pulling a little package of fish-and-chip wrapping paper from his pocket and unfolding it. Inside this he had a wad of greasy old banknotes. Those he gave me were spotted with oil. "Don't bother with the change" he said, "I didn't expect to have the set back so quickly."

He left me with two thoughts. First, there seemed to be a story with his set. Secondly, how could I get hold of a little chip shop?

## **Bertram's JVC 2151**

While I was pondering over this Bertram Blowfly staggered in with a JVC Model 2151 in his arms. "My neighbour

told me that the tube's gone" he said. "Told me he'd change it for me only his meter thing doesn't work and he's under the doctor for his nerves."

"I'd have a mental breakdown myself if I had the time" I replied. Inside the set I found a Ferguson TX100 chassis. When I switched the set on the purity was awful. So I applied my degaussing wand, expecting at least a temporary improvement if the tube's shadowmask was in place. There was no improvement at all and I began to feel that Bertram's neighbour might be right. Then, casting aside my prejudices and adopting my usual rational approach, I replaced the posistor in the degaussing circuit. When I switched on again the picture was perfect. I shook the old posistor close to my ear: it sounded like a maraca.

## **Vibey's Panasonic Video**

Just then Greeneyes called in at the workshop. She brought with her a strange-looking chap – he looked like a human toby jug. This is "Vibey" she announced. The toby jug grinned. "He's come to prune the vine. We'll pay him in grapes from the autumn crop. He's also brought you this video that needs adjusting."

It was a Panasonic NVL28HQ. On test it worked mechanically and split the aerial signal, but that was all. It wouldn't tune, record or produce a picture from a prerecorded tape. It seemed likely that the r.f. converter was in trouble. A meter check showed that the 12V supply was present at pin 4 while scope checks showed that there was a lush video input waveform at pin 2 and audio at pin 4. But there was no composite output at pin 1. So I took it out and gently opened it. The little i.c. was much the worse for wear, having baked. So I parcelled up the converter and sent it off to MCES of Manchester. It came back so quickly that I stopped and did some sums on my fingers to see whether it had been possible in the time. On fitting the repaired converter and switching the machine on I had excellent pictures. A saving factor in this difficult trade is that we are served by some excellent firms. MCES for one has proved to be consistently reasonable and quick.

Having reassembled the machine I called Greeneyes on the internal phone and asked her to return it to her friend Vibey. "You deal with him" I said. "Forty quid. Call him out of the vine and tell him I want cash, not kind."

## **The Doctor's Sharp Video**

My next caller was old Dr. Hokum, who's as Irish as they come. I'd first met him forty years ago when we were both patients in a TB sanatorium. We'd both recovered rapidly, he because his patients wouldn't let him go, me because I'd a lot of living to do (I didn't know then that I was going to waste my life in this trade). He brought along his Sharp VCD801 VCR.

"I think it's got heart trouble Donald" he said, "give me your opinion."

I plugged it in, inserted a cassette and looked at my monitor. Nothing appeared. "Seems to need spare-part surgery" I said. When I removed the top I saw that the idler was slipping. So I took off the bottom cover, disengaged the idler drive belt, turned the machine the right way up, removed the two red Phillips screws – one at each side of the cassette carriage – and swung the carriage out. Then I undid the two screws that secure the idler, dropped in another, replaced the carriage, hooked up the belt, tried the machine out and finally boxed it up.

"The price of the idler will do, doctor, for old time's sake."

# What a Life!

**Donald Bullock**

Old Abe dropped in again the other day. He's a rustic who lives in a shed close to the banks of the Severn, along with a growing crop of old TV sets, a screwdriver or two and a tube of Superglue. His dwelling doesn't run to a bathroom or a sink, and he hasn't changed his cloths in all the years I've known him. So his aroma precedes him. If there's anything he's better at than bottling it's long-distance walking and doffing his cap to anyone who wears a tie. But he pays his way.

Brother Terry, who lives almost a mile away, saw him striding past and telephoned to warn me. "Your buddy Abe is closing in on you" he joyously announced, "he's got one of his sets wrapped up in his horse blanket and tied with binder twine. Better get the kettle on."

## **Abe's Pye T194**

Abe soon put in an appearance. He greeted me and started to unpack his parcel. Out came yet another monochrome portable, this time a 14in. Pye T194 (Philips TX chassis).

"Me brother gave 'im to me. Says 'e's gone wrong once too often, keeping 'im broke. Now 'e's mine and I'm going to give 'im to the Merry Widow. Aaarh, I likes 'er!" And he doffed his cap. "I've 'ad a quick look at 'un" he added.

As I put the set on the bench its back fell off. I plugged it in, switched on and found that the field scan had collapsed to about a fifth of an inch high. "If you plugs the aerial in and turns that knob down" said Abe, "you sees little cowboys roamin' about in that little bar o' light".

I quickly checked the field output transistors. One of them had recently been replaced. It was the other one, TS521 (BC338), that was virtually open-circuit. A new one brought back full height. Then the picture started to twist around. I switched off quickly and looked at the smoothing. The main block had been pulled out of the board and pressed back in.

I looked at Abe, did some sums, resoldered the capacitor, tested the set and boxed it up. As I was about to speak Abe put three tenners and a fiver on the bench.

"I knows, thirty five pounds ain't it?" he said. "That's what it cost me brother at Snoddies when it went like it the other day."

"Abe" I said, "what can I do with you? It ought to be fifteen pounds. I was going to make it twenty because of your bloody meddling, but you're always straight, pay up without a word and walk eight to ten miles here and as many back with your sets under you arm. Pick up two of those tenners before I start thinking about the price of Bell's whisky. I've got a thirst brewing."

## **A Metal Box with Dials**

Our next caller was Jeremy Chamberlain, a farmer who lives close by. He's pretty big in farming circles and sometimes appears on the BBC, putting forward the farmer's view. He was carrying a metal box with dials. Said it was a Marconi moisture meter, Model TF933C.

"What does it do, Jeremy?" I asked.

"Measures the moisture of my grain" he said. "According

to the instructions it's a Wheatstone bridge. I put the grain in this little pillbox thing, screw it down tightly with this thumbscrew and read the results on the dials. Only it doesn't work."

"Er . . . doesn't it then?"

But he'd gone, leaving me baffled by his machine. Sir Charles Wheatstone, who invented the famous bridge, lived round the corner. But he died in 1875, when I was a young blade. I wished that Jeremy had brought the thing along earlier. It ran off two PP3 batteries and they'd been left in when exhausted. As a result the battery clips had suffered. So I ordered some new ones.

## **John Berryman's Samsung CTV**

John Berryman's big van then drew up. He's the cheerful undertaker from a nearby village. "You look well Don. How's Greeneyes?"

"We're both fine John" I said, "and expect to last for some time. You'll have to be patient."

"Looks like rain out there" John said, "and this blessed Samsung's just died. What can you do about it?"

"Can't do much about the weather" I whipped, "as for the set - well, you're the undertaker." Fierce wicked like.

He left me with the set, a C1210R which is similar to the Alba CTV10. Actually it's the Nikkai Baby 10 chassis. Very neat and tidy it is. I pressed the power button and the LED came on. Pressing the standby button produced a relay click but apart from this the set remained as dead as a door-nail.

I'd no circuit diagram. Oh for the days when a dozen circuits would enable you to repair almost any set put on the bench! And we could mend most of them without having to get the circuit out. I opened the Samsung and found that the fuses were o.k. A check showed that there was 16V across the main smoothing block. This voltage was present at the relay's output and then passed to the AL2711K chip IC402, a huge three-pinned device that lives in its own boxy heatsink. The second pin is connected to chassis, so I hoped to find a decent h.t. voltage on the remaining pin. There was 2.9V.

## **The Logic of It**

With masterful logic I decided that either the chip was failing to deliver or something was dragging down its output. I open-circuited L402, which feeds its output to the other circuits. The voltage fell to zero, so I had to stop and think. From a study of the chassis it was soon apparent that the chip was wide open and that the 2.9V had actually come via R408 which is in parallel with the chip and L402. To prove that the chip was the cause of the problem I bridged it with a 5Ω, 10W resistor and momentarily switched on. Up came a writhing raster. A new AL2711K chip did the trick.

## **Ferguson TX100 Chassis**

Just as I was pulling a Ferguson 22G2 (TX100 chassis) on to the bench I heard a clopping sound outside. I looked out to see a vision of poetry in motion. It was Miss Dream again. She was carrying a set that looked like the one I'd just repaired.

After the pleasantries and a promise to have it ready that evening she swept off. I put the set aside for attention later. After the experience I'd just gained it would be a piece of cake.

I switched the Ferguson set on and it squealed at me. It

was otherwise dead. With the back off it was clear that the noise was coming from the line output stage. As I had an output transformer in stock I decided to try it. Up came the picture and the set screamed no more. I wasn't too bad an engineer after all I thought.

### **Miss Dream's Portable**

As I picked up Miss Dream's portable the storm began. Rain peppered down, lightning flashed and the mains supply started to blink. Her set was a Samsung C1212R. I looked reassuringly at my remaining AL2711Ks, reckoning that I'd shortly be needing one. But when I opened the set up I found a totally different chassis that was quite new to me. And I didn't have the circuit for this one either. There seems to be no end to service data problems these days, especially with the variety of cheap sets around. We can hardly add the price of a manual to the bill with each new set we get.

The fuses were once more all right. They always are! I looked for h.t. at the main smoothing block then traced along to the emitter of Q131, a 2SB948A transistor used as a regulator. There was 18.5V at its base but nothing at its collector, so I disconnected its load. As this didn't restore its collector voltage I checked the transistor. It was good.

Its base is controlled by Q130 which was biased off with over 17V at its base. I traced this state of affairs back to the TMP47C433AN microcontroller chip IC105. Without a circuit diagram there was little I could do apart from check for a good waveform across its crystal oscillator. This was excellent.

### **Microcontroller Fault**

A quick phone call to Samsung proved helpful, as it always does. I put the phone down with the knowledge that the chip should have an input voltage of 4.5V at pin 42 and that there should be a 4.7V output at pin 8. The first voltage was present but not the latter. At this point son Steven announced that we had a replacement – one of a complimentary pack that Toshiba had kindly sent us yonks ago when we contacted its technical department about a problem we'd then had.

When I fitted the chip the set sprang to life. But there was no brightness. Advancing the first anode voltage potentiometer on the line output transformer a little produced a bright screen with a large row of noughts across it! None of the front controls worked, and I then found that the set would come on from cold without pressing the standby button.

I carefully checked the chip I'd taken out with the one I'd put in. The numbers were identical except for what I'd thought had been a batch number under the big one. The chip that had come out had 3842 on it while the one I'd fitted had a different number in this position. Samsung confirmed that this was the programming software number. Steven managed to get the correct one locally, and this proved the point. The set now worked perfectly, with a striking picture.

It was getting towards the end of the day, and we appeared to be in for a wet and windy night. Our last caller was Miss Dream, who was delighted to find that her set had been done. She paid up and made to clip-clop out.

"You're my favourite man today" she cooed.

Then Jeremy Chamberlain phoned. "Any luck with the meter?" he asked.

"Not yet Jeremy, probably tomorrow" I said. "But if you're wondering about your grain, I can help you there. It's wet Jeremy, very wet."

# What a Life!

**Donald Bullock**

Les Piercy dropped in the other day. I wonder how many of you remember him? After being in the radio and TV business in the London area he was, when I first came to know him, a Radiospares rep. He later went into partnership with Harry Reddin, running their own spares business RSP Supplies. Though he retired several years ago he retains a considerable knowledge of our trade. We spent a pleasant hour recalling the early days.

## Some Memories

We agreed that though there was never much money in the servicing trade there was, at one time, some status. People, especially country folk, would often be waiting on their doorsteps for our call and we often came away with gifts of produce from their gardens and perhaps a few eggs. Les recalled the time when, on an outside service visit in Sussex, he was given a bottle of home-made wine. He stowed it away carefully behind his seat and went on his way, first to Horsham and then towards Surrey. It was there, in a leafy glade, that the wine exploded, covering himself and his vanful of sets with the sticky wine. "I though my end had come" he added.

A frequent job in those days was to remove the implosion screen and clean it and the tube's face. They used to attract a film of greasy dust that fogged the picture. "It wasn't at all unusual," Les commented, "for the customer to complain that his picture had become liney after we'd carried out a cleaning job."

Les recalled a small boy who arrived at the shop daily for a 1A fuse. Hearing that the set was a Pye VT4 he suggested that the PZ30 h.t. rectifier probably had an intermittent heater-cathode short and offered to change it. But the visits continued, until one Saturday when the Cup Final was imminent. Les was asked to call round and change the valve, which he did along with the fuse. Whilst at it he cleaned the screen and tube face. Then he accepted a cup of tea and left.

The bills he sent were ignored until, when finally pressed, the customer paid for the valve and fuse but not the call. "We don't pay people to sit in our home and drink tea" he was told.

One day Les was called to service a vacuum cleaner that wasn't sucking the dust up efficiently. He asked the owner when she last emptied the dust bag. "What dust bag?" she replied, "surely all the dust goes into the mains?" Another lady said her Electrolux had failed after being cleaned. "How did you do it?" Les asked. "By sucking soapy water through it of course" was the reply.

In those days most of the sets were of the t.r.f. type and we were plagued by faulty crimson EF50s. Rotary tuners later came on the scene. Some had a full complement of coils but others were fitted with only those required in the locality. Les was asked to change a set of coils in a huge Ferguson console set with castellated knobs. He had difficulty getting them off to release the chassis and get at the tuner. The tuner knob was eventually freed but to remove the volume control knob he had to use a piece of rope and tug at it with his knee against the set. It came away suddenly of course, along with the volume control shaft, propelling Les backwards. The result was a considerable shambles – and Les then found that he'd got the wrong coils. The

customer was not amused.

Les then recalled the time when one of those screen magnifiers, which were full of paraffin oil, fell into the fire. "Boy did they have a cheering fire for a while!" He also recalled the "magic screens" that were advertised in the papers and claimed to be able to convert a monochrome set into a colour one. Those who sent off for one received a screen-sized sheet of plastic that was tinted blue at the top, pink in the centre and green at the bottom. "Not bad with a country scene" said Les, "but a full-face close-up produced a bizarre effect."

It seemed that there was never a dull moment in those days.

## A Ferguson 3V36

As Les left, Mr. Moggie came in with a Ferguson 3V36 VCR. "He's dead and flashing, but you can see only bits of the clock. It blew a fuse a fortnight ago. Was all right with a new fuse then it went like this."

I removed the cover and looked at the power panel carefully. Pin 1 of socket CN4 was sitting in a little circle of ash. It had clearly been a dry-joint that had carbonised. I cleaned and resoldered it then tried out the machine, which now worked well. What a relief!

## Mr. Ng's TX100

My next customer was Mr. Ng, who had with him a Ferguson Model 20A1 – a 20in. set fitted with the TX100 chassis. He laughed as he announced that it was "completely dead", then hurriedly departed. On investigation I found that two of the mains bridge rectifier diodes, D6 and D8, were short-circuit while the mains fuse and the surge limiter resistor R106 were open-circuit. After replacing these items the set was still dead. So I disconnected the 119V and 20V outputs from the chopper circuit and connected a 60W bulb across the 119V supply's smoothing capacitor C129. It didn't light up. This meant that the cause of the trouble was in the chopper circuit.

I soon found that the TICP106D thyristor SCR1 in the start-up supply for the TDA4600-2 chopper control chip IC7 was open-circuit. But fitting a replacement made no difference. Nor did a new TDA4600-2 chip. Although the 330kΩ resistor R115 connected to pin 4 of the chip seemed to be o.k. I decided to replace it, also the 0.39Ω resistor R114 connected to pin 7, but the set still failed to come to life. I eventually found that C115 (8.2nF) was short-circuit, removing the feedback to the chip. A replacement restored the e.h.t.

When Mr. Ng came back he was still laughing happily. He stopped laughing when I told him that the charge would be nearly £40.

As he left the phone rang.

## A Question

"D'you handle backs?"

"Beg your pardon?" I said.

"D'you sell backs?"

"Backs of what?"

"Tellies."

"No sir."

## A Philips KT4 Set

I continued with my work. The next set was an old-timer, a Philips 20CT4626/05T (these Philips numbers!). It was

cracking and banging. I opened it up and found that there was a dry-joint on one of the line output transformer's pins. Resoldering it cured the cracking, but there were no programmes. When I tuned them all in the picture had a green cast. So I set up the grey scale. This produced excellent results.

## ***An Amstrad TVR2***

Mrs. Scratcher then bowled in with her Amstrad TVR2. "It ain't much Mr. Butcher" she said, "it works a treat until you press the record button, then it ejects the cassette."

I took the machine apart, which is quite a feat in itself, and studied the deck. It worked all right in the play mode. When the record button was pressed however the pinch wheel shuddered but didn't move towards the capstan, the drum didn't rotate then the cassette was ejected. I replaced IC400 (14DN244C) on the deck panel, then IC200 (BA7751ALS), but this made no difference. I then noticed that the four-pin plug that mates with the socket on the left-hand side of the cassette carriage wasn't properly seated. A casting pimple made it sit askew. I filed this off and tried again. All was now well, but the fault occurred again when the set had been put back together.

I took it all apart once more and looked again at the plug and socket. The socket pin nearest to where the pimple had been was lower than the others. I pulled it up with a pair of sharp-nosed pliers, reassembled the machine and tried again. It finally worked as it should have done.

# What a Life!

**Donald Bullock**

My twenty-three year old son Steven has been helping me in the workshop recently to gain some experience. He also sees a future in microwave oven servicing and got me to fork out for the servicing course run by Jim Garrod on the Isle of Wight. On the final day I popped over and met Jim, who certainly knows his microwave onions. As a result Steve has come back thoroughly capable. He hopes to take over my TV business if Greeneyes and I ever manage to slope off to warmer climes.

Steve quickly became proficient at dealing with VCRs. Most have mechanical faults of course, but the other day he succeeded in tracing the cause of an absent 5V supply in an Hitachi VT120 to a faulty capacitor in the mechacon circuit.

## **Mr Rubicund's B & O TV**

Mr. Rubicund is one of our nicest customers, a market gardener from the country. The other day he brought in his CTV receiver, a B and O 3503, because it was dead. The trouble turned out to be on the power panel where there were several dry-joints around the pins of the transformer.

When he collected his set Mr. Rubicund tossed it on to a mound of fertiliser in the back of his Land Rover as though it was a bale of hay. We winced and of course it came back almost at once.

"I plugged 'un in and 'e banged. Sorry to be a nuisance."

On examination we found that the power module had been shaken out of its runners and had shorted to the chassis. Two of the bridge rectifier diodes had gone short-circuit and we expected to find that one or both of the two thyristors had also failed, but they were all right. In fact we couldn't find any other faulty components, though the meter indicated that a short-circuit was present.

Then we spotted it, on the track from the bridge at the point where the short to chassis had occurred. A tiny burn had carbonised, and the soot was forming a bridge to the adjacent earth track. It was of roughly the same colour as the dark Paxolin panel, and wasn't at all obvious. We washed it off and, to make sure, treated it with the glassfibre pen that *Television* contributor Ed Rowlands brought us on a recent visit. Then we phoned Mr. Rubicund again.

"Bring your van this time Ruby" we advised. He did, and loaded the set gently, securing it to the side with a webbing strap. Then he brought out a box of mixed vegetables for us and apologised once more.

## **A Ferguson 3V38**

Mrs. Smallpiece asked whether I'd have her son in the workshop for a day. He'd taken a television course and wanted to get some practical experience. As Steven was away on his course and Mrs. Smallpiece is a decent sort I agreed. So along came Ivor. After he'd tidied the workshop I put him in front of a Ferguson 3V38 VCR that Egbert Crust had brought in. He'd bought it secondhand and had been told that its mains transformer had been replaced some eighteen months ago.

Ivor soon announced that the transformer's primary winding was open-circuit. Two such failures in eighteen months? We checked the thermal fuse and found that it was open-circuit. I then suggested that Ivor might check the current being drawn. A few days previously I'd taken

delivery of an Avo 8 Mark 3. Ivor had apparently used one on his course and said that he was familiar with it. He got to work and a few minutes later I heard the Avo's cutout fly open.

"The hand raced to full deflection" he said, "that proves something."

I soon found that he'd connected the meter between the live side of the thermal fuse and earth. "Ivor" I said, "all over England there are scores of power stations working flat out to produce millions of amperes of current. All in unison. You've just connected the Avo across every one of them and have proved two things. One, that the Avo isn't quite up to measuring their combined output, and two that you need a bit more instruction." I could have added a third, but that would have meant me using the word "prat", which Greeneyes doesn't like.

We wired a trip in series with the Avo and connected the two across the open-circuit thermal fuse. "When we switch on, keep you hand on the switch" I said. He did so. The transformer drew only a few milliamps and quickly became warm. It had shorted turns. Odd, two in eighteen months.

## **A Bush TV191S**

Then Mrs. Squinter came in with her daughter Blodwyn, who recognised Ivor. They'd been to school together. She also brought along a Bush TV191S, an old hybrid monochrome set. I never thought I'd see one of them again.

"Nothin' on the screen Mr. Blux" she said.

As I'd nothing on the bench I looked at it straight away. There were a few valves in the drawer, so I tried a new PY88 and PL504. Nothing doing. I next checked the line output valve's screen grid voltage, which was missing. Then I remembered. These sets have a thermally-fused 2k $\Omega$  screen grid feed resistor that's over on the other side of the chassis. It used to go open-circuit when the solder got tired. Sure enough this was the cause of the absent raster. I cleaned and resoldered it, resisting the temptation to wind a bit of fuse wire around its solder blob. This restored the picture but as I was boxing the set up there was a horrifying scream from the drive outside. We rushed out to see Blodwyn jumping about, waving her arms like a semaphore machine.

"Ivor Smallpiece did it to me" she howled, "he connected me to this machine".

I turned to Mrs. Squinter. "Blodwyn will settle down in a minute" I said.

Then I turned to Ivor.

"Ivor" I said, "goodbye."

# What a Life!

**Donald Bullock**

I wish that I could repair TV sets as easily and rapidly as I could thirty years ago. A dozen a day was easy in those days. Now some of them take me ages, and I can no longer buy much with the money that comes in. The trouble is that today's sets are not only more complicated, they're also far too cheap.

When broadcasting in colour started we decided to get into colour servicing. We swatted up on the theory, and bought a new Commer van which we had brightly painted to proclaim our new service. The same week I bought myself a new Philips G6 from our wholesaler. The cost was the same as the van. We were very successful, and it wasn't long before I bought our property, The Chestnuts. Soon after that my Rolls Royce Silver Cloud sat in the drive.

But as the cost of everything else gradually rose, the price of TV sets fell – and fell. If things were the same today a new colour set would cost the same as a new van – several thousand pounds. They're cheaper than ever though, so we can't charge an economical price for repairing them.

Some day, when I feel up to it, I'll telephone the garage and ask them to call and collect my car for a repair estimate. Later, when I phone for the estimate – 'cos they won't phone me, the customer, only television repairmen do that – and they tell me it'll be hundreds of pounds I'll tell them that I'm not going to bother and could they drop it back? All at no charge of course. It'll be part of the service they offer. Some day...

## **Tim's Colour Portable**

Earlier this week Tim Tapeworm danced in with an Hitachi colour portable, a CPT1644. "I want two opinions"

he declared.

I looked behind me. "There's only one of me here at present" I said.

"A certain firm told me that the tube in this set has gone" he continued. "I want you to look at it too. There's no red at all in the picture."

"It might well be the tube" I said, "red guns lead a hard life."

The set turned out to be dead, though the tube's heaters were alight. When I advanced the setting of the first anode control I found that there was field collapse. But why no sound? A scope check at the tube base showed that there was no video either. As voltage checks indicated that the tuner was o.k. I decided to check the fusible resistors. A well-hidden one, R714 (1Ω), was open-circuit – it's tucked in between the line output transformer and its screening can. When this had been replaced sound and vision were restored. But there was no red.

I swapped over the red (Q851) and green output transistors on the tube base panel. As this made no difference I brought the scope back into action. Starting at the collector of Q851 I traced back through the connections and eventually found the red signal: there was a hairline crack in the print. When this had been bridged a good picture was displayed.

When Tapeworm returned he paid the bill with glee. "I'll give 'em 'it's the tube'" he said as he left, "Snoddies here I come."

"Oh dear" I muttered.

## **Another Colour Portable**

Son Steven helps in the workshop these days. He finds the customers quaint and amusing. As I said to him, so did I – for the first twenty years. Then it began to wear a bit thin.

The other day Mrs. Midge danced in with her 14in. Decca colour portable (Tatung 120 series chassis). "It's dead Mr. Boll, er Mr. Bullock" she trilled. "We don't want to spend anything much on it 'cos it's only the one the cat

watches. See what it is and let us know. Then we'll decide."

I looked at Mrs. Midge carefully. She wasn't a wicked woman, nor even a bad one. Just normal. What caused the problem was that I'm a television engineer instead of an ordinary trader.

When she'd gone I put the set on the bench and opened it up. As the IAT d.c. fuse had died a violent death I made for the BU426A chopper transistor. It was dead short. After replacing these two items I switched on and the fuse went to heaven. I then found that the chopper transistor had accompanied it. An hour later, when I'd fitted new replacements and also changed the start-up resistors R808 and R810 which had both gone high in value, the set sprang to life. Mrs. Midge came back as I was boxing the set up.

"Twenty pounds" I said in response to her raised chin.

"Hmmm. That's more than we'd thought" she said thoughtfully. "Did it need expensive parts? I'll have to see what my husband thinks."

She phoned up later. "If we let you do it, will it last for a few more years?" she asked.

"Dunno Mrs. Midge" I said. "And whilst on the subject I don't feel too good myself."

### **A Bush 2114**

Mrs. Grewsome came through the door with a huge dog that was almost as tall as her. "Come on in, Fletcher" she said. I looked behind her for her friend, but Fletcher was the dog. He was turning about wagging his tail with gusto. Down went my pen-tidy, then the telephone handset.

"Come come Fletcher, Mr. Butler doesn't want your antics I'm sure." I scooped up my pens and put the phone back on the hook as Mrs. Grewsome placed a Bush 2114 colour portable on the bench. "We don't know whether to have it fixed or get one of those okeydokeys from Crudds Foodstore. They're remote control and only £99. We've had this one for only three years. 'Ow long do the tubes last? My husband says it can't be much, probably the coil or a valve. 'E'd do it hisself, but his meter thing isn't working. Anyway, see what it is."

Later I pulled the set on to the bench. It was dead. I soon decided that a circuit was necessary, so I ordered one from Bush. When it came it was for a completely different set, a large table model. A phone call to Bush produced the information that two of their chassis share the Model number 2114. I could have the right one if I tried again. I did and the right manual came, so I'd bought two.

It soon became clear that the TDA4600 chopper control chip had failed. My experience with this chip led me to check a number of the associated components carefully. C820 (100pF) had decreased in value, as had C817 (10µF, 16V) and C802 (100µF, 16V). I then changed C810 (220µF, 160V) on the grounds of its appearance alone. This is the reservoir capacitor for the 110V h.t. supply: when it loses value there's general instability. Next I turned my attention to R801 (0.68Ω). It measured correctly but I changed it anyway.

Time to start the set up via the variac. Up came the h.t. voltage, as sweetly as I'd hoped. But there was no sound and no raster. After switching the Hameg scope on I made for the line timebase. The KTC2229 line driver transistor Q401 was delivering a healthy spike to the line output transistor, which was warm. I felt the line output transformer which also felt warm and healthy. But when I looked carefully at the tube neck I saw that the heaters were out. As the heaters themselves were all right I followed the wiring back towards pin 5 of the line output transformer and came to

the low-value resistor R421. It was open-circuit. A new one restored the raster, but there was still no sound and vision and the controls for the electronic tuning didn't work while the display was very dull indeed.

The vertically mounted control panel, on the right-hand side of the main chassis, had a hairline crack across it. I fitted jumpers carefully. There was now life on the screen and the set was trying to tune but couldn't make it. Then I noticed that the LA7520 signals chip (i.f. etc.) IC101 had been fitted back-to-front in its socket. Turning it around made everything work normally - except that there was no colour. Crystal X501 had been got at. It was a 4.43MHz one instead of 8.86MHz. I looked one out and fitted it. Back came the colour. The set now worked perfectly and the results were excellent.

When Mrs Grewsome and Fletcher returned I showed them the results, told them that the set had been got at and that the bill would be £40. Fletcher leapt up, licked my face and knocked my pen-tidy and phone off the bench. Mrs Grewsome was less enthusiastic as she peeled four browns out of her purse. "Forty pounds to have a telly mended! Used to be no more than seventeen and sixpence."

### **Sales Pitch**

The phone then rang. Steven answered it. "Bullock's Television" he said. Then he turned to me. "There's someone asking for Mr. Bullock."

"Well that's you" I snapped. "You're Mr. Bullock as well, aren't you?" But he got me to take the call.

"Is that Donald Bullock himself?" purred a soft, low voice.

"Sure is" I said.

"Then I've got good news for you" the purr continued. "We're Hill Samuel and we'd like to advise you on investing your money."

"I haven't got any. Perhaps you could advise me how to get some?"

She hung up.

### **A Sharp Video**

Son Steven prefers repairing VCRs to TV sets and he's not doing too badly. I went out with Greeneyes the other day, leaving him to unravel a fault on a Sharp VCD801 that was on the bench. It would fail to record and erase sound intermittently. By the time that we returned he'd cured the problem. I asked him what had been the cause.

"As the machine laces, the erase head slides back. It's powered as soon as record is selected. The constant movement because of successive lacing and unlacing can put a strain on the feed wires, and in this case they'd fractured within their sleeving but sometimes came together as the head moved during lacing. Hence the intermittency."

"So how did you find that out?" I asked.

"Studied the circuit. As the leads go open, the audio and erase heads switch off. So no new sound is recorded, nor is the original sound erased. Technically speaking the vision isn't erased either, but it gets erased as the new pictures are recorded. I've soldered the leads directly to the small PCB on the erase head and the machine now works all right."

"Well done" exclaimed Greeneyes, "I bet your dad wouldn't have discov..."

"Wondered how long it would take you to suss out that little fault" I said brightly. Then, my memory not being what it was, I reached for my pen to write it down.

"Time you retired dear" said Greeneyes.

# What a Life!

**Donald Bullock**

I can remember when my only problems in this trade consisted of getting spares within a reasonable time and coping with the customers. Mending the sets came easily – a dozen a day was nothing. Now there are many firms falling over themselves to supply spares faster and cheaper than ever before, but the sets are a different matter. I can't mend them easily or quickly any more. The customers? They don't change. They're still as nutty, devious and demanding as ever. And when you get the combination of a nasty set and a difficult customer life isn't worth living.

Take Mr. Devell for example. He phoned up the other day to ask how we charged for bench servicing. Was it by the hour or according to the fault? Now this is an old one, and after forty years I still don't know the answer. Who hasn't spent hours or even days cracking a difficult fault and then got a succession of sets with the same trouble? Is it right that the first customer should finance all the rest?

The first time I encountered the Fidelity ZX3000 chassis with its awful switch-mode power supply and that manual I spent ages, and in the process built up a pile of expensive dud BU426A transistors, before I got it right. After a month it blew again. I can now cure these sets in half an hour – thanks to experience gained with the sets of other paying customers. The same applies to those Philips sets with intermittent faults caused by cunningly concealed dry-joints in the line output stage.

## **Mr Devell's Set**

So after learning that Mr. Devell's set was a 20in. Mitsubishi that died intermittently, sometimes after minutes and at other times after hours, I warned him to fear the worst. In spite of that he brought it along.

It was a Model CT2017BM. I put it on the bench and switched on. After five minutes it went dead. I took the back off and eased the chassis out carefully. Then it sprung to life again and no amount of tapping and flexing the PCB would bring the fault back. So I reassembled the set and put it on soak test.

## **Mr Hornett's KT30**

Next I picked up Mr. Hornett's Philips set, which was fitted with the KT30 chassis. It was said to be dead. When I switching it on I found that it was continuously tripping. With a glow of impending affluence I studied the line output transformer's connections. Unfortunately they all looked good, but I nevertheless resoldered them and tried the set again. It was still suffering from the hiccups. So I went for the line output transistor. That would be the cause of the trouble! Why hadn't I done this before? It tested all right however, so I refitted it. Then I got my trusty Cirkit meter and went through the diodes in the line output stage, the bigger ones first. One or two of them read uncertainly when in circuit. These I unsoldered for re-testing. But they were all o.k.

This job wasn't going to be quite the easy meat I'd anticipated, and I was running out of quick-fix ideas. Before resorting to a study of the circuit I decided to check one or two of the capacitors in the line output stage – they live a

hard life in this chassis. Again they were all o.k.

I got out the circuit diagram and started to make some systematic checks, starting in the power supply. The h.t. voltage was low and pulsing. I switched off, discharged the reservoir capacitor and carried out some resistance checks in the h.t. circuit but couldn't find anything wrong. Then I noticed that the 4.7Ω, 5W surge limiter R6291 had been changed. There was a healthy voltage at one side of it but a very low voltage at the other side. I checked again for a short-circuit, then noticed that the new resistor was marked 4.7kΩ instead of 4.7Ω. I fitted the correct component and obtained perfect results.

I was ready for Mr. Hornett when he called to collect the set. I charged him £28, told him what I'd found and how long it had taken me.

"Ah, that'll be the other place we took it to" he said. "Only they kept it for weeks. Said they couldn't get the spare. So we collected it, paid the bill and brought the set to you."

"Paid the bill?" I asked. "What for – and how much?"

"Thirty quid" he said. "It was Snoddies."

"Remarkable firm" I said, biting my lip and shaking my head.

## **Mrs Wireworm's Akai**

Just then Mrs. Wireworm came in with her Akai VCR – a VS25EK. It was dead and there was a burning smell.

"I think it's finished" she said, "but my husband said its the condenser or the coil."

I opened it and looked at the power pack. A fusible resistor, FR2, was cooking. So was the 1kΩ resistor R18. As I didn't have a circuit I turned to Akai technical for a lead. To my surprise the engineer advised against repairing the power pack. "Send for a replacement power panel, modified" he said.

"But wouldn't it be better if we repaired this one?" I asked.

"We don't advise it. I can tell you how to, but you might end up with further trouble in the machine" he said.

So I ordered another. It came quickly and cured the trouble, much to Mrs. Wireworm's delight.

## **Back to the Mitsubishi**

Then I noticed that the Mitsubishi set had died, so I pulled it over, took off the back and tapped about gently, first in the line output stage then in the power supply. Nothing happened, even when I assaulted the set with the hairdryer and freezer. So I switched it off and studied every inch of the main chassis print with my giant magnifier. But I found nothing suspect.

Then I remembered that I'd had trouble in the past with the relay circuit on the subpanel that's attached to the left-hand side of the cabinet. The relay switches the h.t. in when energised by a small d.c. voltage that's derived from a diode. The feed resistor goes intermittent. As a result the relay switches off and on, interrupting the power supply. It would probably be that.

I took out the panel, replaced the resistor – and the diode as well for good measure. Then I reassembled the set and ran it again to see whether it would fail. It did.

By now I was feeling nasty, and rounded on Greeneyes when she clogged in with my mug of tea. I felt the mug and pulled a face. "Too cold" I snapped.

"Nonsense" she said, "I've just made it."

I took a sip. "Too weak – you know I hate weak tea."

She looked hard at me. "You've got another difficult set,

haven't you?"

"Yes. It comes on and goes off when it likes. I don't know why."

"I expect it's a dry-joint again. You know, where the legs of one of those transformer things go into the panel. You've had them go loose before." And off she clopped.

I stopped and thought. She was referring to the line driver transformer here, and she was right. The one in this chassis is tiny and, being low in mass, vibrates away at line frequency when the set is running. As a result its four tiny legs get footloose in the panel. And since most of the supply voltages in a modern set are derived from the line output stage the whole works comes to a stop when the line drive is interrupted. I should have thought of that before. And because I didn't I felt nastier than ever.

I screwed in my jeweller's eyeglass and scrutinised the transformer while lifting and rocking it. Sure enough it was loose. When I took it out I saw that the pins were blackened. I cleaned off and tinned them, then resoldered the transformer back into the PCB. Time to try the set again. This time it worked and went on working. After giving the set a long soak test I phoned Mr. Devell to tell him about my success.

"How much?" he asked.

"Thirty five quid" I replied. "I feel generous, not to say sappy, today."

"Thirty five quid for a drop of solder!" said Mr. Devell. "I wish I had one of those meter things and a soldering iron. I could have done it myself in a couple of minutes."

I put the phone down and reflected. Not without Greeneyes he couldn't.

# What a Life!

**Donald Bullock**

Quite a lot of jobs came in last weekend. So on Monday morning, bright and early, I breezed off towards the workshop, determined to make good headway.

As I got there the Reverend Goode's ancient chariot swung into the drive and out he struggled. So did his young curate, the Reverend Blande. Between them they brought in a television set and a VCR.

"The Curate's picture rolls, my son" boomed the Reverend. Then he turned to Curate Blande, who handed me the recorder. "I think it's the valve, my son" he piped, pointing at the TV set. "The vicar's video doesn't record properly."

Then they beamed at me, patted my shoulder and clambered into their wagon. As they left they passed old Mr. Simper, who was bringing his TV set along in a pram.

"Everything's deep purple Mr. Bugner" he whined. "It can't be much, 'cos we're old age pensioners and the wife's got housemaid's knee and gout. So we'll let you do it."

Then the phone rang. I answered it.

"This is Reginald Rongun, Mr. Butt. I've accidentally dropped my old video recorder down the stairs. Pop me a letter into the post to say it's finished, will you?"

"Bring it in with £20, Mr. Rongun, then we'll assess the damage and give you a quote. If you say no we retain the deposit for our trouble."

The phone spluttered and went dead. All we had to think about now were the three jobs that had just come in – and the mountain that had built up last week. Steven settled down to the backlog and I pulled the Reverend's VCR on to the bench.

## **The Akai DX4**

It was an Akai DX4. While it played all right the recordings made on it were distorted and pulled for five seconds in every fifteen. It was the same in the SP and LP modes. With this type of trouble the first thing I do is to give the machine a thorough clean, paying particular attention to the tape path, the heads, the idler and the pinch wheel. But the fault was still present after I'd done this. I then checked the mechanics, particularly the back tension. This didn't improve matters at all, so I studied the deck with my illuminated magnifier. I soon saw a thin trace of deposits that my original clean hadn't cleared on the audio/control head. My spirit cleaner wouldn't shift it, and in fact removing it was no easy task. It was only as I finished that I saw the well-sucked acid drop stuck amongst the wiring. I gave the machine a final test, pronounced it o.k. and replaced the casing.

## **TV Sets**

Time to look at the Curate's TV set. It was a Toshiba 140R4B colour portable. He'd attached a note which said that after an hour the picture went small, distorted and rolled, and the set growled. So I switched it on, flung a blanket over it and put it aside.

I then put Mr. Simper's set on the bench. It was an 18in. Zanussi, Model 20ZA374-16B, BS700 chassis. We don't

get many of these and the sight of it frightened me. The sound was all right but sure enough the screen was bright purple, which meant that the green gun was asleep.

Checks on the tube base panel suggested that the red, green and blue output transistors were all right, so I moved back to the TDA3301B colour decoder chip. As the voltages here were haywire I fitted a replacement. This made no difference. A more careful examination of the tube base panel then showed that the green output transistor's collector connection was loose in its soldered joint. Remaking this restored the green output but the picture was uncertain. I took off the panel and carefully cleaned and reflexed the side-contact connections to the tube. This resulted in a good, stable picture.

Just as I boxed up the Zanussi the Curate's Toshiba started to twist and writhe. It also groaned in sympathy. When I pulled off the back the picture became normal. So I played the hairdryer on to the PCB. The fault eventually returned, but no amount of freezing or flexing would alter it. I decided to dust off the board completely before studying it for hairline cracks or dry-joints.

After a search I found the half-inch dry paintbrush I use for this purpose. I switched the set on again and brushed away amongst the components. Perhaps I'd find a clue to the cause of the trouble whilst tidying up the chassis. The 2SC3715 line output transistor Q404 has no heatsink in this model: it's free-standing, and leant forward a little as I brushed around it. Immediately the picture twisted and writhed. I found that by moving the transistor to and fro I could control the set's antics. So I switched off and studied the joints under the transistor carefully. They appeared to be perfect. Then I tried, gently, lifting the transistor's legs one by one out of their holes. The base and collector leads held firm, but the emitter lead lifted out easily, leaving its solder blob looking intact. Cleaning it off and resoldering cured the trouble.

As I put the back on again the reverend gentlemen returned and gathered up their equipment.

"Good work Donald" boomed the Reverend. "You'll go to heaven I'm sure."

"Good work Donald" piped the curate. "You'll go to, er, heaven I'm sure."

I looked at them earnestly. "But not yet awhile, I hope?"

## **A Nikkai Portable**

My next caller was Mrs. Pysener. Shifty and sallow, she eyed me carefully as she handed me a Nikkai colour portable. It had a silver-grey cabinet with a black back, but nowhere could I see a model number.

"Rolls" she said. "And I might as well tell you that Gumboils have had a go at it. Kept it for a month, said they couldn't get spares, charged me a fortune then kicked me out they did. I don't want none 'o that with you. I'm an old age pensioner, and my husband's got Anne Joiner."

There was an excellent picture but, as she said, it was rolling. I opened up the set and saw that just about every component in the field timebase had been unsoldered and replaced. My confidence dropped from its usual low to zero minus. I didn't have a circuit diagram and could see no sign of a field hold control. Automatic field hold circuits are not amongst my favourites. I made my way around the field timebase as best I could, looking for anything amiss, and gradually got the feeling that I'd had a set like this before, with the same fault. I pondered, then turned the front of the set towards me. It sat there on its well recessed and invisible plinth. Now what was it that I knew but couldn't recall?

Still looking at the front of the set I crouched down so that my eyes were level with the front of the hidden plinth. The rims of three thumb-edge knobs could just be seen. Two of them adjusted the colour and brightness. When I stroked the third one the picture stopped spinning. Yes, I'd had the same palaver before with a similar set and had been fooled again. Gumboils had also been fooled. I put the set back together again and reflected on the time I'd spent on it. And I remembered the time when I had a good memory. I wish I could remember where it went.

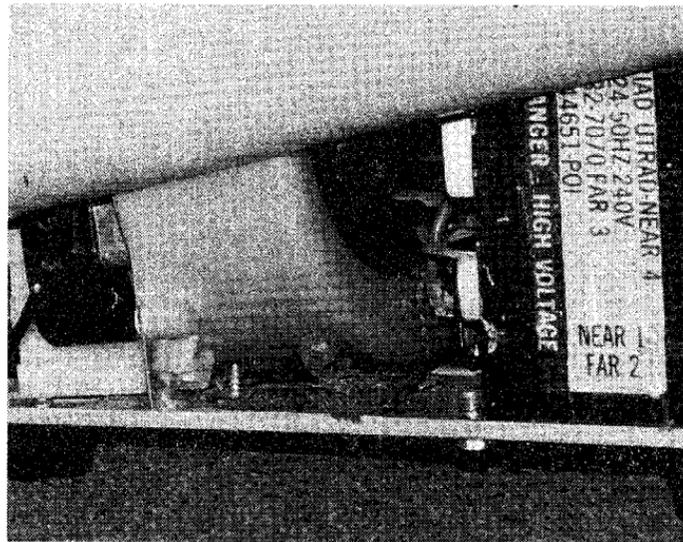
### ***Microwaves and Mice***

Since Steven's microwave course with Jim Garrod on the Isle of Wight we've been fairly busy with repairs. Last week we had two microwave ovens in, a Zanussi and a Tatum – so they were from totally different parts of the globe. When we opened them up we found in each the skeleton of a mouse. Both had met their ends by getting themselves across the mains input. There were other similarities. In both cases there were a few tiny maggots in the debris of the skeleton and some odd-looking beetle things – blunt and grey-brown, as big as houseflies.

Steven couldn't see how the mice could have got into either of the ovens. There simply wasn't any access. We came to the conclusion that they must have got in during factory assembly.

### ***The Amigo A500***

Finally does anyone know anything about the Amigo A500 computer? I don't. Jamie, my eleven year old son,



*The latest thing in hi-tech mousetraps?*

had one given to him on his birthday. It's developed a fault: there's brightness but nothing else on the screen – and the power light doesn't come on. What can it be? He's blaming a chip that he calls Fat Agnes, but it's all Greek to me. I peeped into the keyboard and frightened myself to death.

“When I was his age” I said to Greeneyes “I had a wind-up metal fire engine for my birthday. It was called the Electronic Miracle, the electronics being two torch bulb headlights which I often broke. My father would moan about this but was at least able to mend the thing – and he was a cobbler! How times have changed.

# What a Life!

**Donald Bullock**

I wish I could grow up. Chaps of my age ought to be dignified and wise, which I'm not. Had I been wise I would have given this trade the elbow long ago and taken up something easy and profitable. But I didn't, and there's no such thing as a dignified television engineer. Sometimes, on holiday, I meet people who don't know what I do for a living. They treat me with respect. It gives me a wonderful lift, but it doesn't last.

## **Mrs Taffy**

Greeneyes thinks I'm undignified because of my silly behaviour. Take the other day for example. Mrs. Taffy, who has the highest and squeakiest voice I've ever heard, brought in her Hitachi VT418 VCR for repair.

"You did it a month ago, before we went abroad, and it's never been right since, isn't it?" she squeaked.

After she'd gone Steven and I began this talking in ridiculously squeaky voices with Welsh accents. We were enjoying ourselves immensely, then Steven had to go to the wholesaler. Twenty minutes later, as Greeneyes brought in my tea, the phone rang. A high-pitched voice with a Welsh accent assailed my ear.

"Mr. Bullock?"

I smiled to myself, thinking of Steven, and replied in a similar voice.

"Yeh-es?"

"Mr. Bullock the television man?"

"The very same, and very clever I am, can't they?" I replied.

"Have we got a crossed line Mr. Bullock?" said the voice. I suddenly realised that it was a customer. Getting out of that one was tricky. I had to lower my voice and fade out the Welsh business by degrees. Then I had to face up to Greeneyes, who was shaking her head sadly.

I decided that it was time to look at Mrs. Taffy's Hitachi recorder. The playback and E-E pictures were marred by travelling hum bars. Our records showed that last time we had cleaned the heads – and that was five months ago, not one.

The picture was in fact unwatchable. My diagnosis was a.c. ripple on the d.c. supplies and I spent a long time looking for a faulty component. But I couldn't find anything amiss in the power supply. Then Mrs Taffy phoned for a progress report and asked whether the mains voltage in Belgium was similar to ours. At that I glanced at the mains voltage selector carousel at the back of the machine. It was set for 200-220V. Resetting it to 240V cured the trouble.

## **Terry's Hinari VXL8**

Brother Terry came in next, with his Hinari VXL8 VCR.

"Watch this" he said, slipping our test tape into it and pressing the eject button. The cassette shot out and he caught it. "Yesterday it would't eject at all" he said. "I cured it myself, but now it won't play."

"How did you cure the sticky tape ejection?" I asked.

"Sprayed some WD40 into it's mouth – quite a lot, actually." Then he turned to Steven.

"I reckon you'd better take it to Snoddies, or buy another one from Crubb's Foodstore – they'll be about twenty five

quid there" I said, but he took no notice. It's difficult to get a word in when he gets going.

As Steven sat listening to Terry I quickly slipped the test tape into Mrs. Taffy's machine before declaring it to be fit. The tape squealed to a halt and I could hear scrunching. When I ejected it I found that it was well tangled up and dripping with WD40.

When Terry left I settled down again to Mrs. Taffy's machine while Steven tackled Terry's. He got it right in the end, but it was hard going. He's gone out to buy a pencil, and if all goes well you'll be able to read about it in a subsequent VCR Clinic.

## **Ed's Fault Guide**

Ed Rowland called in the other day and brought us a copy of his latest *Amstrad, Logik, Matsui and Saisho Fault Guide* which, he tells us, is selling like hot cakes. I'm not surprised. These makes are a mystery to many, and now that Mastercare no longer runs a technical advice service there's nowhere much to turn.

Whilst Ed was here we had a Matsui 1480A that refused to go into standby. Ed's guide referred us to R126, and fitting a replacement cured the trouble.

Another similar set we had in, this time a Saisho CT149X, suffered from loss of sync. The guide referred us to R507 (1 $\Omega$ ), which was open-circuit. Again a replacement restored normal operation.

The guide also contains a Matsui/Saisho chassis equivalent table. Nice to see you Ed, and thanks for the Guide. Very useful.

## **An Osaki Portable**

The next set on the bench was an Osaki 14in. colour portable. It looked like a Fidelity set and bore a label marked CTV14 underneath. We looked out a circuit we had obtained from Jackson Products. It was for an unspecified make but matched the set, which had field collapse with full beam current that couldn't be turned down by means of the brightness control. So we reduced the setting of the first anode control on the line output transformer to avoid etching the line into the tube's phosphors, then set about trying to find a voltage supply fault that could be responsible for both symptoms.

We soon found that 25V supply F, which is derived from the line output transformer via rectifier diode D22 (RGP15J), wasn't reaching pin 9 of the TDA3651 field output chip IC2. To get there it has to pass through the fusible 12 $\Omega$  resistor R50 which was open-circuit. A replacement brought back the field scanning and restored the action of the brightness control. We gave the set a thorough soak test in case there had been some other reason for the failure of R50, but it behaved itself impeccably. So we passed it fit.

## **Triumph CTV8209**

Immediately afterwards we put a Triumph CTV8209 on the bench. It too had field collapse and when we opened it we found an identical chassis to the Osaki set. So we went straight to R50 which was once again open-circuit. A new one put matters right.

## **Enter Mr Blowfly**

Then Mr. Blowfly buzzed in with his Nikkai NVR500RC VCR.

“Dead – ha ha” he announced, “dead as a dodo, ha ha” and off he went.

We opened the machine, which looked like many other badge-engineered ones including the Alba 3000 and 4000 series, the Sentra VX8000, VX820 and VX500, the Solavox NCVR1000 and NCVR5000 and the Daewoo VCR30BDB/50DBD/50DFD/50DFP. They often come in totally dead or with just a few random display segments alight. I referred to them in this column a few months back, mentioning that the service manager of a multiple retailer had told me to add a 4.7k $\Omega$  resistor from the positive side of C821, the 5.5V “battery”, to the base of Q809 to get the machine working again. Some correspondence followed. One reader insisted that replacing C821 was the answer. Another reported that having replaced C821 it was sometimes necessary to wind the cassette housing down by hand and then operate eject before the microcontroller chip would toe the line and normal operation was resumed. I’ve since found that sometimes the machine won’t come to life even after doing this. But they always respond when the 4.7k $\Omega$  resistor is added!

We checked the voltage across C821. As it read 5.5V we wound the cassette housing down and operated eject. It made no difference. So we replaced C821 and went through

the cassette housing procedure again. Still no good. We finally added the resistor and switched on. Hey presto! – the machine sprang to life with a full display.

Mr. Blowfly later called to collect it. We explained what we’d done. “Good, ha ha!” he said. “Thanking yew, ha ha, Mr. Block.”

## ***A Philips CTX-E***

The last job of the day kept us working till late. It was a Philips TV set, Model 20CT2226/05T, which is fitted with the CTX-E chassis.

Once tuned in it would drift. We changed the 2.4V “battery” without much confidence, and weren’t too disappointed when this made no difference. A check on the tuning voltage with a digital multimeter showed that it was stable. We nevertheless decided to try a new control chip (IC7800). This made no difference, neither did a new tuner. Finally we checked the stability of the 33V supply, which is stabilised by the ZTK33 chip D6101, and found that it varied intermittently between 33V and as low as 29V. A replacement ZTK33 chip produced a stable 32.8V supply and solidly-locked tuning. Why hadn’t we checked the 33V supply first?

# What a Life!

**Donald Bullock**

I was the eldest child in our family. Next came Terry. There was such a difference between us that everybody called him Sunny. He's just as Sunny today, though a bit prune-faced. Everybody likes Sunny, who's kindness itself. Nothing is too much trouble for him. He calls on every member of the family every week, just to see whether their tellys, videos, radios and electrical bits and pieces are o.k. When they're not he brings them to me, to mend for nothing. Then he nags and nags until they're done.

## **A Philips CTX-E**

The other day Terry appeared and asked me to carry in a set from his car. It was a 16in. Philips portable, Model 16CT2216/25S (CTX-E chassis). "It's aunt Gertie's" he announced. "Poor old soul, no money at all and crippled with arthritis, but she won't complain. Fix it for her will you? I'll take it back to her tomorrow. Got one to lend her meanwhile?"

I pushed an old set towards him, but he motioned me towards his car with it. "You carry it, will you? - my knees are bad today."

The Philips set turned out to be dead. Ever an optimist, I resoldered the pins of the line output and driver transformers and, whilst at it, the chopper transformer's pins as well. Then I switched on. The set was still dead so, hoping that I'd get there without having to think too much or consult the circuit diagram, I connected my Cirkut meter, switched to the low ohms range, across the main 4.7 $\Omega$ , 4W surge limiter resistor R3291 that's close to plug M7. It was open-circuit. As I was replacing it Terry waltzed back. He was in time to see me switch on the set. It sprang to life and so did he.

## **More Requests**

"Ah, good" he said. "I'll pop it back to her. By the way Uncle Clem picked this up at a sale last week." He started to undo a large parcel. "Some of the wires are wonky. Since you've got plenty here I thought of you. Pop a few bits in for him will you? He's eighty you know, bent up like a crackerjack, can hardly see and stone deaf." I was studying the contents of his parcel.

"I don't repair bloody harps!" I said. "Listen, do a quick deal with Clem and take music lessons, 'cos nice helpful chaps like you sometimes come to sticky ends at the hands of their nasty big brothers." But he wasn't listening.

"Here - can you mend fruit machines?" he asked. "The one in our club moans and groans every time I see it. It's terrible. . ."

## **Miss Blossom**

My next caller Melody Blossom is the perfect antidote to Terry. She's Mexican and a trainee doctor here.

"I'm having a little trouble. He's Turkish" she said, frowning slightly. "He was so sparkling, then he hissed and went off. Now he is terrible trouble." British decency welled up within me and my upper lip stiffened.

"The swine" I cried. "I've heard about the Turks and their ways. Where can I buy a cheap revolver?"

"No, not a person" she explained. "My television set. He says 'Made in Turkey'." I crumpled back into my usual heap.

The set was a Bush Model 2514T, and sure enough it was Turkish. I had no circuit but opened it up, trying to look clever while she waited. A sturdy wirewound resistor (R601) close to the line output transformer had burnt away completely apart from its legs, one of which sat in a little well of charcoal. I looked at the underside of the chassis and saw that some of the print between this resistor and the line output transformer had burnt away.

"It needs surgery" I said decisively. She smiled and left and I settled down to the set. First I cleaned away all the soot and charcoal. Then I fitted jumper leads over the missing print and cleaned off two blackened capacitors (C600 10 $\mu$ F, 250V and C603 0.047 $\mu$ F, 250V) near R601.

A phone call to Bush/Alba brought the usual cheerful response, the information that R601 is a 10k $\Omega$ , 2.5W wirewound resistor and the advice to check whether C603 was short-circuit. It was, actually o.k., but I replaced it along with R601 and switched on. This produced another firework display, another burnt out resistor and more print damage. So I decided to order a new line output transformer from CPC.

It arrived next day. I repaired the damage, fitted it and this time started the set up via a variac. The results were exceptionally good, and I was sorry about the nasty thoughts I'd had about Turks. They can make excellent TV sets anyway.

## **Return of Old Abe - with a Philips 2A**

Old Abe called in with something wrapped up in an old blanket tied with binder twine. As I've mentioned before Abe shares a hut on the banks of the Severn with two old 12V portables, a car battery and a screwdriver. Every time he's pulled a set to pieces he brings it in to me and uses the other one until it's mended. Then he starts to pull the second one to pieces. But he's a good customer and pays. He touched his forelock and grinned.

"Mornin' sir" he said. He undid his parcel and took out a gleaming Philips colour portable. "Went into a line across the screen, then went dead. It ain't mine. Belongs to Pinky 'Ubbard, the farmer who charges me battery." Then off he shuffled.

I pulled the set on to the bench. It was fitted with the 2A chassis, so the first thing I did was to check the BUT11A chopper transistor which was dead short. I disconnected the 140V output and wired a 60W bulb across the smoothing capacitor C2701, then got to work on the power supply. As most of the problems with this power supply are on the primary side I made a thorough check on anything likely to be faulty. Everything seemed to be all right here. Turning to the secondary side of the circuit I found that one of the l.t. rectifier diodes, D6711 (1N4148), was short-circuit.

I replaced this and the BUT11A and wound the set up via the Variac. To my delight the lamp came on. So I removed the lamp, reconnected the 140V supply and tried again, expecting the set to work. It didn't. Further checks showed that the 140V supply rectifier diode D6696 read short-circuit both ways whilst in circuit, though it was all right when removed. Why should this be? The reservoir capacitor C2697 was o.k. Maybe the BU508V line output transistor was short-circuit. It was. Why hadn't I tried this before?

A new line output transistor restored the brightness, but it was squeezed into a collapsed frame. Now for some fun. The TDA3654 field output chip is powered by a 26V supply which is obtained from the line output transformer. A check on this produced a reading of 0V. When its load was disconnected the supply rose to 40V, then dropped back to zero. Goodness me! Further checks showed that the rectifier diode and its reservoir capacitor were o.k. Then the voltage came up again. I reconnected the field output chip but there was still no frame. Perhaps a new TDA3654 would put matters right? No, and again no voltage. Then plenty – over 50V, followed by a dancing frame and a clicking from the line output stage.

I switched off and ran a finger down the case of the line output transformer. It was hot. Surely these bizarre happen-

ings had to be the result of fireworks within its windings? Cruel experience has taught me to keep a spare 2A line output transformer in stock. When it was fitted a perfectly stable picture was produced.

I telephoned Abe's well-to-do family and asked them to get word to him that the set was ready. A few days later he came in with his blanket, his binder twine and a small paper bag of browns.

'Pinky 'Ubbard said to thank 'ee and pay, Mr. Bullock sir" he said as he enclosed the set in the blanket and got weaving with the twine. "Er – one of my sets be under the weather, Mr. Bullock. Some of the bits inside pulled themselves about a bit – like they do. I must bring 'im in next week, 'cos I'll need 'im when the other one plays up again."

# What a Life!

**Donald Bullock**

"We had a story today about Mr. and Mrs. Cobbler" said my daughter Rebecca. "They had so many shoes to mend that they went to bed weary each night. One night, after an awful day, they crawled into bed really worn out. Next morning, to their delight, they woke up to find that all the shoes had been done and their workshop had been thoroughly tidied up and was sunny. This happened every night thereafter, and they lived happily ever more."

I smiled suitably and thought of Weary Willy and his untidy workshop that was full of lots of nasty sets he couldn't mend. There was the Salora J chassis set with the hard to get at power supply that kept blowing up, the old Ferguson hi-fi video with the chain-driven cassette housing that eats fingers and turns them into new faults, and that wicked Sentra VCR that wouldn't spring to life whatever he did.

Willy started to think about switch-mode power supplies and TDA4600 chips. He wondered how big a boat it would need to take them all to the middle of the Atlantic and how much gunpowder would be required to send them to the bottom. Then he crawled off to his workshop, clambered over all the sets he couldn't mend, had a drink of meths and curled up under the bench.

When he awoke there was this fog. As it cleared he looked around his workshop and his eyes opened wide. Could this be the workshop he'd gone to sleep in? Where was the nasty J chassis, the pulled-apart Ferguson and that wicked Sentra video? Willy rubbed his eyes in astonishment. They were nowhere to be seen. In fact all that he could see were the shiny sides of piles and piles of TVs and videos.

Then Greeneyes clopped in. Her upside-down face smiled at his, under the bench. "Come on Weary Willy" she breathed. "You've been asleep for ages. Loads of sets have been brought in. I've put them all on top of the others. And they're all tricky ones that have already been

pulled about by Snoddies and Gumboils."

Weary Willy grabbed for the meths. But Greeneyes was there first. She snatched it and made to depart. "Wake up and get cracking Willy" she said, "they won't mend themselves you know!

## **A Ferguson TX85**

Weary Willy made some room on the bench and pulled up the nearest set. It was a Ferguson 14J9 – a 14in. colour set fitted with the TX85 chassis – and was as dead as could be. He decided to check the voltage across the mains bridge rectifier's reservoir capacitor C69, but his fingers slipped. His eyeballs lit up and shot out, telling him that some 340V was present. Then he caught sight of the TEA2018A chopper control chip IC4 and its start-up resistor network – two series-connected 82kΩ resistors, R89 and R91, with a 390kΩ resistor (R60) in parallel with them. He was certain that one or other of them would be the cause of the problem. But they were perfectly all right. A tear slipped down Willy's face.

A voice sounded in Willy's head. "See if the chopper circuit is inhibited" it said. "Disconnect the output from the h.t. rectifier D12 then connect a 75W bulb between its cathode and chassis. If it lights up when you switch the set on, the power supply is o.k. and you can start to think nasty things about the line output stage.

Weary Willy did so and the lamp didn't light. So he disconnected the other two rectifier diodes on the secondary side of the circuit, the ones that provide the 13V and 17V supplies. The lamp still refused to glow, and another, larger tear slid down Willy's face. He was saddled with yet another nasty switch-mode power supply fault.

The thing to do, he decided, was to check the start-up voltage at pin 6 of the TEA2018A chip. He knew that 5.8V was required here for the set to spring to life. There was no voltage and the hunt was on. Maybe the 330μF reservoir capacitor C71 was short-circuit? It wasn't. Willy looked long and hard at his next suspect, the TEA2018A chip itself. He fitted a replacement and switched on. Up came the starting voltage, which immediately rose to 12V as the chopper circuit broke into self-oscillation. Brightness appeared on the screen, and Willy also felt a bit better.

## **The Hitachi G6P**

"Next" he shouted, just as Mr. Thicke picked his way in with a Hitachi TV set in his arms. "It's dead" he said. "Do it if it's cheap, otherwise ring me."

Weary Willy sighed. He really should think of a way of getting paid for his time when the customer decided against going ahead. He put the set on the bench and switched it on. It was a CPT2176 (G6P chassis) and its little beacon was out. There was h.t. across the mains bridge rectifier's 150 $\mu$ F reservoir capacitor C906 but nothing much else. He checked the chopper transistor (Q901) which had MN650 printed on it. He found that it was dead short, then discovered from his little book that it was a BU508A in disguise. Weary Willy sighed and wished that transistors all wore proper numbers. He fitted a BU508A and, whilst at it, decided to check the 2SD1453 line output transistor Q781. This was also dead short. After replacing it he reached for his variac, 'cos he doesn't like repeatedly blowing up transistors in hard to get at places.

The set failed to spring to life and the ammeter on his variac began to creep up as he increased the voltage. He thought he detected a nasty, warm smell and felt the line output transformer. It was hot. So he disconnected all the diodes it supplies and tried the set again. The variac's ammeter began to creep up and the nasty smell returned. So he phoned Mr. Thicke and told him fifty pounds.

Mr. Thicke said he wished he still had his old voltmeter so that he could have mended it himself, and that he too could earn fifty pounds an hour fiddling with wires. And his wife had arthritis, and couldn't Willy do it cheaper because he'd another set that needed repairing?

Willy ordered a new transformer from SEME. It arrived next day in a sturdy yellow box marked HR Components: Willy noticed that it was made in Spain, where he wished he was. The original transformer's first anode voltage output was contained in the screened outer of the focus lead, but the replacement had a separate, green wire for this. He soon fitted the new transformer, and when he switched the set on it came to life with a good picture. This cheered him up. As he stepped back to look at it he tripped over a set on the floor and banged his shin on the edge of another one. At this very moment Mr. Thicke showed up for his Hitachi.

"I'm in agony with my missus. Her says you never shoulda done it" he said.

## **The Microwave**

As Mr. Thicke departed Mr. Roughouse came in, looking as though he'd just sorted Popeye out. He was carrying a Matsui microwave minus its cover. This came behind, carried by his weedy wife Olive.

"He works, but he don't heat up. Where's the valve?" He prodded about in the works with his fingers. Weary Willy gibbered and tugged at his arm.

"Don't touch" he shrieked. "It can floor, even kill you."

Mr. Roughouse repeated his message, stabbing his finger at the capacitor. Willy retreated, still gibbering, but Mr. Roughouse flagged him down.

"He ain't on" he said, pushing his thumb on to the positive terminal of the capacitor. Willy stepped to one side, closed his eyes and awaited the crash. There wasn't one.

"You chaps gets too excited" Mr. Roughouse said. "Mend 'im if it's up to fifty quid. New 'uns at Crubb's Foodstore are only seventy quid, an' you gets an oven set an' a basket o' groceries."

Lots of big tears slid down Weary Willy's face and he wished he was somewhere else.

# What a Life!

**Donald Bullock**

Life has been easier since son Steven started to work with me. What has distressed me a bit however is the speed with which he's picked up technical knowledge that took me forty years to acquire. But it does mean that I can slip off to Spain whenever I like, in the knowledge that life in the workshop goes on – just as long as I slip back often enough to sweep the floor, wash the teacups, empty the dustbins and tackle the tricky ones that pop up now and again. The fax machine has proved to be a boon to us, but one thing I could do with is a set of the last fifty or sixty copies of *Television*. Can anyone oblige?

## **Mr Nutt's Problems**

We have been in this business a long time now – to the extent that we've had the valued custom of four generations of some local families. Those whom I moan about are a minority. It's just the relentless dedication with which they afflict us! Take Mr. Nutt for example. He's the paranoid smallholder who is convinced that everyone is watching him and eavesdropping. The other day he called in with his Philips 16in. portable – it's a KT3 chassis set.

"My neighbour has aimed a dish transmitter at my place" he confided. "But I've got him rumbled. This old set lets me know whenever he listens in to us. The picture turns into a transmitter. I want you to build something into the set to stop him."

Now I know Mr. Nutt of old. Apart from this fixation he's perfectly sane. Arguing with him about it is useless. "All right Mr. Nutt" I said, "leave it with us."

For the first ten minutes the set suffered from intermittent line collapse. I confidently resoldered the pins of the line output transformer but this made no difference. I then found, by tapping and flexing the chassis, that the cause of the trouble lay somewhere in the area around the U470 sync and U450 power modules. Resoldering every doubtful joint on the two panels and lightly cleaning the edge contacts again failed to cure the problem. So I finally switched off the workshop lights, drew the blinds, felt my way back to the chassis and began tapping about on it. As I did so I noticed a spark. When I switched the lights back on again I found that it had come from one leg of the degaussing resistor R292. It was dry-jointed, though it looked all right. Resoldering it cured the trouble.

## **Nostalgia**

I was going to study the circuit to see why R292 should have had this effect but the phone went and Greeneyes came in with the tea. She was just in time to hear me being less than enthusiastic about attending to a satellite TV system.

"What's the matter with you?" she asked. "When I came to work with you as your secretary colour TV was just starting and you sailed into colour servicing quite cheerfully. It's not at all like that now." Steven wanted to know what it was like in the early days, which always gets me going.

When I started there was only monochrome BBC in Band I. Most of the sets were of the t.r.f. type, gramophone records were shellac 78s and classy homes had radiograms.

Then ITV started up in Band III, bringing signal problems the like of which we'd never seen before, and

programme converters that sat on the top of the set. They too caused problems galore. Cyldon and Brayhead subsequently came up with a family of rotary tuners that were designed to be fitted into the sets. When converting a set for ITV reception we first had to make sure that we had the right tuner. Then, armed with braces and bits, we'd cut a huge hole in the side of the customer's highly polished and valued TV set, hoping against hope that our conversion would be satisfactory.

All sorts of things could blight our plans. If we weren't careful, the bulky tuner wouldn't align with the hole we'd made. But the most common headaches were that the Band III signal available, from Birmingham in our case, wouldn't be enough, or that the pictures obtained would be heavily patterned. Sometimes the neighbours would experience patterning.

In this area every conversion was a chancy business. As the ITV signal was dicey and weak, service calls multiplied. "Poor ITV" was a common complaint, and we'd trot off with a pocketful of r.f. amplifier valves. The Mullard PCC84 was the most common one, but there were also UCC84s and ECC84s, and some of the more exclusive brands like Murphy and Ekco used Mazda valves – the 30L1 to start with, then later the higher-gain 30L15. It wasn't long before we resorted to the dodge of using the high-slope 30L15 whenever a low-emission r.f. amplifier valve had to be replaced. It meant adjusting the r.f. padders in the tuner, something that was supposed to be taboo, but the effect was little short of miraculous – until the valve's emission settled at a lower level.

Most Mazda valves had metal skirts and fitted rigidly into the special holders. They seemed to present instability problems however. Trying to calm an Ekco i.f. strip was a difficult business. I settled for using Hunt's paper capacitors connected between the screen grids and chassis, followed by careful realignment. I never did find an answer for use with the red, metal-cased Mullard EF50 valves. They seemed to be determined to float regardless.

But the picture quality with those early Ekco and Murphy sets was remarkable for their day. Our favourite was the Ekco 327. There was a scramble for it every time one came in part exchange. Eventually we all had one.

Relaying these things to Steven suggested to me why he's so bright and receptive to the latest developments while I'm less so. "Your brain is like a brand new computer loaded with miles and miles of virgin tape" I said. "Mine's an old valve model with the tape worn out be repeated erasure of redundant technical knowledge. I used to know countless valve equivalents, and furthermore which pin was connected to which electrode in them all. I can still remember dozens of them. All useless knowledge now, taking up space in my napper. Same with all the technical tips and ruses for scores of radio and TV brands that are now just memories. There's hardly any room left for all the new-fangled things you pick up so easily!"

Later, I heard Steven talking to Greeneyes as they looked through an ancient photo album he'd found.

"Dad looks bright and young in these pictures" he said. "Funny what happens as time passes."

I poked my head around the door. "That old Decca you're stuck on – the one with no luminance. You can put your scope and meter away. Just pop in another luminance delay line. There's one in that old Tatung chassis you couldn't fix. And that Bush 2020T that's still giving you problems even though you've changed the TDA3562A. Take it out and fit a Telefunken one – or do the mod. Oh, and that Saba you were waiting for help to lift it off the bench: I've popped it in the van for you."

# What a Life!

**Donald Bullock**

We get some strange coves here. Some of them are harder to puzzle out than the TV and video faults they bring along. Take Mr. and Mrs Bugg for example. They tottered in the other day with something wrapped in a towel in a baker's basket.

"Don't think I'm trying to be funny Mr. Er. . er. ." he said, "but are you any good at fixing transistors?"

"There never was such a fellah" I replied.

"Don't think I'm trying to be funny, but this is a telly transistor. My son tried superglue and blue tack but now he thinks it's a condenser, 'cos it stinks rotten. Then the cat suddenly had a fit last night."

"Let's see it" I said, pointing impatiently at his basket.

He untied the towel slowly to reveal a moggie. Something was beginning to build up in my chest.

"Not the bloody cat" I screamed, "the transistor." Then I pulled myself together. "Actually Mr. Bugg I'm a bit on edge. Busy, you know."

He ran out to his car and came back with a Toshiba 175T9B colour set.

I waved them out and opened the set up. An empty superglue tube was stuck to the inside of the cabinet and the line output transformer was covered with a black, gooey mess. There was a crater of ash in the middle and a couple of nearby resistors and a capacitor were charred.

I'd a set with a similar chassis in the workshop, so I borrowed its line output transformer. The charred resistors, R440 and R441, were both 10k $\Omega$  while the capacitor (C445) was 0.056 $\mu$ F. These three items are at the earthy end of the e.h.t. system, for current monitoring purposes. I fitted the borrowed transformer, replaced the three charred components and switched on. There was an excellent picture, which pleased me. So I called Mr. Bugg on the phone to tell him of my success.

"I'll have to send for a new transformer of course" I told him. "The cost will be thirty-eight quid altogether. It's a super picture!"

"Ah now Mr. Er. . er. . , don't think I'm trying to be funny but that's a bit steep, ennit? We're old-age pensioners you know. Shall we say twenty quid? Then we'll let you do it."

It turned out to be another wasted effort. Pity.

## **Mr Chausible's VCR**

Then Mr. Chausible bumbled in, smiling and winking away as though in the know. "Ha, ha, it's good to be alive on such a nice day" he chortled. "The postman just gave me this letter for you." It turned out to be an electricity bill for over three hundred quid.

He'd brought his VCR with him, a Ferguson 3V44 (JVC HRD140). As he sloped off I pulled it on to the bench to try it. When I inserted a tape the carriage descended and the capstan motor, drum and on-off beacon pulsed for twenty seconds. Then the tape was ejected and the machine switched itself off.

"Swine" I thought as I opened it up. It was full of tape debris and dust, so I gave it a good mechanical service. The fault remained of course. Time for a bit of analytical thinking for a change. I decided to start at the beginning of the electromechanical cycle and studied the loading motor.

It was cutting off too early. But why the pulsing? That seemed to indicate an electrical problem. I moved to the power panel to check some electrical voltages and saw that the 2A fuse F2 in the centre was open. A new one restored normal operation. The current was well within the fuse's rating, even at the peaks, but I soak tested the machine to be sure that everything was o.k.

Eventually Mr. Chausible called to collect it, grinning and winking as ever.

"Twenty-five pounds" I said.

Chausible's smile faded and his winking eye stayed shut. "Gosh, you people aren't cheap" he said. "I'd reckoned about a fiver, even a tenner if expensive parts had been required. But twenty-five pounds!" Then he looked up. "Don't think I'm trying to be funny. . ."

## **A Call from Ribby Ellis**

My next caller was Ribby Ellis, who's a keen practical joker. He's spent enough time in our workshop to know how customers carry on but said that he had a couple of genuine questions for me.

"Tell me Don, which is the best telly?"

I tried to answer this one as I always do, pointing out that most sets are much of a muchness today and that it depends on what facilities are required.

He heard me out then came back with "how long will it be before tellys get cheaper?"

"They're dirt cheap today, Ribby." I went into my usual routine about the cost of a Philips G6 and a Commer 5 cwt van back in 1968 and their respective prices now.

He then wanted to know "when tellys will work without aerials. You know, like radios do?"

So I launched into my answer to that one, as I've done so often over the years. When I'd finished he asked "whether dust in tellys makes 'em fail sooner?"

This brought us to dry dust and damp dust and folks who take the backs off sets and upset them. Time was ticking away, but there were further questions about how long a tube really lasts, does it leave the sound when it fails and how long does a telly last?

I was beginning to feel irritable again. "Tell me, Ribby, how much longer are you going to throw these questions at me?"

"Till you realise I'm taking the Mick, you silly" he grinned. "Lost some of your buttons, haven't you? Name's Ribby you know."

"I know, Ribby, but I'm afraid I'm not up to it today."

## **Next the Gas Man**

Just then there was a tap at the door. It was Rupert Quelp, the gas man.

"Hi Donald. I've just read your meter. Don't think I'm trying to be funny, but if I were you I'd leave home before the bill comes. Have a look at my portable video, will you? It can't be much because it's o.k. most of the time. It's a Fergy 3V47 and it's gone off intermittently since it was new. Snoddies never managed to find out why. Nor Gumboils, or that spotty D'Arcy kid at number 29. So I'm letting you have a go. Let me know when you've found the cause, so that I can decide whether to have it put right. They're so cheap now you see. Crubbs Foodstore have them at £99.95 and you get a hamper of goodies and a ticket in their draw for a month at Disneyland!"

"This is Disneyland" I said, "and the name's Donald Duck." I put the machine on the bench and tried it. The picture and sound were o.k. and I couldn't make it fail. So I

put it on soak test. A few hours later the vision went, leaving a snowy raster. After giving the machine a full service I looked around for dry-joints on the power and signals panels but couldn't see any. Because of the intermittent nature of the fault I spent a considerable time before finally removing the drum and discovering that the feed wires had never been soldered. When this had been attended to the machine worked perfectly, producing exceptionally good pictures.

Rupert was pleased when he called back. "Ah, a loose wire! I knew it wasn't anything much! You can't charge of course because you've not really done anything, but I'll remember the good turn. I breed reptiles you know. If you ever want to know anything about snakes or other forms of low life, just ask."

There must have been something in my expression, because he backed away and smiled weakly.

"Don't think I'm trying to be funny, Don. . ."

# What a Life!

**Donald Bullock**

Mrs. Ruff, a large no-nonsense woman, barged into the workshop the other day followed by her lodger Old Pukey. He was struggling with a 24in. Granada teletext set. She strode to the bench, clasped the underside of her sleeve with her fingers, and used her arm as a huge duster to clear the end of my bench.

"Put it here, Pukey" she ordered. Pukey did as he was told.

"I've told him time and time again not to play with the tuner thing while the set's on" she said. "Now he's gone and blown the set up, Mr. Billhook. I wish he'd get out of my house, I do. Straight."

I plugged the set in and switched on. The sound was o.k., but the picture had a series of vertical black lines, about half an inch wide, superimposed on it. I'd never seen a set like it before and had no circuit diagram. Then, as we watched, the lines faded – taking the luminance with them.

Mrs. Ruff looked hard at Old Pukey, muttered a bad word, then pushed him out ahead of her. "Give us a ring, Mr. Billboard" she rasped.

## Sorting out the Granada CTV

When I examined the chassis I found that the chroma panel contained a TDA3300B chip that obviously processed the signal. I looked for the luminance delay line but couldn't see it – the chroma one was obvious enough. It seemed best to phone Granada at Bristol. I spoke to Eddie Conway who was most helpful. Looking at the circuit diagram, he advised me to scope the luminance signal as it emerged at pin 35 of the chip then follow it back, suitably delayed by the delay line DL1, via 2R5 (1k $\Omega$ ) and 2C5 (10 $\mu$ F, 25V). So I searched again for DL1. It was so positioned that it hid its reference number, and looked like a small, square-edged, capacitor. I scoped the signal as Eddie advised and found that it was present up to 2C5 but not thereafter. 2C5 was open-circuit of course, a replacement restoring the picture.

My thanks to Eddie for that – drop in for a cup of tea sometime!

## Mr Smallpiece's Video

Our next caller was the thin-faced Victor Smallpiece, who had brought his Amstrad VCR4600 Mk. 2 video machine with him. Sensitive and timid, he moved his shoulders around inside his jacket and cleared his throat.

"It's dead, Mr. Bullock" he said. "Belongs to the wife's brother – he uses it for Certain Things." After that he stole away.

I put the machine on the bench and hoped that it would talk to me. But it didn't. It even refused to accept a cassette, switching itself off. When I opened it up I saw that the threading arms stopped too soon. After a few preliminary tests I hand-wound the mechanism ready to start again, connected a meter across the loading motor and pressed the start button. Up came the d.c. motor voltage and the loading sequence started. Then it stalled, and the voltage rose. The motor had stopped drawing current. A replacement motor fixed the machine, and when Victor phoned I told him that it was working again. "Hump" he said.

## Mrs Gunge and the 3V46

Mrs. Gunge walked in with her spotty son Oscar, who was carrying a Ferguson 3V46 VCR. These machines produce excellent results, I know, but around here they seem to be rather accident prone.

"Hi Oscar" I said, "what's eating the Fergy?" Mrs. Gunge poked him aside and answered.

"The picture's faulty, ain't it Oscar?" Oscar made to nod and breathed in to speak.

"And the sound, right Oscar?" Mrs. Gunge continued. As Oscar opened his mouth, his mother's voice hit the air.

"My Oscar just can't watch it Mr. Butcher" she continued.

Oscar breathed in quickly and looked up at me "The tracking..."

"Oscar thinks it's the tracking" Mrs. Gunge explained. Oscar studied the floor.

I escorted them to the door then put the machine on the bench. The symptom made it look as though the auto-tracking was out, but this machine doesn't have it. So I busied myself around the control circuitry. Eventually I found a 1 $\mu$ F, 50V electrolytic capacitor, C1, whose value had fallen to half the correct figure. A replacement cured the fault and I was impressed by the excellent picture and sound quality. All that remained to be done was to get the chassis cased up again without any casualties. I managed this and later on Mrs. Gunge and Oscar called back. She paid up and smiled at Oscar.

"Say thank you to Mr. Bloater, Oscar." He raised his chin and opened his mouth, but once again his mother beat him to it.

"Such a funny boy. Mr. Buster. He hardly says a word. Can't think why."

## The Sharp VC681HM

A Jaguar crunched into the drive and came to a halt. Out struggled the greasy Mr. Pearshape, in a cloud of cigar smoke. A demure young lady got out of the other side, carrying a Sharp VC681HM VCR. He pointed to the open workshop door. "In there" he said.

Jane obeyed and I took the VC681HM from her.

"Jane's video's playing up" Mr. Pearshape growled, tossing his business card on to the bench. He was a money lender. "Fix it and phone me. I'll do the paying." He turned to Jane and jerked his thumb at the Jaguar. "Into the car, girl" he said.

When they'd gone I put the recorder on the bench and tried it. I selected rewind search. The machine went into fast-forward search for a few seconds then stopped, unlaced and switched off. The cassette remained in place. As I've had mode switch problems with this model and the VC750HM I fitted a replacement. It cured the trouble – a quick repair for a change. Jane would be pleased, and Mr. Pearshape too as it wouldn't cost much. How nice to be able to dispense such happiness.

## Another Sharp VCR

My next visitor, Mrs. Tubby the forester, always puts me on edge.

"Ah Mr. Bull" she said. "This set's faulty." She was carrying a

Sharp VCR like the one I'd just repaired.

"What's wrong with it?" I asked.

"It jams and stops."

"Ring me teatime" I said.

When I tried it the machine behaved much as the other one had. Oh dear, I'd used my last mode switch. To prove the point I decided to borrow the switch from Jane's machine. So I set about doing the swap, which took me longer than I expected. When I tried Mrs. Tubby's machine it behaved exactly as before, so the switches had to be put back. I resolved never to be so silly again. I'd wasted time, and this made me feel nasty.

When I'd got Jane's machine right again and Mrs. Tubby's as it was when she brought it in, I looked into it in greater detail and ended up by taking out the master cam. Sure enough its rather thin walls had broken down, a new one completing the repair. The cams are cheap and fitting a replacement always gives me a feeling of satisfaction.

When Mrs. Tubby called I handed

her the recorder and gave her the bill.

"You read it, Mr. Borax – my glasses are in the car."

I read it out then came to the bottom line. "Thirty pounds" I said.

She took a blue and a brown from her purse then picked up the machine. When she got to the door she stopped. "This repair is guaranteed" she commented.

"For ever, Mrs. Tubby" I said.

### ***The Panasonic NVJ30***

Later that day nice old Arthur Ball dropped in with his Panasonic NVJ30 VCR. His family firm uses it as part of their shop security system.

"I think it needs one of your wash-and-brush-up services" he said. "If you ring when it's ready we'll pick it up."

"I'll have it done in an hour" I said.

When he'd gone I set to. After cleaning the heads and the tape guides I gave the machine a general check over. Just as I'd finished testing it Greeneyes came in. I

switched on the phone amplifier and asked her to ring the number. She did so and the phone at the other end was picked up.

"Balls" shouted a voice. Greeneyes slammed the phone down and spun round. "I suppose that was another of your twisted jokes" she fumed.

"That was Arthur Ball's firm" I said. "They'll be wondering who's playing about. Then our phone rang. I picked it up, feeling a bit put out. "Bullocks" I barked. The line went dead. Then it rang again. "Bullock's Television" I cooed.

"Oh, hello Donald. Arthur Ball here. Did you ring us?"

"Yes Arthur, but things seemed to go wrong."

"That's funny. Same here. Grem-lins on the line I suppose. We get a lot of it with incoming calls. Just got a foul-mouthed wag when I dialled you. Anyhow, if the recorder's done we'll slip down and collect it."

"See you shortly, Arthur" I replied.

# What a Life!

**Donald Bullock**

More and more I seem to have the feeling that it's all happened before. It came over me the other day when Walter Wingnut called in with a Britannia 14in. colour portable that was dead. It had a paper label underneath, of all places, with B14M11 printed on it. When I opened the set up it looked very much like a Fidelity chassis, though it was not identical with any one that I knew. To my surprise we had an appropriate circuit diagram, for Model C14R06. I soon spotted a BUT11A, a tiny but tough power transistor, which had bitten the dust. So I replaced it and left the set running.

## **The Grundig CUC70**

I then pulled up and plugged in a Grundig C7410 22in. set that Snoddies had kept for a fortnight before handing it back as unrepairable. It's fitted with the CUC70 chassis. No sound, the ticket said. Unlike Snoddies to pass up an easy buck I thought. Ought to be easy! Then, as I was thinking about it, up came a brilliant clean raster followed by line collapse.

With my understanding of Snoddies growing, I dismantled the set and studied the chassis carefully for dry-joints or other obvious clues that would save me the bother of looking out circuits – or thinking. All the joints were perfect but I did notice that R528, a 10 $\Omega$  resistor, was a bit hot and bothered. It feeds a BY268 diode, D529, which turned out to be dead short. Replacing both items restored normal operation and I was impressed by the excellent picture.

## **Back to the Britannia**

Meanwhile the Britannia had stopped working, and I found that the BUT11A had passed away at its post. There's a 4.7 $\mu$ F electrolytic capacitor in its base circuit, while its emitter is returned to the negative side of the supply via two resistors, R120 (3.3 $\Omega$ ) and R115 (0.68 $\Omega$ ), which are connected in parallel. When I checked them I found that the value of the electrolytic had fallen to 1 $\mu$ F while both resistors were high – the 0.68 $\Omega$  one was nearly 4 $\Omega$ .

I replaced these items and, before switching on, checked some associated ones. Up came a good picture, so I set about tidying up the bench and shelves for a while before boxing the set up. I hate boxing up then unboxing sets that seem to last just long enough to keep me on a loser! After twenty minutes or so it was still behaving, so I boxed it up and put it on soak test.

## **The Samsung VI626**

Next was a Samsung VI626 VCR that was dead. I checked the power pack and found that both the 9V and 5V supplies were missing. A study of the circuit diagram led

me to an MC7809C 9V regulator which had voltage at its input but nothing at its output. Fitting a replacement restored both supplies. A quick repair, I thought. But I was wrong: the mechanism was running haywire.

In a case like this, analysing the sequence of events is always a good idea. So I switched on, noticed that the clock and channel numbers lit up, then tried to insert a cassette. The machine wouldn't accept it. A look at the top-deck mechanism showed that the lacing up claws were stuck an inch from the back of their grooves. So I hand turned the loading motor until the claws retracted and fed in the cassette again. As it was accepted the loading motor whirred, the stop button lit up and the claws came to rest in their previous position.

The mechanism was lively but out of sync. I reckoned that the most likely cause of the trouble would be in the cam system. So I turned my attention there and dismantled the mechanism to gain access. Sure enough the walls had broken down. As a result the tape lacing mechanism was not controlled. We keep a stock of the more common cams, and before long I had the recorder behaving properly and delivering excellent results.

## **Return of Walter Wingnut**

It was at this point that Walter Wingnut called in for his Britannia. I glanced at it as he arrived. It was working well and after greeting him I pointed to it and gave him the good news.

"It wasn't easy, Walter, but my cleverness won the day" I said cheerfully. "Twenty five quid to you!"

"A lot of money. I hope it'll last" said Walter. "Chap I bought it off said you mended it for the same trouble a while back."

As he was about to hand me the browns and a blue, the set pinged and died.

Walter stowed his money away. "Didn't make a very good job of it this time either" he said. "You'd better have another try – and I'm not paying more than you said, mind."

So I got no money, had to take Wingnut's abuse, and had to face up to tackling the Britannia yet again.

## **The Ladies**

Then slender old Miss Briske came in, carrying a piece of sheet music and a hot-water bottle. She was followed by Mrs. Ruff, a mouthy roughneck who calls me Mr. Billhook and keeps on about her lodger Old Pukey. She was carrying an old toaster. I didn't feel up to either of them. I had Wingnut's Britannia on my mind and needed some peace while I worried about it. A further visitor, Miss Fussie, then arrived. She also had a hot-water bottle. I was beginning to feel nasty.

Miss Briske put the hot-water bottle down and smiled. "It's jammed solid. Old Mrs. Talbot advised me to see you about it. Would you have a go?"

I looked at her in silence. Then her face lit up. "Do you sing, Mr. Bullock?" she asked.

"Not a lot, Miss Briske" I replied.

"I do Mr. Bullock" she smiled. She closed her eyes and began to warble.

I coughed and Mrs. Rough snorted. "Look Billhook" she rasped, "I'm here to put money in your pocket – if you can spend a minute. Old Pukey's jammed a doughnut in the toaster. I've had a go with a fork, but no good. You're supposed to be the expert."

I turned the toaster upside down and the doughnut fell

out. Then, checking that no debris were left inside, I plugged it in and switched on. The workshop quickly filled with dense smoke. As it cleared, I pushed the toaster back to Mrs. Ruff. "No charge" I said wearily.

"Pukey, start packing" she said as she left.

"Leave the door open" I said as the first two ladies departed. Miss Fussie then stepped forward and handed me her hot-water bottle, which was full of water. Two in one day!

"I can't undo it" she said. "Would you undo it and test it please?"

I undid the stopper with my pliers, poured some of the water into my tea mug then studied it carefully. I dipped a finger into the mug and smelled it thoughtfully.

"Absolutely perfect, Miss Fussie" I said. "No charge. Goodbye."

### ***Another go at the Britannia***

Time to open up the Britannia again. I studied it afresh. I'd already checked or replaced just about everything that could be the cause of the trouble. Then I noticed that the

# What a Life!

**Donald Bullock**

Now that we're Bullock and Sons I'm able to slip out of the workshop now and again. In fact I sometimes slip as far as Spain for a week or two where we have, amongst other things, a Sony audio stacking system. Of late the CD section, a CDPM30, had been disinclined to accept discs. The drawer would come out all right and take the disc in, but the disc would either come straight back out again or the machine would refuse to play it, the visual display faltering and then finally sticking.

I removed the lid, was disappointed by the rather flimsy plastic construction, then studied the loading action. Because the loading belt slipped, the machine didn't complete the cycle. As I'd no spares I ordered a new one. What to do in the meantime? With Snoddies in mind I grabbed a saucepan and boiled the belt for fifteen minutes. This did the trick and I was able to play Paris After Dark, a new CD of old, romantic pre-war French songs: they've been remastered to give truly amazing reproduction. This has rekindled my interest in the means employed by such experts as John R.T. Davies, the well-known ex-Temperance Seven man and wizard of the art of cleaning up old 78s. I've dropped him a line.

## **Broadcasts Available**

I brought a Pace PRD800 satellite receiver and a 1m dish over and, using a satellite finder from Panasonic, installed them. The results are surprisingly good, despite the fact that we're at the edge of the footprint. But as one who was brought up on the BBC style of presentation I find Sky's general standards unacceptable. As a result we watch very little television. Two terrestrial Spanish channels are available, one at u.h.f. and the other at one end of Band I – with horizontal polarisation, making receiving aerial systems very cumbersome. A little time spent away from Britain makes a chap very appreciative of our with-it country.

One bonus with Sky Television however is the fact that some UK radio programmes, including the BBC's World Service and Radio 4, are interleaved with the Sky Gold channel. Reception is excellent. I'd earlier spent a great deal of time and trouble erecting a high, outdoor long-wave aerial system. But my efforts weren't completely wasted: we now receive some very pleasant, melodious snatches of radio that seem to come from France.

## **Uninterruptible Power Supply**

Since I'm an inveterate scribbler another necessity here is an uninterruptible power supply (see test report in the January issue) for use with my wordprocessors. Necessity

because there's often at least one power cut a day here, without any warning.

## **An ICC5 Ferguson**

It seems that I can't escape from my TV reputation. Miguel called the other day and declared "I think you are clever television mechanic".

"Not me, Miguel!" I replied, "I'm just here for the sun."

Anyway the upshot was that I ended up looking at his Ferguson 59P7 television receiver – it's fitted with the ICC5 chassis. The set was dead and a quick check showed that the two 1Ω surge-limiter resistors RP01 and RP02 had both burnt out. Moving over to the nearby mains bridge rectifier I found that one section was short-circuit. Just in case it had been a victim rather than the criminal I checked the 150μF, 385V reservoir capacitor CP03. It's as well that I did, because it was dead short.

I sent Miguel down into the village for one of the spares I didn't have, and a bit later we had the set working merrily.

"I tell everyone how clever you are on television" said Miguel. "That'll bring you lots of pesetas!"

"You tell nobody" I said, "televisions make me loco."

"I'm a secret" smiled Miguel.

## **Tropical Tom's Bush**

Everyone here likes Tropical Tom. Portly, loud and open, he's kindness itself. But he's also very short tempered. He arrived from his holiday home frantically shaking a Bush 2714 portable colour set (11AK03 chassis).

"One chance!" he bawled at it as he approached our door, "one final chance and no more. Next time down the well!"

When I plugged the set in it refused to go into standby. I've had this before, so I replaced thermistor TH802 in the start-up circuit. The set then sprang to life and I left it soak testing. An hour later there was a power cut. When power was restored the set would only groan and flicker.

I suspected the microcontroller chip IC1004 but didn't have one. So I checked some of its more obvious d.c. voltages and ended up at the cathodes of D804 and D805, the l.t. rectifier diodes on the secondary side of the chopper transformer T802. There was barely any voltage here though there was plenty of pulsed a.c. at their anodes. I checked their back-to-front ratios in circuit. They were excellent. Then I took them both out and checked them again. Still good! While they were out I checked the higher-voltage lines which were o.k., then their reservoir capacitors which were also o.k. So I soldered the two diodes back into circuit and tried again. The set worked a treat.

I could only conclude that the diodes had been dry-jointed. It seemed worth examining the rest of the chopper power supply with a magnifying glass. As several joints had a hairline running around them I resoldered the lot. With luck the set won't end up down the well!

# What a Life!

**Donald Bullock**

A dead Hitachi colour portable came in the other day – it was fitted with the NP84CQ chassis. When I opened it up I found the most crowded little chassis I've seen for some while. As I didn't have a circuit diagram I started to make checks in the power supply and immediately found that Q902, a BU806 Darlington power transistor, was short-circuit. I replaced it then checked the 2SD1453 line output transistor Q703 which was also short-circuit. So I replaced this too then switched on. The set grunted, but that was all. At this point a circuit was really needed and an idea came to me. I took down Mike Lyon's ECS model-chassis guide and found that the chassis is also used in the GEC Model C1405H, for which we do have a manual.

The BU806 is part of a sort of pre-regulator, or initial regulator, circuit. It's followed by an LM317 variable voltage regulator chip, IC901, that lives at the other end of the giant heatsink. A check showed that it had also failed. I replaced it and switched on again. Once more the set grunted, and that was all.

Then I stopped and thought. I'd been silly, hadn't I? I hadn't checked the replacement BU806 after replacing the LM317. They'd both be useless now. I checked them and they were.

As I'd just one more BU806 and LM317 I carefully checked the resistance between the h.t. line and chassis. The reading was respectable, so the remaining BU806 and LM317 were fitted. Then I checked the line output transistor again. The new one was all right.

I took down my variac arrangement – I've added a voltmeter, an ammeter and a 2A mechanical cutout (from a Thorn 3500 chassis) to the variac itself – and used this to supply power to the Hitachi portable. All went well as I wound up the voltage. The ammeter's hand shuddered a bit at switch-on, then settled back happily against its stop. I wound on cautiously, darting my eyes about like a weights and measures pest. Then the hand suddenly flew over to the other stop as the set grunted again and died.

## **Mrs Tubby**

It was at this point that Mrs. Tubby rolled in from the Dean Forrest. She talks in riddles and a visit from her was the last thing I wanted.

"I've parked my car in the road. It's faulty" she said.

I looked up wearily. "I can't mend cars Mrs. Tubby" I said.

"The telly's faulty" she said, leaning towards me as though I was an idiot, "the one you mended the other day. It's never been right since you did it. But we thought we'd give it a chance. It didn't settle down though. You'll have to get it out of the car."

I followed her out from the drive, wishing I'd been an optician or a rich and aloof car mechanic. She walked on. Her car was a hundred yards away. I pulled out the weighty Sony KV2217UB and started the trek back to the workshop. When I got there I was tottering.

"I want you to do me a favour Mr. Bullock" she then said. "My son Walpole leaves school soon. He seems to have some electrical questions to answer. Perhaps I could pop him in tomorrow. This workshop could do with a clean

up. He'll do it while you answer his little questions." And off she went.

## **Back to the Hitachi**

I took another look at the Hitachi/GEC circuit and noticed that there's a bit of the power supply that's right over at the other side of the chassis, as far away from the rest as could be. It's an over-voltage trip that removes the 12V supply to the line driver transistor and various other parts of the set. Maybe something here was causing the grunting. There's a crowbar thyristor and a 36V zener diode (ZD903), which turned out to be short-circuit. I'd have to order one. So I phoned JJ Components and placed an order for this and various other items.

They arrived next morning. After fitting the zener diode in the Hitachi set I started it up again. This time it came on perfectly. The faulty line output transistor must have killed ZD903 as well as causing the damage in the power supply. Anyway the birds were now singing and the sun was shining. Then a cloud appeared. It was Mrs. Tubby and her son Walpole.

## **Walpole's Questions**

Sure enough Walpole had the workshop tidy in no time. He then made some tea and we sat down for his questions.

"What's electricity, voltage and current?" he asked, with his pencil poised.

"Steady" I said, "first things first. Electricity is the movement of electrons. Got that?" He looked blank.

"Everything – pear-drops, elephants, copper wires – consists of lots of atoms which in turn consist of a nucleus with some little electrons bumping around it. The atoms are each like a tiny solar system."

"Can't see it" Walpole said blankly.

"Look" I said, "imagine a long tunnel full of footballs. Each one has a dozen tennis balls jostling around it. You're at one end with an enormous basket of tennis balls and I'm at the other with an empty basket. And I just love tennis balls. You lob a tennis ball into your end of the tunnel. This attaches itself to the nearest football which now has say thirteen tennis balls surrounding it, an unlucky number. So it jettisons a tennis ball farther into the tunnel. This in turn enters the orbit of another football which in turn kicks one out. The chain reaction carries on all along the tunnel and I wind up with a tennis ball in my basket – though not the one you tossed in. Then you lob the rest of your tennis balls in, as fast as you can, and I get an equal number out at my end. Call the tennis balls electrons. You've created a flow of electricity."

"But what's current and voltage?"

"Current is the number of electrons – er, tennis balls – you're lobbing in" I said, "and voltage is the force with which you're lobbing them in."

He made some notes, then looked at me thoughtfully.

"Where do all these electrons come from?"

"There's an enormous reservoir of them" I replied, "and your standing on it – the earth. They are cruelly dragged out of it at the power station and can't wait to get back. We send them all over the place before they get there, to wherever we want work done, and make them flow through our gadgets as they fight their way back home."

Walpole looked even more thoughtful. "What's resistance, capacitance and inductance then?"

"Walpole" I said, "I've got sets to fix, and your ma's just entered the drive. Bring the rest of your questions along next time."

I humped the Sony set (YE2 chassis) on to the bench, hoping that I could mend it. I'd fitted a new mains switch six months earlier. When I switched it on the power supply sang like a kettle for a few seconds then fell silent. There were no voltages at its outputs.

I headed for the usual culprits, R607 and R618, but they were all right. C12 also proved to be o.k. when checked on my capacitance bridge. So I disconnected plug F6 and connected a 100W bulb across pins 1 and 2 – the 135V output and chassis – then switched on again. The bulb lit up. Checks showed that the other output voltages were also present and correct. So the cause of the fault had to be an overload on the 135V line, which supplies the line output stage.

I turned to the line output panel and checked the resistance between the h.t. input and chassis. It was down at 5Ω. So I rushed to the line output transistor which was all right. I traced the short to pin 1 of the line output transformer. The circuit shows that it's connected only to pins 10 and 11, so I isolated these by nicking the print. But the short remained. There was nothing for it. Out came the transformer, and I then found that pins 1, 10 and 11 read continuously with nearly every other winding. A new line output transformer restored normal operation.

### ***Mr Flighty's Mitsubishi CT1447BM***

Just as Greeneyes brought in my tea Mr. Flighty danced in with a Mitsubishi CT1447BM TV set. He ignored me, put the set down with part of it on my hand, and grinned at Greeneyes, asking how she was and had she been on holiday yet. He went on and Greeneyes chortled. I waited. When he'd run down I pointed to my trapped hand with my good one and he moved the set off it.

"Sorry old chap" he said, "it's stuck in standby."

"I know the feeling" I replied.

He then danced out, waving at Greeneyes. Muttering something about ferrets I applied myself to the set. I checked the STR44115 chopper chip IC901 and found that its pins were all shorted together. So I fitted a replacement. The set again failed to start up and I noticed that the chip's

heatsink was getting hot. In this chassis (Euro 3) D906, a 132V zener diode, acts as a crowbar in the event of excessive h.t. voltage. It was short-circuit. I fitted a replacement and started the set up with the variac. It drew current but that was all: there was still an h.t. short-circuit. So I disconnected the 115V supply at pin 2 of the line output transformer. This cleared the short. I checked and cleared the 2SD1426 line output transistor Q551, then the two rectifier diodes D552 and D553 which were also o.k. I then took out the line output transformer to check its windings with the circuit. The primary winding (pins 1-2) was shorted to the two secondary windings. A replacement cured the trouble.

### ***Another Visit from Mr Pearshape***

Mr. Pearshape's Jaguar sang into the drive. He tumbled out in a cloud of cigar smoke. A shy but well-built little lady hung in the background. She might have been his cleaner, but wasn't. . .

"Set in the boot. Bad back you know" he rasped. I carried it in and he propelled the young lady in with his finger.

"Blue picture wasn't it m'dear?" he croaked. She nodded at the ground. He handed me his card and added "mend it quick and ring me, right?" Then they departed.

The set was a 14in. Sony Model KVM14TU. Its picture had scarcely any blue content and the red was smeary. In addition the chroma seemed to be far too intense. When I changed channels the blue content improved. I decided that the actual fault was a dark picture with a varying chroma balance but I had no means of adjusting it – the remote control unit hadn't been brought along.

A check showed that the tube's first anode voltage was low at 150V. I traced its source back to the line output transformer where R852 was powdered and white while D852 was sooty. When these items had been replaced I had full brightness and correct colour balance. A relatively simple cause of symptoms that had threatened to baffle me.

A phone call to Pearshape brought a hoarse chuckle. "I like to keep her happy you know" he rasped.

# What a Life!

**Donald Bullock**

Les Lawry-Johns' death was a great loss to us all. In a practical sense he was a technical wizard of his time. But the reason for his great popularity amongst readers – I suspect that most long-term readers turned to his article first when the latest magazine arrived – went deeper than this. He was one of us, a fellow sufferer at the hands of Joe Public. We knew those who caused him such trouble: thinly disguised, they circulate amongst us all. Like the rest of us, Les knew exactly what they were up to. Yet he continued to suffer because his tormentors – our tormentors – have no code of honour. Like us all he constantly resolved to harden, to make the most of his experience so that he would come off best in future. But he seldom did, and nor do we. It isn't in our stars. We're born losers.

Les's troubles were ours. But he was a bit more honest, a bit more vulnerable and a great deal more decent than most of us. His writing left us all richer. I, for one, am grateful to him.

## Grundig Troubles

Kevin Bentun brought his Grundig colour set in the other day – a CUC2401 type. "It's gone mental" he announced. "All right at first, then the sound and picture fade, leaving the screen bright. After a while the picture comes back and flutters at me. Enough to get a chap's dander up, I can tell you." And off he minced.

Hoping to resolder a few dry-joints and make some quick money I got cracking. There would, I figured, probably be a line output transformer derived supply playing up. An hour later I'd got nowhere, so I decided to stop and try to think about it. Well, it could be the line output transformer. We had one like it in stock, so I fitted it. This made no difference. I next connected a voltmeter to the tuner's 12V supply. When the fault returned, the voltage swung about. On opening the tuner I saw several suspect joints, but resoldering them didn't help. As the supply remained stable when it was connected to a dummy load I carried out a more detailed examination of the tuner and soon found a 220 $\mu$ F, 10V electrolytic that had dried up. A replacement cured the trouble.

Then, surprise, surprise, Mr. Fussie fidgeted in with another Grundig set that was just the same.

"It's never been right since you mended our wireless" he bickered. "I took it to Snoddies and they fitted some parts and charged me £40, but it's still the same."

"Why don't you take it back to them?"

"They recommended you."

As the fault was identical to the pervious one I mended it in no time. He returned shortly after I'd phoned him with the news.

"What was it?" he moaned, looking at me as though I was a bad drain.

"A condenser" I said. "Twenty five pounds."

"How much was the part?" he asked.

"Tuppence" I replied.

"That's sixty five pounds in all" he whined, "Snoddies said you might be expensive. Can you guarantee that another part won't go? Could this have damaged anything else in the house?"

I gave him a deranged look and he departed, leaving me wondering why, all those years ago, my people put me in

this trade when the local paper beckoned me. The extra pound a week I suppose. Oh to start again!

## Video Problems

Mrs. Tubby rolled in from the Forest of Dean with something in a plastic bin liner. "How much to mend this?" she asked, eyeing me as though I was a sneak thief.

"What is it?" I asked.

"Wonky" she said.

After a delay she extracted the item from its bag. It was a Philips/Pye DV286 VCR that was matted with greasy dust and had strands of tape hanging from its mouth.

"Help" I muttered as I waved her out. Then I called Steven in from the van. "Your job" I said.

"What's up with it?" he asked.

"Wonky" I replied. He gave me an odd look and took it over to his bench.

Having unloaded that one I pulled a Ferguson 3V47 portable VCR on to the bench. "Picture was intermittent, now gone. Sound o.k." said the card. The machine was full of dust and tape debris. So I gave it a thorough service and tried it again. It was no better. I took the video heads out and found that the leads hadn't taken to the solder when the machine was produced. They were held only by the resin. After resoldering them I tried the machine again. The results were excellent. As I was boxing it up I looked over at Steven. He'd finished the Philips video and was doing the bill.

"What was it?" I asked.

"A jammed Chinese cassette and a missing spring which should have held the back-tension arm by the tail. I found it in the works. It's o.k. now. What shall I charge?"

"Up to you" I said. "But you won't win. If you charge enough you'll be a rogue. If you make a small charge it was easy and you shouldn't have charged anything at all. And God help you if it goes wrong again or another of her Happy Friend tapes jams. And don't phone her yet, because that will mean that there couldn't have been anything much wrong with it."

"I wouldn't mind a cup of tea" said Steven. I got the message. Never mind. Who sits on pride after a forty year battering?

## Miscellaneous Faults

As I set about making the tea Steven pulled a Panasonic TX5500 (U5 chassis) on to the bench. The card said "no brightness". He stood there pondering.

"IC601" I said.

"You see what?" he asked.

"It won't be a no brightness fault" I said. "Almost certainly it'll be no luminance because the TDA3562A chip IC601 on the upright panel to the right of the main chassis has failed. Don't forget the A" I added as he looked in the i.c. drawer. "You'll get nowhere if you fit one that doesn't have the A suffix."

So that's what he fitted, curing the trouble.

Then he pulled a Neff 6007 microwave oven on to his bench. When he operated it the counter worked but the rest didn't.

"What do you think's up with this?" he asked.

"Dunno" I said, "and when you find out, shield me from the answer."

A short while later he had it working. The switch at the top of the door had burnt out. Whilst at it he replaced them all.

As I was washing up he got busy with an Hitachi VT8300 that wouldn't accept a tape. It didn't take him long

to discover that the loading motor wasn't working. "There's 6V on the pink supply lead" he said "and only 0.4V on the white. I'll check around IC905 and 906."

"Check R081 while you're doing that" I said. It was open-circuit, a replacement restoring normal operation.

## **Visitors**

Just then the door flew open and an RAF chappie from the nearby estate breezed in. He was carrying a cardboard box that contained a dismantled television set.

"Ah!" he said. "They tell me you're good with a screw-driver! I got this set for nothing in Germany. When I brought it back the sound needed twiddling. So I had a go and swapped some of those things with legs. Some smoke came out of there, where it's gone black. I don't mind letting you do it, but I don't want to spend. . ."

I opened the door and jerked my head. Off he went. I felt the need for some air and wandered out to have a word with Brian who does a bit of gardening for us. He always looks well and smart and as usual had a cigar wedged in his mouth. He was clipping at some bushes. A van spluttered up and out leapt this all-in wrestler with a Ferguson 3V00 video, also dismantled.

"Where's Mr. Bullock, mate?" he asked me thickly. Then he saw Brian and shot over to him.

"Ah Mr. Bullock. This thing's got a volt gone wrong. It isn't much and won't take long. Don't wanna spend much, see. . ."

I sauntered off and Steven appeared. Later I came in at the back of the workshop and found him putting it together. "What do you think of this trade?" I asked him.

"It's good fun" he replied.

That's what I used to think. What's gone wrong with me?

# What a Life!

**Donald Bullock**

Bringing son Steven into the business was a rare brain-wave on my part. I still can't understand how he's learnt so quickly what it took me forty years to learn. The bonus is that I no longer have to stay rooted to the workshop each and every day – there's nothing like a spell away from the bench. Another interesting thing is that Steven doesn't mind making field calls. I stopped that years ago, having reached the stage where my eyes would glaze over as soon as I was corralled and the usual prattle began.

## **Last Straw**

It was the Blakeways who finally made me give it up. I'd already called on Mrs. Pratt (no picture) to remake her aerial lead connection yet again, slyly catching her dog's face with my service case in the process. It was a huge, overfed dog that used to roll on the lead and pull it from the set. Though I explained the cause of the trouble twice a week for years, Mrs. Pratt always reacted as though it was something new.

"Oh Bonzo, you silly big softy! What's mummy going to do with you?"

Then, as she turned for her purse, I'd catch it under its snout and it would throw itself about and howl.

"Dear Bonzo" she'd say, "don't take it so. I didn't mean it!"

After my last visit I went on to the Blakeways, whose set lived in a corner amidst a maze of wires, old shoes and goodness knows what else.

"Never bin right since you last did it. . . Hums now. Never watches it meself. . . wife and children. . . Which is the best set anyway? Gets hot you know, never used to."

"My husband thinks it's the valve. . . or the condenser. . . Is renting a good idea? Irene next door had trouble galore then rented. . . No more trouble. . . Special sets y'know."

"Can't be the tube, 'cos the sound's all right. . . How can you tell when the tube's gone?" Then, pointing to the aerial lead, "that the tube then? We was watching, er, what was we watching Doll? ITV, I know. That one where they guesses things and there's the thin Irish chap with the mouth. . . or was it Eastend Neighbours? Like that Rosebud in May chap, don't you? Did you see the one. . . Reckon the colours really right? 'Ow long before we won't need no aerials? We were about to come and pay for what you did last year when it went again. . . Ain't gotta take it 'ave you? That all it was? 'Ow much for that little bit then? Tell you what, we'll see 'ow it settles down. . ."

## **Out in Spain**

My Amstrad PCW8512 wordprocessor failed during a recent visit to Spain. Field Collapse. I had a service manual, which had come surprisingly cheaply from Willow Vale, and it didn't take me long to establish that the LA1385 field timebase chip was the cause of the trouble. But where to get one? I telephoned JJ Components and received a couple within a few days. Jay and his wife Lata run this excellent little firm. They are two of the most

helpful and decent people you could wish to meet, and their latest catalogue is a gem.

## **Scrambled Signals**

The availability of 'alternative' Sky TV decoder cards was mentioned in an article in *Television* recently. Such cards are widely advertised in Spain, where dish television is popular amongst the thousands of British residents. Can't think why, but there we are. One firm offers Sky cards at £220, with D2-MAC cards at £150. Another offers a 'cardless decoder'. "Save hundreds of pounds" says the advert, "we have the solution and you buy it only once." There are also companies that provide all the decoded channels by cable for less than the price of a card. I don't know what would happen if the encoding changed.

Dish reception is quite good in Spain – provided a large dish is used, preferably 1.2m or more, plus a very low-noise LNB. Personally I wouldn't bother, having sampled the programmes. But it's a funny old world. Fancy people paying to watch commercial television, and paying twice to watch BBC television.

This encoding business got me thinking. Some channels display no chroma while others do. Some seem to suffer from degraded luminance bandwidth, and all mess about with the line scanning.

I looked up the VideoCrypt circuitry in a Pace manual. It's printed on pink paper overlaid with deep grey bars. This makes it tedious to read. So I copied it which is not, of course, impossible. Basically the video signal is converted to digital form and fed into a pair of line-duration memory chips. When told to do so a following latch switches the processed signal to a digital-to-analogue converter. Processing is controlled by the split output from a 28MHz master oscillator: the 14MHz outputs are divided again to produce 7MHz and 3.5MHz clock signals.

The smart card needs two supplies, one at 5V which is switch controlled and another that can be varied between 5V, 12.5V, 15V or 21V as commanded. For those who might be wondering how the on-screen messages remain clear and locked on the scrambled screen, well they simply pass straight across to the video output stage while the previously mentioned processing is going on.

What I find interesting is not the fact that a few have cracked the encoding, but why this hasn't been more widely cracked. I would have thought that almost any competent electronics technician, given the broadcast signal, a decoder-receiver, its circuit diagram and an oscilloscope would pretty quickly be able to see what's going on and what could be done about it.

## **Tuning Problem**

Like Greeneyes, some VCRs have extensive wardrobes. The Nikkai NVR100/500RC for example often appears as the Solavox NCVR1000/5000, the Sentra GX8000 and the Alba VCR3000/4000X, not to mention the Amstrad clones. One we had in recently wouldn't tune properly. Some channels couldn't be got at all. Others had crackling on sound and on E-E and video. In the end we found that the cause was in the converter box, a replacement providing a cure.

## **The Trews' Bush**

Mr. and Mrs. Trew called in the other day with a Bush colour portable, Model 2114. She placed her hand in the small of his back and he spoke.

"We think it wants adjusting, Mr. Butcher."

"Don't like that word" I replied, "but tell me more."

"When we turned it on last night it squealed and hissed, then smoked and burnt and went off. Would you need to keep it a while, Mr. Bullrush?"

"I sure will, if not longer."

As they left Steven came in. I handed him the set. "It squealed and hissed, smoked and burnt and went off" I said, "and it's all yours."

### **Clarence's Video**

As Steven settled to do it Mrs. Runner called in with her son Clarence. He was carrying a Samsung SI1260 VCR.

"Tell Mr. Bullock what's wrong, Clarence" she said. Clarence opened his mouth but his mother spoke.

"It takes the tape in all right doesn't it, Clarence?" As Clarence breathed in to speak his mother continued.

"And it whirrs, doesn't it, Clarence – and what else is it?" Clarence shifted his stance and opened his mouth, but it was no good.

"Oh, and he can't get his tape out, can you, Clarence?" Then she smiled. "It's an educational tape, Mr. Bullock. He thinks the world of it. Likes to study, he does. Spends his life in his room with that recorder thing, you know."

When they'd gone I tried the machine. There was no E-E picture but the sound was there. When I tried to eject the tape the machine switched off.

I decided to make a few checks in the power supply and found that the 5V line was low. This brought me to a couple of diodes, D109 and D110, that were leaky. After replacing them I tried the machine again. It worked perfectly. Then, wondering what Clarence was studying so intensely, I inserted his tape and pressed play. Then I pressed stop as quickly as I could and took the tape out. Wherever had Clarence got it from? And hadn't there been more legs than arms? I boxed the machine up, put the tape on top of it and placed the lot to one side. Just then Steven called over.

### **The 2114's Problem**

"Got the Bush done!" he exclaimed. He had, too. The picture and sound were excellent. "Found that C806, a 1,000 $\mu$ F, 16V l.t. reservoir capacitor, was down to 300 $\mu$ F. It had also blown its top. R811, the 1 $\Omega$  surge limiter in the h.t. supply, was open-circuit. C409 (220 $\mu$ F, 25V) which smooths the supply to the line driver stage was down at about 80 $\mu$ F and C818 (1 $\mu$ F, 50V) in the regulation network was faulty. It's a TDA4601 type power supply. I'm getting to know these sets quite well. Reckon that the Trews went on using theirs, even though they know that it had problems, until it blew up."

"One that came in the other day was squealing, would tune only to BBC-1 and had vertical tearing. C818 had gone low in value again. As a result the h.t. was low and spiky."

### **Return Calls**

Next day the Trews trudged back, him in front. "Have you adjusted the set, Mr. Buzzard?" he piped.

"You could say that, Mr. Twap" I beamed. "And if you've got your cheque book we can do the same to your bank balance."

Then Mrs. Runner came in with Clarence for the Samsung video and his tape.

"Thank Mr. Bullock for doing it so quickly, Clarence" she said. Clarence took a gulp of air. "He don't say much, Mr. Bullock. Heaven knows why. But he can get back to his studying now. He's brighter than he seems, you know. Knows what it's all about."

"Can't deny that, Mrs. Runner" I said.

# What a Life!

**Donald Bullock**

When I started in this trade there were no transistors. There were wireless sets, electric gramophones with pickups that weighed a ton, and radiograms – a wireless set and a gramophone in one huge box. There were a few television sets as well of course. They were full of valves, had tiny screens and also weighed a ton. And they received just one programme, BBC, 'cos that's all there was.

I had no idea at that time what I was letting myself in for. These thoughts came to me the other day when I heard Steven happily accepting a CD player for repair. It's sometimes hard to appreciate how the trade has managed to cope with the dozens of complex developments and the ever-increasing multiplicity of domestic electronics equipment.

## **The Hitachi DA58**

The CD player, an Hitachi DA58, would read a disc only once in about ten attempts. I was trying to read a B & O circuit diagram and claimed to have a headache (that would figure!) and to be too busy to even think about it. So Steven took down the manual and went about it with no apparent concern. He found some dry-joints around a clutch of transistors – Q007, Q008, Q011 and Q012. When he'd resoldered these the player worked correctly.

## **An Amstrad STV20**

He next applied himself to an Amstrad STV20, which is a 20in. TV set with a built-in satellite receiver and decoder. The job card said 'intermittent blue screen'.

In this model the satellite receiver/decoder is vertically mounted at the right-hand side (viewed from the back), with the cable connections and the card insert slot at the back. The main panel and power circuitry are on separate panels on the floor of the cabinet, in plastic slots. Steven soon found that the tube's voltages varied when the signal panel was pressed and lifted. The power and signals panels have to be pulled out together, then separated for service attention. In this particular set the PCB slots were very rough, so much so that the print at the extreme edges of the panels had worn shiny through ordinary cabinet movement.

It's quite a new model. Working without a circuit diagram, Steven concentrated on the circuit connector that links the signals panel to the tube's base panel. He found that a 170V voltage at pin 2 disappeared when the fault was present. Steven could find no hairline cracks but noticed that the rear, right-hand corner of the panel showed signs of running hot. Resoldering the components in this area – C75, C86, R85 and D15 – cured the intermittency.

"Didn't like that Amstrad" he said as he boxed it up. "You can do the next one."

## **An Old Bush**

While he was lifting the set down, quiet Norman Glutton glided in with an old Bush TV set – one fitted with the T22A chassis. I saw that it was one which had been

adapted for remote control operation, and prayed that I wouldn't have to take out the mass of ironwork and circuitry behind the front cabinet controls. Norman works at the local pub, mainly because he gets all the unsold pies and pasties and something to wash them down with. I've never seen him without a pie.

"You seem to be coming here a lot recently Norman" I said, "you must have a television set and a VCR in every room!"

The Bush set displayed three obvious symptoms. What there was of the raster was green, it had collapsed into a bright horizontal line, and there was no digital display. Were there three separate faults, or one that caused all these symptoms? Surely there had to be a single fault. I made for the 12V line, which is derived from the line output stage and is stabilised by an LM7812 regulator, IC701. It feeds the field generator and the signals circuitry, the LM7812 being mounted on a large heatsink at the rear, right-hand side of the chassis, close to the edge. It had originally been dry-jointed, probably because of stress due to its position. But the solder had melted and shorted the 12V line to chassis. As a result the 2Ω, 2W fusible resistor R422 had given up. The resultant voltage loss was the cause of the various symptoms.

As Norman doesn't have much income, I felt kindly towards him when he returned. "Here it is Norman" I said, "good as new – but no better I'm afraid. Fifteen quid to you!"

"Oh good" he mumbled through a piece of pork pie. "I'll charge old Woody thirty quid. He'd reckoned on having to pay about forty."

## **A Ferguson 14M2**

Meanwhile Steven was working on a Ferguson 14M2 (TX89 chassis) whose display symbols flashed and constantly changed. Most of the time the display was nonsense, but when it did make sense and settled on a local channel a good picture came up. Then the set would switch itself to standby. Steven stood their poleaxed.

"What's up with this one then?"

"God knows" I replied, "but remember – adopt a logical approach." Then I slunk out to make the tea.

A big murder enquiry was going on in our area at the time. Umpteen bodies had been found and more were being sought. I stayed in the house awhile to see all about it on the box, which I normally never watch. Then I took Steven's cold tea out to the workshop. He'd got the set working and was also watching the murder enquiry.

"What was it?" I asked, pointing to the Ferguson.

"Someone seems to have done in a lot of women" he answered.

"No – the fault on the Ferguson" I said.

"Oh, that. A carbonised on-off switch. I've wired one in temporarily and have ordered the right one from HRS."

"Yeah" I said, "I suppose it had to be that."

"No. It could have been caused by IC13 and IC14: as they're data linked, you have to replace them both. Another possibility could have been e.h.t. arcing, particularly under the e.h.t. cap."

"You've been on to Ferguson!" I exclaimed.

"Wouldn't speak to me" he said.

"Then where did you get all that?"

"Worked it all out and tried the most likely thing first. You did say to be logical!"

I'm still puzzled about how much he's picked up in such a short time. The bits I know took me a lifetime to absorb.

# What a Life!

Donald Bullock

I woke up early one morning. The sun was shining, the birds were singing and it felt good to be alive. Then I remembered that I was in TV/VCR repair, and that Walter Windpipe had called the night before, at half past ten, with a Samsung VCR.

"Sorry to call so late Mr. Bodger" he slurred. "I've had this in the car a couple of days and remembered it only when I left the, er, club. It's the wife's Sing-Song. Can't be much – it was all right before it seized up."

## Walter's Sing-Song

When I got to the workshop I opened Walter's Sing-Song, an SH260 that was quite new. Its carriage had jammed because the brittle plastic cog assembly had been stripped by the coarse-toothed metal slider that meshes with it. The two never did mesh well in this series of models. A look in the manual gave the part number as 65203-605-310, but it proved to be no longer available. The recommended replacement is part number 65203-605-330, which costs 63p. Samsung have a £3 minimum order charge so, in view of the potential business out there, we ordered six. The spares came quickly and we had the machine right in no time. I have to say that Sing-Song certainly try harder and their service people have always been good to us.

I've referred on previous occasions to a pair of troublesome diodes in this machine, D109 and D110, both type O54001. They go leaky or short-circuit. As a result the voltage on the 5V line falls, the consequences being loss of the E-E vision (the sound remains) and no drum or capstan drive. If they are only slightly leaky the symptom is intermittent cassette ejection. Specimens like Windpipe then force the carriage. So while we were at it we replaced these diodes with some tougher ones.

## A Ferguson A51F

My first caller that day was Mrs. Simper. She swept in followed by a scruffy lad with a TV set in his arms.

"Put it down there" she ordered him. As he put it on the bench he knocked down our drawer of assorted screws. "You oaf" she said. He stood there blinking and I started to pick up the screws.

"Smokes" she said, "all the bloody time". I looked at the fellow. "Not him" she continued, "the set. He's a telly addict, not a smoker. Can't be much wrong with the set. Snoddies said it was a condenser and quoted a quid."

I straightened up. "Perhaps you should take it there then?" I suggested.

"They can't do 'em."

So I ended up with the set, which is fitted with the IKC2 chassis. This frightens me to death. When I plugged the set in it made three spirited attempts to start then smoke began to belch from beneath the line output transformer, close to the core. Like the ICC5 and ICC7, this chassis seems get through line output transformers – and they're not cheap. We paid up, got one, fitted it and to our relief the set worked.

When Mrs. Simper returned with her lad to collect the set we told her that the charge was £40. She looked at us with contempt and said to him "pick it up, you dummy – wish you

could make money like these people instead of watching telly all day."

While Mrs. Simper was attending to the payment he picked the set up, gave us a wink and made a disgusting sign behind her back.

## The Philips K35 Chassis

Half an hour later I noticed that Steven was grunting and rubbing his eyes as he worked on a set. "What's up?" I asked.

"Partial field collapse with this K35 set of Rupert's" he said, "but the BD437/BD438 field output pair TS530/TS532 test perfectly after being removed."

"Nevertheless, try a new pair" I said. He did, and up came the picture.

"Aren't I clever?" I added. Then we stopped for our tea break. I made the tea – it's one job I can do well without having to use my tired brain. As we were finishing, two odd fellows came along in quick succession. One had tiny eyes and a permanent leer, the other looked like the hunchback of Notre Dame.

## Strange Fellows

"I'm Terence Stoate" leered the first, "of Stoate, Weasel and Fleecem, solicitors. I've a 20in. Ultra Model V2001 in the car. TX90 chassis, you know. I've made a note of the serial number. Can you get it out? – I have back trouble. It just groans."

That I understood. As I struggled in with the set Steven was accepting a Panasonic NVL20 VCR from the other man. "Call back this afternoon, Mr. Huckmore" he smiled.

"Er – how come the new confidence?" I asked.

"It's dead, no functions or display" he replied. "I think it'll be the 1µF, 400V electrolytic in the switch-mode power supply down to about 0.005µF." He was right.

I went to the house for some Aspirins, then put Mr. Stoate's set on the bench and opened it up. The chassis was immaculate. He'd been into it and removed every speck of dust. Some of the larger components had a red felt-pen spot on them. When I plugged the set in nothing happened apart from a groan from the speaker. I decided to make a few cold checks, but there was nothing obviously amiss. Steven boxed up the NVL20 then came over as I plugged the set in again. While he was peering at the chassis the line output transformer suddenly exploded, covering him with a sticky resin.

"What was it?" he asked when his ears had stopped ringing, "and how do I get all this off?"

"It's the first time I've had a line output transformer explode" I said. "Phone HRS for another – ask for a TX90 white spot."

When it arrived Steven got busy fitting it while I looked out the manual and linked the set to the mains supply via the variac. We connected a d.c. voltmeter across the h.t. line and turned the set-h.t. control to minimum. Then we wound up the set slowly, standing well back – me behind Steven. As the voltage rose the set pulsed two or three times and up came a raster. After plugging in an aerial we had a picture. It wasn't bad, except for the verticals on the right-hand side – they were wobbling and rippling. We tried to adjust the h.t. voltage, which was low, but the control had no effect. So we switched off quickly and checked around in the power supply/line output stage circuit. Sure enough the BD839 boost voltage regulator transistor TR107 was short-circuit. All was well when we fitted a replacement. We took care to set the h.t. correctly, boxed up the set and put it on soak test. Later we pronounced it fit.

Mr. Huckmore subsequently called to collect his NVL20. "Funny-looking chap that was here last time I came in" he said.

"So many are, Mr. Huckmore" I said.

As he departed Mr. Stoate came in.

"Odd cove that one" he commented.

"We seem to attract all the oddballs" I said, smiling thinly.

## ***A Grundig CUC60***

There was only one job left to be done that day, a Grundig

TV set fitted with the CUC60 chassis. Apparently there was occasional field collapse and "the line gets brighter and brighter".

"Shall I have a go at it or will you?" asked Steven.

"You have a go" I said.

The chassis has subpanels mounted on the main PCB. Steven pulled out the field timebase panel and checked D2758, a pretty little SKE2F diode. It was open-circuit. He fitted a new one, checked the panel for dry-joints and resoldered C2758 (100 $\mu$ F, 35V). "That'll put it right" he said. It did.

He was just lucky.

# What a Life!

coils for years, then suddenly I had to do just that on two consecutive jobs!

## Some Easier Ones

**Donald Bullock**

I don't like these modern telephones – the sort without wires to anchor them. Steven does though. He's got one that he carries around the workshop. When he's finished talking to it he puts it down wherever he happens to be and goes out. My troubles start when it rings and I can't find it.

Yesterday he left it on our COPS monitor. When it rang I lunged at it and it fell under the table. That was where I crawled to answer it.

"I'm Doctor Who" said a voice.

"Good God!" I exclaimed.

"My personal has gone all velly silly colours and shrunk" he continued. "It's also making a silly noise."

"But why tell me?" I asked.

"Because I want it put right. By the way, I have it in the car."

"Where are you then?"

"In your front drive."

## The Philips KT3

As I clambered from beneath the table he came in. A photo with "Dr. Hoo" and the name of a local hospital was attached to his shirt. The portable turned out to be a Philips 37KT3060 (KT3 chassis). When I plugged it in and switched on there was distorted sound and the field scanning had collapsed to a non-linear six-inch band across the centre of the screen. Then Dr. Hoo's suit started to bleat. He took his smart-phone from his pocket, cooed into it then took his leave.

Did the set have one fault or three? I opened it up and waggled the degaussing plug in its socket. One of the wires popped out. It had never been crimped. I soldered it properly, curing fault number one. What about the distorted sound? When I tried an audio module from a scrap set the improvement was immediate. So that was the answer to fault number two. The field fault wasn't so easy to deal with.

Half an hour later I was totally baffled. Every voltage and waveform in the field timebase seemed to be correct, and I'd replaced the BD223/BD234 pair of field output transistors and umpteen other components. Time for some logical thinking. What hadn't I tried?

I sat and reflected. There was a time when scan coils often gave

trouble. But they don't seem to fail any more. Or do they? In a flash I decided upon a course of action. I loped over to our TV graveyard and saw a set with a dud tube and an identical set of scan coils. When these were fitted to the set on the bench a perfect picture came up. Well! We live and learn.

## Another Portable

It was then that Mr. Bacaroni called in, carrying a 14in. Saisho portable – a CT142RX. He thrust it into my face and began to sing like Pavarotti.

"My Emerson from Roma, he lasted till old age. This Japanese bunkum, no age at all, he go up there." He was pointing to the sky.

"They do, they do" I said. "Leave it with us. Don't ring – we'll ring you." Off he pounced.

I didn't have the manual but the set seemed to be similar to the Matsui 1480A for which I did have one. So I used this to go after the fault. When the set was switched on it made a thin, tinny sound and there was no raster. After checking that the h.t. was correct I investigated the 2SD1426 line output transistor Q402 and found that it was short-circuit base-to-emitter. When this had been replaced there was the welcome crackle of e.h.t. Another job done, I thought. But I was wrong.

The picture that came up was only a third of the correct width. I switched off and felt the line output transformer. It was warm, but not hot. So was the replacement transistor. I spent an age going through the line scan circuit. Apart from one or two slightly low capacitors, which I replaced to no avail, everything seemed to be all right. There was a substantial fault somewhere, but once again I had run out of ideas. Then I noticed the smell of something cooking and saw a thin wisp of smoke climbing from the scan coils. I switched off and felt them. They were hot all right. Surely not another dud deflection yoke?

I returned to our graveyard and found an identical set of coils. Fitting them restored perfect results. It's fortunate that the same make and type of yoke is used in so many sets. I hadn't had to replace the deflection

Earlier Steven had taken in a Sony KVM14U with no raster. When I removed the back I expected to find another open-circuit resistor in the first anode supply, with the rectifier diode cracked and cooked. But no, the first anode supply was o.k. Pity! Then, brushing the dust from the neck of the tube, I noticed that the heaters were out. As usual the supply comes from the line output transformer. Although it's a pulsed voltage, our meter indicated that it was present. But it wasn't reaching the tube's base. The feed is via plug CND82, which is beside the transformer. There was a hairline crack in one of the tracks. I hand wired both connections, switched on, and up came the picture.

Meanwhile Steven was working on a Ferguson 3767 (TX10 chassis). There was e.h.t. and the tube's heaters were alright, but there was no brightness. He'd measured the first anode voltage and found that it was about 800V. "Check the cathode voltages" I suggested. These were too high. We looked at the green LED on the c.r.t. base panel – it provides a stable bias voltage for the RGB output stages. There was no light. A replacement sorted that one out.

The complaint with an Hitachi VT9500 VCR we had in was that rewind was o.k. but there was no fast-forward operation. Steven applied his attention to it. The idler seemed to be catching on the chassis and as it's made of thin plastic we assumed that it was warped. So a Konig replacement was fitted. To Steven's astonishment this made no difference. It took him a while to see that this was because the tiny tensioning ball bearing was missing. We then realised that it was also missing from the original idler. A new idler from Hitachi had the ball bearing intact and fitting it corrected the trouble.

Our final case that morning was a dead Bush 2114 portable. The things to go for in this situation are the thermistor (TH801) and resistor (R817, 5-6k $\Omega$ ) in the start-up circuit – feeding pin 9 of the TDA4601 chopper control chip IC801. We replaced them both and had the set working merrily. Another item that gives trouble in the power supply is R808 (270k $\Omega$ ) which is connected to pin 4 of the chip – in the collector current simulation network. It goes high in value, killing the chopper transistor.

# What a Life!

**Donald Bullock**

There has been a lot of comment in these pages recently on the increasing tendency of TV and video manufacturers to stop providing technical help to those of us who land up with the job of repairing their products. It's certainly a problem that's getting worse. And, when all things are considered, the policy strikes me as being a short-sighted one. Some might say a ruinous one.

When we were dealers, every set we sold was British. Some manufacturers – Bush, Murphy and Ekco amongst them – were proud of their products and would appoint, after a great deal of vetting, an official dealer in every large locality. These dealers were provided with sales leads and the fullest back-up service imaginable. In return, the dealers were expected to observe Price Maintenance, i.e. not to undercut their competitors, and to attend to the needs of their Agency customers promptly and cheerfully, whether there was a profit in an individual job or not. This meant that customers invested in their sets rather than merely buying them – in the confident knowledge that a first-class back-up service would be provided. It ensured, amongst other things, that piffling little faults with a high nuisance value to the user but no profit to the dealer were attended to quickly – things like obtaining and fitting a new control knob.

Agents were kept posted with servicing notes and details of modifications. They were required to implement the latter where thought necessary, for the common good of the manufacturer, the dealer and the customer who, after all, paid for it all and thus kept the manufacturer and dealer in business. In my salad days I worked for such Agency dealers. I still remember the air of quality and self-esteem that permeated their shops and service departments.

What a difference today! The Agency system is no more – despite what one or two of the more expensive and toffee-nosed distributors might claim – and the wide diversity of highly-complex products that come our way from everywhere constitutes a servicing nightmare. Never has there been a greater need for the fullest

technical back-up from every manufacturer and distributor in our trade.

Yet each week another one seems to stop providing it. There was a time, not long ago, when Mitsubishi could be relied upon to provide the fullest help whenever we were struggling. We would be sent sections of circuits by fax, and could enter into helpful technical discussions. Once a couple of chips were popped into the post to help us get a local Special school's recorder right.

The other day we called for help again. The technical boys, some of the nicest people around, had to refuse help because we're not an official dealer. "It's all a matter of money" we were told. "It costs money to employ someone to sit here dispensing help."

It does, of course. But isn't economising on this a short-sighted policy? Here's what the outcome was. After a few more attempts to help the customers, a young couple, we had to reassemble their set and tell them that we had tried, but failed, to repair it. Their faces fell, then they looked thoughtful.

"That's the last Mitsubishi we'll buy" the man said.

## **Mr Loon's Colour Set**

Mr. Loon called in the other day with a 20in. Goodman's colour set – Model XRT20. He complained that there was uncontrollable brightness with flyback lines. When I opened the set up it looked like the Fidelity ZX3000 chassis – only it wasn't. There were obvious differences, and the component numbers were not the same.

After making a few telephone calls we found a source for the manual and were quoted £24.50 plus VAT for it. So we decided not to bother. Using the ZX3000 circuit as a rough guide, we made a start by checking the voltages around the TDA3562A colour decoder chip. They were much the same as those shown in the circuit diagram. For want of any better idea we then replaced the chip. This made no difference.

We subsequently learnt that the set was one that had been produced for Comet. So I lifted the phone and had a

word with my old friend Peter Ambrose, who always knows the answers with Comet stuff.

"There are a couple of 100k $\Omega$ , 0.5W resistors from the collector of the BU508 line output transistor TR5" he said. "On our sheet they are R406 and R418. They go high."

He was right. One was open-circuit and the other was very poorly indeed. Fitting replacements cured the trouble, and I then studied the ZX3000 circuit to see how it compared.

It was similar in this section. The two resistors are shown as R98 and R99, their job being to feed line pulses to the timebase generator chip which in turn supplies sandcastle pulses to the colour decoder chip. Thanks again Peter!

## **A Dead Mitsubishi**

There's no nonsense with Mrs. Sensibull. She strode in with a Mitsubishi CT2144TX and plonked it down on the counter. "Here's your chance to make a few bob out of me. Dead as mutton it is. Not even the beacon light. I'll pop in tonight to see how you're getting on with it."

The set is fitted with the Euro 4 chassis, which has one or two unusual features. There are for example two chopper circuits, one to provide the supplies for the control circuitry so that the standby system works. If this circuit is faulty, removing the micro-controller chip's 5V supply, nothing happens. Sure enough there was no 5V output from IC951, which receives its input from the standby chopper circuit. The relevant rectifier D956 and its surge limiter resistor R957 had failed. Replacing them cured the trouble – but only for five minutes, after which the set died again.

Once more there was no 5V supply. This time we found that the 2SC4004 standby chopper transistor Q951 was short-circuit base-to-collector. We fitted a replacement and, whilst at it, renewed its two 330k $\Omega$  base bias resistors R973 and R952. But the set was still dead. Further checks showed that there was no supply to Q951. In our set this came via a 270 $\Omega$  resistor which is not shown on the circuit diagram we had. It was open-circuit. A replacement produced a beacon display and the welcome rustle of e.h.t. when we switched on again. There was a really excellent picture when we connected the set to an aerial.

Incidentally John Coombes wrote about the chassis back in the July

1991 issue of *Television*. We found the article a great help in sorting this set out.

### **Mr Bloat's Sony**

Mr. Bloat puffed in carrying his Sony KVM14TU, with the screen away from his chest. He placed it on the counter gingerly then opened his mouth to speak. But no words came out, only a strangled noise. He sat down on the chair that's usually full of junk. After a few minutes he tried again.

"Hohh wohh ffuh" he said. We nodded understandingly and wrote 'Sony TV' on the job card. Then we plugged the set in, using a flylead that Steven had begun to wire above the counter. A picture came up, but it had a green tinge. And there was a thick

red fringe around everything. Then it all went twisted and drifted away, taking the sound with it.

"That it?" I asked. He nodded and opened his mouth.

"Ffuh wohh hohh" he said. So we smiled, waved him out and opened his set up.

In this model the i.f. circuitry is contained in a can. Tapping it with a screwdriver affected the symptoms. So we took the can out, opened it, sucked the solder from every joint with solder braid then remade all the joints. When we refitted the can and tried again the picture and sound were stable.

The green cast was caused by loss of blue and red gun emission in the c.r.t., the red fringe by a sadly poisoned red cathode. We set up the grey scale as well as we could, which reduced the overall brightness, so we

advanced the setting of the first anode (screen) potentiometer to compensate. This improved the picture quite a lot, and as we were boxing the set up Mr. Bloat returned.

"Sorry about earlier" he wheezed. "Carrying that set nearly done for me. Managed to do it?"

"Sure thing Mr. Bloat" I said. Then I asked him over to the bench to see the picture while Steven went on hoisting his new aerial flylead over the counter: its purpose is to enable us to show customers the picture at the counter instead of dragging them through the obstacle course to the bench.

Mr. Bloat was delighted and paid up. I decided to avoid another show by carrying the set out for him. "Follow me, Mr. Bloat" I said as I strode out and popped the set into his car.

# What a Life!

**Donald Bullock**

The bell went early one morning, as I was taking a shower. It kept on ringing. I half dried myself, scampered into some things and ran to the front door. There I met Mr. Sickener for the first time.

"It's my Sharp microwave" he said. "I know what's wrong with it, and it isn't much. I've opened it of course. There's a D-shaped plastic thing under the turntable and it's cracked. How long would it take you to get the spares and do it?"

"A couple of days" I said.

On hearing this he clasped his hand to his bald pate and spun round on his heels. "How will I manage without it for that length of time? Give me your card and I'll decide. There are a few other dealers keen to do it."

So I had to find my keys, walk to the workshop and open it to get a card for him. I didn't like the look of him, and hoped that it showed. I mentioned that Snoddies does microwaves, and that Crubbs Foodstore doesn't but sells new ones very cheaply. At that he left.

He was back with the machine a few minutes later, and I had to go out to the workshop again and unlock it to book the oven in.

"Can we try it?" he asked, picking up the plug and looking around for a socket.

"No" I said, "we aren't open yet."

So he opened its door and began to dismantle the turntable assembly. "Oh, by the way, there's a burning smell when you switch it on." He gazed at my shirt, then my feet. "I... er, I'll be going now" he said.

I went back to the house and looked in the mirror. My shirt was on backwards. Then I looked at my feet – I was wearing sandals: there were odd socks, one dark grey, the other maroon.

A little later I took a look at his microwave. It was ancient. On the side, near the back, there was a Snoddies' sticker. "Not worth repairing" it said. Cripes, if they'd passed up the chance of a fast quid, there must be something wrong. We soon found that the machine had been badly pulled about, and that the nasty smell when it was switched on was because it was filthy inside.

When Mr. Sickener returned we told him the bad news and placed the

machine on the counter in front of him.

His reaction was fast. "I suppose you want another fifteen quid, just to tell me to clear off?"

"Eh?" I said.

"That's what Snoddies just did."

"No charge" I said. He grabbed the machine and fled.

## **Mr Runty's Sony**

The next caller was Mr. Runty. He's tiny, and apparently to compensate for this he indulges in circumlocution.

"Ah, Mr. Bullock, my – ah – Sony television has I fear developed a malady. I have it in my vehicle. It has shrugged off its mortal coil."

I had to struggle to get it out and on to the bench – it was a KV2090 series receiver (XE4 chassis). As he left I checked and smelt the mains switch, which was all right. So, having had several of these sets in before, I studied the underside of the main panel. Sure enough there were some dry-joints. There are five 10W wirewound resistors in two batches. The first batch consists of R621 and R622. They both stand upright and the centre lead of each one was dry-jointed. The same applied to the other batch – R637, R640 and R601. I removed them all in turn, cleaned and tinned the leads and resoldered them in. The set then worked a treat. When Mr. Runty returned he was delighted.

"Ah, Mr. Bullock, my gratitude is unbounded. How can I indicate my indebtedness to you?"

I tapped my finger on the bill. "By remunerating me and perhaps adding an honorarium." Then I added "I got that little lot off a sauce bottle".

## **Warder Phil**

Warder Phil was our next caller. He had brought along a Toshiba set. "Belongs to old Mrs. Downe" he said. "She's bedridden. Her stupid son looked after her until he got himself put into our place for a month for kicking up a rumpus after a night out. I'd like to get his ma's set fixed though."

Typical of Phil. The Toshiba set's beacon light came on when the on-off switch was pressed, but went out when

standby was touched. We didn't have the circuit but opened it up and turned the chassis on its side to examine the print around the line timebase. I soon found transformer T401 so dry-jointed that I was able to lift it off the panel. Cleaning the pins and resoldering the transformer into the panel restored normal results, though the tube was a bit low.

"How much do I owe you?" Phil asked when he called back.

"What do you get for doing the running about?" I asked.

"Well, nowt" he grinned.

"And that's our charge too."

## **A Radio-cassette Player**

Then Mrs. Suet rolled in and plonked a Pye 9014 radio-cassette player on the bench. She opened her mouth and a noise like a saw on a sheet of tin emerged.

"Can you mend these?" she asked.

"When we do, it's sheer luck" I replied. "What's up with it?"

"The radio is all right, but when I play my Shirley Bassey tape there's a loud whining noise followed by a sharp tapping. What does that tell you?"

"That there's a midget in there with taste" I said. We later found that the 'knocking' was a harsh crackling caused by the cheap two-pin mains plug not gripping the socket properly while the 'whining' was caused by an up-ended resistor lead that rubbed against the capstan.

"I've let the little fellow out, Mrs. Suet" I said when she called back. "And boy did he go. If I were you I'd swap that cassette of yours for a Bing one."

## **Amstrad PCWs**

I was telling Steven that there's something up with my Amstrad PCW8512 monitor – the one I keep in Spain. I'm not sure whether the tube has become muzzy or whether the main board that provides its supply voltages is in trouble. I could do with a redundant one for spares – say one with a useless disc drive. One that's perhaps not worth mending.

Just then Mrs. Scribe came in. She's a housewife who does some writing and was carrying her Amstrad PCW82512.

"I know you use Amstrads" she said. "Can you repair mine? The second disc drive won't boot up when I put a disc in. If the drive's finished you can keep the machine for spares – I'll get another." And off she went.

When I slipped a disc in nothing happened. So I pressed the little disc release button and the machine didn't give it back. I opened the monitor, took the second disc drive out and opened it. The release mechanism was dry. So I cleaned and lubricated it, floating a spot of thin oil on a drop of water and using a fine screwdriver to apply, sparingly, a film of oil to it. After that the release mechanism worked well. While we were at it we treated the other moving parts, including the worm drive.

The disc drive now worked, but the screen remained blank. I saw that although the drive motor was running the disc didn't revolve. There's a spring lever with a felt pressure pad that presses on the surface of the disc. When I gently lifted it to reduce the pressure the disc spun and the machine booted up. Was the pressure too great then? I checked and it wasn't.

Perhaps the drive was weak? I unplugged and swung open the PCB that hides the mechanism: the thin belt that couples the drive motor to the disc drive hub was perished and no longer supple. We found an identical one and fitted it. The machine then worked well.

When I'd reassembled it and set it up I typed a four-word sentence. Steven glanced over as I printed it to test the printer. "This was nearly mine" it read.

Mrs. Scribe was delighted that her Amstrad had been so easily and cheaply repairable. "By the way" she said, "my hubby reads me all your tales of woe about telly servicing. Is it true that the local BBC was after you

to talk about your funny experiences in the trade?"

I nodded.

"Why not write a proper book about them? You ought to, you know."

"I've a mind to do just that" I replied.

### ***A Samsung Portable***

Our next caller was Councillor Glorie. He's bulky and scruffy and winks every time he speaks, as though it's only just him and you. He brought along his 10in. Samsung set, a CI212R, which you also come across as the Nikkai Tara 10. The manual, which refers to the set as the 3ZSMC1 210R, can be obtained from either firm. Take my tip and get it from Samsung - it'll cost you a lot less than from Nikkai.

It's a complex little set. This one was dead though the Councillor reckoned that sometimes, after it had been switched on and left for an hour, it would burst into life for a minute. He had taken it to Snoddies and, to give them their due, they had tried, having added a pound of solder to the print and replaced a number of 2SC1685 transistors in the power switching circuit with 2SC945s, which have a better specification.

There should have been 15V or so across C516, the 10,000 $\mu$ F reservoir capacitor for the bridge rectifier D213, but the voltage here was very low. Disconnecting the series regulator transistor Q131 and its driver Q130 promptly restored the voltage and I spent a long time, as Snoddies had, looking for a switching circuit

fault without success. I replaced C516, which made no difference, then suspected the TMP47C433AN micro-controller chip IC105. One had to be ordered of course. When it arrived and was fitted there was again no difference.

I stared at the chassis and thought hard. What could be pulling the voltage down? And if disconnecting Q130 and Q131 restored the voltage, why couldn't I find a nice hefty short? And why did the set sometimes come to life for a minute after being switched on for an hour?

And another question. Why was I a TV engineer when all around me other chaps were doing much better at less wearisome jobs? Too late to remedy that I reflected. Then I thought even harder about the Samsung set and got an idea. Rather than being pulled down by a short, the low voltage could be caused by lack of charge. I'd cleared the reservoir capacitor, but suppose that the bridge rectifier was providing an only niggardly current flow? Enough to charge the capacitor but not enough to keep it charged when the regulator circuit was connected. This would also explain why the set could spring to life briefly after being left switched on for an hour: there could be enough charge in the various capacitors down stream for a quick burst of operation. Enough of theory I decided. Time to check it out, by replacing the bridge rectifier. It's type RS602. When this had been done the set sprang to life every time. So there's one for the records: a delinquent bridge rectifier.

And another satisfied customer.

# What a Life!

**Donald Bullock**

Have you noticed how some BBC correspondents raise their voices at the ends of sentences, baying them so that they sound like questions? One of them, a Martin Sixsmith, is particularly adept at it. The trouble is that by the time you've sorted out such quirks what they are saying is lost on you. I wonder how they keep their jobs?

Now it's spreading to the public

## **A Troublesome Akai/ITT Receiver**

A giant Akai Model CT2870 TV set waltzed into the drive the other day. It was wearing wrinkled trousers over a pair of moon boots. Then it came into the workshop and sat on the counter. As its trousers and boots walked sideways from it I noticed a chest and a head, also a pair of arms.

"Mr. Drip?" their owner asked.

"No one here by that name" I said, sensing trouble.

"I'm Mr. Drip" he said, and again it sounded like a question.

My razor-sharp brain told me at once that he was right. "What's up with the set then?" I asked, hoping that he didn't think I was trying to be funny.

It transpired that this monster telly was in fact an ITT Compact D2 FST set in heavy disguise. There was no sound or vision, just a faint flip-flopping, cloudy line across the screen accompanied by a shrill whine. Strange symptoms. Before Mr. Drip loped off I got him and Steven to help me get the set on to the bench. Then I settled down to try to isolate the faulty stage.

What did the symptoms tell us? Clearly there was field collapse and failure of the sound channel. The shrill whine suggested that all was not well in the power supply. Where to start? It seemed logical to check the power supply's output voltages, which were all as specified. Maybe there was some loading somewhere?

Checks showed that the supplies were missing at the field and audio output stages. So we didn't seem to have a loading problem, in these areas anyway. Back to the power supply. Though its outputs were – apparently – o.k., there was that whine.

A great deal of time was spent checking just about everything before I discovered that the reservoir capacitor for the 31V supply, C732 (1,000 $\mu$ F, 35V), was low in value at about 50 $\mu$ F. This value was apparently enough for the full voltage to be established, but not enough to meet the current demand. So we did have a loading problem, of a sort. Maybe if I'd carried out scope checks some ripple would have been apparent. But this odd situation didn't encourage clear thinking.

When a replacement capacitor had been fitted the whine had gone and the collapsed field was at full brightness, though lacking in width. The TDA3654 field output chip still had no supply at pin 9. After a good deal of searching along the wandering, mapping-pen thin print I found a hairline crack. Fitting a jumper lead restored the field scan and width, but there was still no sound. The newly repaired 31V supply was getting lost somewhere before it reached the audio output stage. Another hairline crack was the cause of the trouble, and another jumper cured it.

The set now gave excellent results. So I cleaned off the

chassis, set it up and, after giving it a soak test, waved it out with a sigh of relief.

Incidentally I have to acknowledge the help of Pete Brook and his assistant John (Mr. ITT) Baker of Hoopwell Ltd. These kind people provided me with a manual and spares, and John suffered with me in sorting out the cause of the trouble. Hoopwell are nice people. They provide a good, efficient, courteous service, and their latest catalogue is a goldmine. Talking to their Julie is a bonus. I almost wish that I had another tricky ITT set to deal with. But not quite.

## **A Mitsubishi Euro 4**

I then picked up a Mitsubishi CT2532 (Euro 4 chassis), another monster. "It works all right for hours, then the height reduces or the picture goes dark or both" the customer had said.

I connected a voltmeter to the AN5521 field output chip's supply pin, tuned in a picture and checked that the reading was 24V. The supply comes from the line output transformer, the feed to the rectifier and its reservoir capacitor being via an 0.82 $\Omega$  resistor.

After a while I noticed that the voltage was falling. Also there was some field cramping a few inches from the top of the screen. Then, as the voltage decreased, the cramping got worse. Just as the field scan collapsed, the picture darkened. A glance at the meter showed that the reading was now 3V.

I opened the set up and checked the 0.82 $\Omega$  resistor. It looked hot and bothered. A replacement cured the fault.

## **Mr. Crout's Hitachi**

Mr. Crout struggled in with his arms wrapped around yet another monster. The TV set I mean – it was an Hitachi CPT2198 (G8Q chassis).

"Ven I switch on, noddings at all" he barked. "Only a ferry dim screen, fitch is no gut to me". Then he smiled and nodded at me.

"I will do my best" I said, and off he strode.

I tried to tune the set in and adjust the brightness but couldn't. Maybe the SAA1293 control chip was faulty. A replacement made no difference however. Next to it sat an MDA2062 memory chip, IC1502. This type of chip is programmed to meet individual chassis requirements and, I now know, is colour coded by means of a small spot label the size of an aspirin. This one had a white label. So we ordered a 'white-spot' MDA2062. When it came we fitted it, but this didn't make any difference either. By now a couple of days had passed by and Mr. Crout was getting impatient.

"Fi so long?" he asked. "Don't you onderstant der technicalities?"

I avoided a direct reply and studied the circuit. The voltages around the memory chip were all correct, and by now I was suspecting dry-joints or high-resistance plug and socket connections between the two interconnected main panels. Resoldering and checking the plugs and sockets didn't help, and I was beginning to wilt.

A phone call to Chas Hyde confirmed that this set should have a blue-spot chip. When we fitted the one they sent us all was well. I reckon that all processor and memory chips should come prepacked with a few aspirin tablets.

## **Enter Miss Chang**

Ven – I mean when – Mr. Crout came to collect his set one of our favourite customers, the demure and shapely Miss Chang, was trying to explain to us what was wrong with her Matsui portable, which is a Bush T2114 in disguise.

“It is – er – it is. . . “ She put her palms together and inclined her head to her hands.

“Let me interfere” said Mr. Crout, clicking his heels and bowing, “I speak seven languages”. Miss Chang twittered to him and crossed her chest with her hand.

“Kaput!” barked Mr. Crout, and out he bowed.

We found that the set tripped at switch-on and made a bee-line for the BU508D line output transistor Q402. It was short-circuit, and a  $1\Omega$  resistor in the 24V supply was open-circuit. Vie – I mean why?

A check on the h.t. supply produced a reading of 145V instead of 110V. Adjusting the set-h.t. potentiometer VR801 made no difference. The power supply is the type that uses a TDA4601 chip (IC801) and was clearly running flat out. So we looked at the control circuitry, centred around pins 1, 2 and 3 of the chip. There are a couple of electrolytics here. C817 ( $10\mu\text{F}$ , 16V) had fallen in value to  $5\mu\text{F}$  while C818 ( $1\mu\text{F}$ , 50V) was low at  $0.3\mu\text{F}$ . We replaced them, turned VR801 to its mid-position and started the set up via a variac. The h.t. was now at exactly 110V. Pausing only to check that it was adjustable, we boxed up the set and called it a day.

# What a Life!

Donald Bullock

When I was at school I used to build crystal sets. I can still recall the day I managed to tune in a programme with the first successful one. It was the Light Programme from the BBC's 1,500m Droitwich transmitter. Subsequently I started to knock up the sets and flog them. They were housed in matchboxes and I sold them for half a crown a time. When I started work I was paid seven pence and a half penny an hour, so I'd done quite well with the crystal sets.

I sometimes think of those days when I pass the Droitwich transmitter on the way to the airport. I thought of them particularly the other day when I opened an English-language Spanish newspaper.

Lots of people receive Sky TV there. I don't know why anyone should want to, but they do. The particular newspaper I was reading used to carry advertisements from firms that offered to supply pirate cards. They claimed they could and would update the cards each time Rupert thought of a wheeze to stop them working.

Well, the last time that Rupert switched the switching the ads stopped. As the weeks went by it was generally assumed that Rupert had finally won. But in the issue of the paper I had before me pirate cards were again on offer. They were different however. It was claimed that these were immune from Rupert's destructive signals. And some of the ads offered to make reception possible using Rupert's expired cards. Your move, Rupert!

I was chatting to the owner of one of the larger spares firms recently. He's also an enthusiastic technician and told me that he had the secret of building anti-destruction circuitry into expired cards.

All this got me thinking about the immense strides since I made and flogged those early matchbox crystal sets. Even outside the electronics industry, nearly all progress has been on the back of electronics. No one can dispute that those of us who stumbled into electronics at the beginning were in on the biggest breakthrough since civilisation began.

There's only one question: why aren't we all loaded?

A month or two ago I mentioned that Steven had taken our moggie to the vet and come back poorer by over a hundred quid. He'd also had the pleasure of seeing one of our tightest customers happily shelling out handfuls of cabbage to the vet.

Maybe we should have been vets. Or opticians. The latter reflection arises from a need for some new glasses recently. I came back even worse off than Steven.

## Distorted Sound

On my return Cecil Stammer was waiting with a 14in. Samsung colour set, Model C1338GA (P50 chassis).

"Ah Mr. Buh Buh Buh Buh" he started.

I came to his aid. "Bullock?"

"Yuh yuh yuh yes. My Sam Sam Sam"

"Samsung" I propted.

"The suh suh suh"

"Sound?" I asked.

"Dis dis dis"

"Leave it with me and call back later" I said.

The sound turned out to be very distorted indeed. Recalling the patient man who struggled to teach us to think

logically all those years ago I first tried another speaker. The results were the same.

So I moved back to the audio circuit and found that R614 was open-circuit while R601 (2.7k $\Omega$ ) had risen in value to 6k $\Omega$ . Replacing them cured the trouble.

## A Visit from the Milkman

Our milkman Clarence brought his Pace SS9000 satellite receiver in the other day, the complaint being of a liney, distorted picture on all channels – as though Rupert had got at his card. Steven soon found the cause of the trouble – that small 2.2 $\mu$ F, 50V electrolytic in the tuner unit (C416). It sat there looking as good as gold, near a little three-quarter inch chip.

Apparently the chip gets hot and dries out the electrolytic. Steve fitted a more manly one on the full length of its leads.

A few days later Clarence popped in for it.

"Hi Clarence" I greeted him. "The good news is that it's ready.

"And the bad news?"

"The milk's on you, for quite a while."

## Accidents will Happen

As he departed Mrs. Whiner pushed Mr. Whiner through the door. He smelt like a brewery and was carrying a little monochrome 7in. set that bore a Boots badge. It was a pretty crimson colour, like Mr. Whiner, and was dead.

"I watches it in the kitchen" she said. "It can't be much as it was all right until I went out and left it with him."

Mr. Whiner smiled. "It was all right" he said.

We had no data on the set and opened it up on spec. It was soon apparent that the set had been dropped: there was a crack across the single panel, spreading from the line output transformer. Six or eight jumper leads later we had the set working again, but there was a nasty a.c. ripple on the picture, which pulled about and lost field sync. There was also no sound. The latter came up when another speaker was tried. We found that the 'spider' of the one in the set was detached and repaired it. We then noticed that there was a good deal of hum.

The set relies on an external 12V power supply, the sort that plugs straight into a 13A socket. We suspected this item and found that Mrs. Whiner had a spare one. She brought it in later and we tried it, but the ripple and hum were still present. Puzzled, we had another go at the set but got nowhere. We finally borrowed a power pack from one of the children's games and tried it. The ripple and hum disappeared.

So we had two dud power packs from Mrs. Whiner. We opened them both and found that in each case the main electrolytic had become detached from the tiny panel. When we studied the cases it was clear that the power supplies had also been dropped.

We'd originally felt a bit sorry for Mr. Whiner and hadn't intended to shop him. But this was too much! So when they came back for their set we let him have it.

"The set had been dropped, Mrs. Whiner" we said, "and so had both the power packs. Twenty pounds, please."

Mrs. Whiner turned to her spouse and elbowed him around his beer barrel. "You stupid clot" she grated, "you pay – you did it."

And he did. As he unbuttoned his overcoat he knocked the power packs on to the floor.

"So 'elp me Christ" said Mrs. Whiner, fetching him another jab.

# What a Life!

**Donald Bullock**

Life is funny – if you don't weaken. It doesn't seem so long ago that I managed to give our local newspaper the slip and wheedled my way into Foyles Furnishing store. In the early Fifties old Tom Foyle's shop housed the biggest and best television business in the city. Television was new, and it was big business. And since every set then produced was a trouble timebomb the shop needed, and had, a fair-sized service department.

If there was one thing that I enjoyed as much as scribbling it was tinkering with wires. I was happy indeed when Foyles took me on as a workshop lackey and vanboy.

I can still remember my first solo service call. It was to a local pub. The landlady, Mrs Brawler, was rough, loud and wayward. And always somewhat sloshed. But no one at Foyles would tell her so – she spent a lot of money at Foyles.

## **The Faulty Ferguson**

She had this 14in. Ferguson set, a Model 932 or 934 I seem to recall. There were two similar models, hers being the one with flywheel line sync. It had about twenty two valves but still had difficulty locking to the ITV signal, which crawled from Sutton Coldfield to our city in Band III.

Anyway, back to the story. One day Mrs Brawler rolled into the shop in a nasty mood and asked to see the service manager. He was afraid to see her, and the only mug in the workshop was me. So I was sent down to the showroom, where Mrs Brawler was amusing herself pounding the ivories of some new pianos.

"I've come to help with your television problem" I announced.

"You don't look to me as if you could do much about it" she replied. "ITV slipped all over the place last night, then it collapsed to a bright line across the screen. That's not what I pays you good money for. The set's here more than it's with me. I've a good mind not to go on having it."

She eventually departed after I'd promised her that something would be done. When I went back upstairs the service manager handed me an ECL80 and a screwdriver, and explained which of the many valves to change. I had to walk there, but felt too important to mind.

## **The Field Call**

Mrs Brawler's sitting room was even scruffier than her pub. Her TV set sat on a mountain of shoes and other things in the corner. When I'd got the back off I juggled the ECL80 about and to my amazement restored the field scan. Then I gripped the chassis and picked up the aerial lead by the coaxial plug, learning the hard way about live chassis. I tried again and got a picture. Fortunately the ITV signal was good that day. Mrs Brawler was delighted.

"You don't look up too much" she said, "but you've got more brain than all the others there put together. That service manager would have taken the set away and sat on it for a month. Come on with me."

We went down to the bar, which was closed. She gave me a pound out of the till, then poured me a whisky.

"I don't, er... drink whisky" I said.

"You do when I gives it to you" she said.

And I did. And another. And that's all I'm going to say about that day.

## **Steven's Approach**

This reflective spell was brought about by son Steven who decided, two or three years ago, that he wanted to learn the trade. He started to work beside me, and the speed at which he picked things up astonished me. He's now taken a nearby shop, where I'm allowed in from time to time to sweep up and make the tea.

There are differences about the way in which things are done. He's polished and professional. He bobs about a lot, has a thousand books to hand and uses proper job cards that I can't even fill in. I prefer my way of doing it. Just keeping still, jotting the customer's name, address and telephone number on a bit of paper and having a yap and laugh with some of them. He seems to attract a different type of customer – younger, brighter, better off and more go ahead. Ah well.

## **The Rev Goode**

The phone rang and I decided to answer it.

"Which Mr Bullock is that?" asked a fruity voice.

"The wrong one" I said.

"Good" the voice said. I squinted into the earpiece. "The Reverend Goode here. My daughter's new boyfriend borrowed her GoldStar video. It now accepts a tape partially then rejects it. I'll be along in half an hour."

And he was. The machine he brought in was a player only, not a recorder. I examined the cassette carriage and saw that when a cassette is inserted its lower front edge should depress two levers, one on each side. This releases a pair of spring-loaded levers, easing the tape transport mechanism into the playing position. Because of some rough handling the levers were bent and the cassette was barred. Bending them back gently restored proper operation. It had taken only a minute, and the Reverend had seen it all. I put the machine's top back and handed it to him.

"I shall remember your kindness, my son" he said, "and bear this in mind – what a man feels in his heart, he is."

"Oh, er, yes" I said.

## **A Spotty Video**

A dapper little man then danced in.

"How d'ye doo" he yelled. "Nubb's the name, Naylor Nubb. And I don't mind telling you I have a problem. It's spotty. It works all right but it's spotty."

"Let's have a look at it then" I replied.

He darted out to his car and returned with an Osaki VCR33 VCR. "Oh God" I said.

"Picture's covered in spots" he shouted. "Spots, spots, nothing but spots."

Then he departed and I opened up the Osaki. It played, but the picture was, as he had said, a mass of spots. And there was no rewind or fast forward.

I decided to get the tape transport right first, and examined the idler. It made contact, but the spools didn't move. Cleaning it made no difference. So I took the bottom off the machine, de-goosed the mechanism then lubricated it. This did the trick, and a video head clean cured the spotty picture.

## **The Shed Door**

Just as I'd finished the Osaki the phone rang. I answered

it and heard nothing but silence. Then Dr. Beckett came on. He's nearly ninety and a bit soft in the head. Since I repaired his old radio he seems to think I'm an odd job man.

"My shed door is jammed half open" he said, "and the drain smells."

"Right" I said. Off he went. I lifted the phone and dialled.

"Sam? Your Pa's been on again. Shed door jammed, drain stinks."

I put the phone down and turned around to see Creepy Gertrude Global beside me. She seems to materialise out of thin air, and it's always bad news.

### ***Gertrude's Panasonic***

"It's my video recorder" Mr Bulbous, "it's going like hell." She had this Panasonic NV430 in her arms.

When she'd departed I put the machine on the bench and tried it. She was right. The capstan rotated at a ridiculous speed. And it did this with all functions. I looked out the manual and homed in on IC2. When I applied freezer to it the capstan slowed to normal. When I heated it the capstan raced off again. We had a similar machine in the rack, so I borrowed the chip and fitted it in the NV430. The fault was still present.

What next? I peered about and spotted C9, a 1 $\mu$ F, 60V electrolytic. Switching my brain from logic to prejudice, I proceeded on the basis of an old principle of mine – distrust low-value electrolytics. To confirm my prejudice I took the electrolytic out and checked it with my bridge. It read exactly 1 $\mu$ F. I stopped and thought. Then I stopped thinking and replaced it anyway. The fault had been cured.

As I was boxing it up Gertrude reappeared and the phone rang. I lifted it but got only silence. By this time I was beginning to feel a bit frayed.

"I've had enough of this" I shouted, and put the phone down.

Gertrude drew back. "Can't you do it?" she asked. "My husband said it was only a condenser."

"No such thing as 'can't' around here" I snapped. "But you're dead right, it was a condenser. It's been done and the charge is twenty pounds."

"Twenty pounds for half an hour's work?" she whimpered. "How much are condensers. About sixpence each, aren't they?"

"Cheaper than that" I said. "They grow on trees. But you have to know which one. It's the diagnosis that takes time, and I don't live on air."

She came up with the tenners, but I could detect that she was less than convinced about it.

# What a Life!

**Donald Bullock**

The other night, as I swallowed my blood-pressure pill and slyly topped up the tiny whiskey that Greeneyes had poured me, I got to thinking about some of the scrapes that this trade has got me into over the years.

## **Sandals**

For example there was the time, many moons ago now, that I broke my resolution not to do house calls any more. I don't know why I agreed to call upon Mr Smooth. Perhaps it was because he caught me at a weak moment, or maybe it was because of his soft, harmless-sounding voice. Or perhaps I saw a quick dollar in it. He said that his TV set's volume control operated roughly and wanted me to cure it. So I grabbed my can of Murphy line output transformer oil and showed up at his terrace house down by the park. He asked me inside and closed the front door. We were in a long, narrow passage. Then he looked at my shoes.

"Please will you be wearing these instead" he said sweetly, handing me a tiny pair of sandals. I looked at the sincere eyes glinting from his black-whiskered face and found myself slipping off my shoes and wishing I was some place else.

"Come" he said as he started down the passage. I tried to follow but the sandals were too small and kept falling off. He stopped and waited patiently. When I'd managed to wedge them on we started off again. We went into a dusky room at the end of the passage. The air was sweet and the odour of curry lay thickly. An old TV set and a woman in a barber's apron rested on a mountain of sandals. I glanced at them anxiously, looking for a pair of size tens, but no luck. So I yanked the TV set upside down, squirted the volume control then got the set upright once more. I noticed that they were both staring at my right foot. Oh dear, my big toe showed through a hole.

I slipped back into the sandals, hobbled back to the front door and got out quick. I'd never felt such a prize sap before and resolved never to tell anyone about it, ever!

## **Problem with a Door Bell**

Then there was the time, one winter's day, when I delivered a repaired set to a very grand house. It was snowing heavily on to an already thick carpet of snow. The front door was set at the top of a high flight of steps. To one side there was a bell-pull. I balanced the set on one knee so that I had a free hand to pull at the bell then, as I gripped the pull, I slipped and, to a crazy cascade of bells, wound up at the bottom of the steps – with the set on top of me and the bell-pull in my hand, attached to yards of wire. The butler, who'd opened the door, looked down with undisguised contempt.

## **The Debt Collector**

One more, the time the firm's debt collector roped me in to help him repossess a TV set. I was to ram a pin through the coaxial cable just before he knocked on the door to ask for the back payments. His plan was that the customer would claim that the set had never been right.

He'd take it away under the pretence of getting it put right. I didn't know that the set had been tampered with, nor that it would turn out to be a filthy night. What I did discover was what it felt like to take the mains to earth.

## **Mrs Tench's CD Player**

Mrs Tench called in the other day with an Hitachi DA6000 CD player. She's a nursery school teacher and doesn't seem to be able to forget it.

"Listen carefully!" she commanded. "The door opens. You insert a disc. Then there's a pause. After that the door opens again and the disc comes out! Isn't that remarkable?"

When she'd gone we pulled the player on to the bench. It didn't take us long to find the cause of the trouble: the loading belt was slipping. It lives to the top right of the carriage assembly. After fitting a new one I asked Steven to phone to let her know that it was ready for collection. "What's her name?" he asked. I told him.

"It's ready Mrs Stench" he said.

"Tench, Tench, TENCHI!" screamed the phone.

"Struth" said Steven, "funny woman."

## **Squat Picture**

I don't know who our next caller was. He brought in an old 16in. Philips set, one fitted with the KT3 chassis. I pulled the pad over and asked for his name and address. Although his mouth moved, I couldn't hear anything. After trying a couple more times I gave up and asked him to return later. Then I gave Steven a pained look.

"Another" I said.

He put the set on the bench and tried it. The picture was only about an inch high. So he took out the field output transistors and tested them.

"They're o.k." he announced.

"Nevertheless, try new ones" I replied. He did, and up came a full picture.

"Often happens with those sets" I continued, "and be careful when you lift the chassis up and down. The leads to the tube base get caught up and if you're not careful the stress will cause print cracks. You could loose one or more of the colours – or possibly the brightness should the tracks to the heaters go open-circuit."

## **No Channel Storage**

We'd a Fidelity CTV1404R awaiting attention (these sets sometimes come in as the Murphy M14R01). It worked all right but wouldn't store the channels. Knowing the set, I checked for 24V at pin 3 of the M491BB1 remote control decoder/tuning chip IC301. As it was low at 8V I went straight to the 33V stabiliser ZD1. It was warm and leaky. A replacement (type MVS460-2) put that right.

I then noticed that the picture would occasionally quiver and the sound fizz. There was a dry-joint at the 1 $\Omega$  surge limiter resistor R112 in the 25V supply. It hides near the line output transistor's heatsink. To be on the safe side I fitted a replacement.

## **The Sharp VCA105HM**

I'm fast becoming fed up with repairs to the latest generation of VCRs. In fact I can hardly operate some of them. Steven's got a different type of mind and seems to be able to take them in his stride. So I'm happy to leave them to him and concentrate on TV sets and machines with control knobs on them.

The other day he had a Sharp VCA105HM on the bench. It would accept a tape and made to operate, then ejected the tape. Steven took off the top and tried again. This time the loading mechanism jerked about in sympathy with intermittent capstan movements.

He homed in on the mode switch, which was full of goo. Cleaning and resetting it cured the fault. Then he pulled up another machine, again a Sharp VCA105HM. With this one a loud vibration noise came from the capstan on all functions, including load and eject.

"Ah" he said, looking intelligent (he takes after me in some ways), "the capstan shaft bearing will be dry." He took it out, cleaned it, greased and reassembled it. The machine then worked perfectly.

## ***A Matsui 2180TT***

Just then Greeneyes clopped in, closely followed by a chap who looked like the Pied Piper on hard times. He was wearing a cravat and smoking a Woodbine in a long holder. I remembered him from about three years ago.

"It's Mr Flighty" Greeneyes announced. "He's got this

faulty Matsui colour set. It's dead and goes bzzzzz, bzzzzz, bzzzzz – doesn't it Mr Flighty?"

Flighty nodded vigorously and started making a kyocking noise and falling about.

"How do you know?" I asked Greeneyes.

"Because he's been telling me all about it" she replied.

I turned to Mr Flighty, who was studying my face.

"My, doesn't time play tricks?" he said.

"Never mind about that" I replied, "what about the set?"

It was a Matsui 2180TT (Saisho FST212T). We got it on to the bench and tried it out. It produced a channel display but nothing else – except for the buzzing.

"Ah, I've had this before" cut in Steven. "It might be the STR58041 chopper chip IC501, but check the R2M crowbar diode D512 first. It'll probably be short-circuit. And check for dry-joints at R427 and R428 in the line driver stage. Another fault I've had with these sets is that the negative from the on/off switch arcs itself open-circuit, where the metal gripping pin bites it." I moved over to let Steven deal with the set. He had it going in no time. I looked about the workshop and noticed that the floor needed a sweep. So I reached for the broom.

# What a Life!

**Donald Bullock**

Until a year or two ago things electrical and electronic cost the earth here in Spain. They're cheaper now, often cheaper than in the UK. So we decided to buy a portable colour set in Alicante for our daughter Rebecca's eleventh birthday. Amongst the sets on display there was a Polish Kneissel KN1432. It not only looked nicer than the rest, but also had by far the best picture and an elaborate remote control unit. And its price was around £100.

We bought it, but because Rebecca wanted to see British satellite television the vision-sound spacing had to be changed from 5.5 to 6MHz. The filter was amongst others in a very complex i.f. module which was screened like a tank. As changing the filter didn't produce the sound we decided, instead of playing hit-or-miss, to drop a line to Poland asking for advice – and hoping for a manual. A few days later, at ten to eight in the morning, we received a fax message to tell us that a suitable replacement module was on its way. Two days later it arrived, along with a letter from Pawel Pietrzak of their technical department.

He explained that the set hadn't been produced for the PAL I system. So they'd knocked up a filter unit specially for us in the factory – at no charge. "We've checked it on your satellite and it works well" he wrote, "have a nice watch!"

We fitted the module and it does work well. The parent company is Daewoo. We are grateful to them and to Pawel Pietrzak. It was far more than we expected. Service indeed.

## More Good Service

Whilst on this subject I'd like to mention the help we received from two advertisers in *Television* when our children's Fidelity/Amstrad satellite receiver/decoder died on us here in Spain. It's an SRD510 that had become temperamental: it would sometimes fail to come to life, though the mains rectifier's reservoir capacitor charged fully. As we didn't have the manual I faxed an order for one that

evening to Harrison Electronics, with a bank card number. An hour into the next day I received a fax to tell me that the manual had been dispatched, at only £6.50. Good going. I'd never even dealt with Harrison before.

Meanwhile I'd noticed that J.J. Components, that pleasant family firm run by Jay and Lala Poppat, was advertising a repair kit for the SRD510, complete with Idiot Sheet, also at £6.50. At this sort of price I can afford to be a big spender. So I ordered the kit, again by fax.

The manual and the kit arrived two days later. Within an hour we'd repaired the SRD510. Our thanks to both firms for their better than excellent service.

## Satellite Radio Reception

Richard, the Bradford TV dealer who has retired to these parts, uses the same Pace receiver that we do. He popped in the other day with a tiny printed panel, scarcely bigger than a cigarette card (does that date me?). "It's an f.m. transmitter" he said. "I've built it from a kit and fitted a scart socket to it. If you plug it into your Pace receiver you can hear the UK radio programmes on any radio about the house and garden. So can next door, if you tell them the spot on the dial."

He was right. The kit, made by Suma Designs of Baxterley, Warks, is priced at £20. It comes with building and setting-up instructions, a layout and circuit diagram. What it does is to take the stereo signal, convert it to mono and transmit it at about 107MHz. This one had a range going on for a hundred yards. The quality is astonishing. Now, when we're in Spain, we can listen to Radios 1, 2, 3 and 4 as easily as in England.

## Sideways

Our youngest son called out the other day that his television set was showing the TNT cartoon programme sideways. Then Rebecca said that her's had been doing the same thing for hours.

Now curious, I went and had a look at the sets. The programmes were indeed sideways, as if the yokes had been turned through 90°. Apart from that the vision and sound were normal. I rubbed my eyes, went into the lounge and switched on our set. It was the same. Then, as we watched, the adverts came on – the right way up. An hour later everything was back to normal.

Leaving aside the matter of compe-

tence, I'm wondering what sort of transmission system could bring such a thing about and how come the adverts were correct?

## A Microwave

Back at the bench I had a caller – literally – the other day. "Are you the one who does things?" she yelled. "It packs up after three minutes."

"What does?" I asked.

"My microwave. It's a Foodcare Finesse, Model 500". She darted out and brought it in.

When she'd gone I put it on the bench and found that she was right. After three minutes it got so hot that the thermal cut-out disabled the power supply. When I opened it I found that the fan blade assembly had fallen off its shaft. I cleaned it off, washed it in spirit and glued it back with epoxy resin. After that it worked all right. Since then two more have come in with the same trouble.

## Glad's VCR

Bulky Gladys Glubb brought in her Goodmans GVR3400 VCR, her complaint being that the programmes wouldn't tune properly. We groaned: we didn't have the manual, and were unsure whether we'd be able to mend it if we got one. But we decided to take a look, and luckily saw the cause of the trouble. There were hairline cracks around the fixing screw holes. After making good the connections we fitted fibre washers and reassembled the unit.

## A Sony KVM14U

The chap who brought in this 14in. colour portable said that it was dead. "Makes a thumping noise at switch on, then nothing else" he added. We opened the set and through force of habit checked the line output transistor. As it was all right we moved back to the power supply where the RGP15J h.t. rectifier D604 was short-circuit. We tried another diode with the same published specification: it lasted about thirty seconds before groaning and grumbling to its demise. Then we tried a BYD33D which is still working on the test bench. But knowing Sony sets we've ordered the correct spare.

## Fred and the Ferguson 51J8

Fred's a funny chap. I don't know his other name or his address, nor does anyone else I've met. He seems to operate from a couple of towns away and certainly pulls in the customers.

His little adverts in the *Western Blurter* promise ever such fast repairs for no call-out charge. Just ring 123456, ask for Fred and it all happens.

But Fred seems to upset some of his customers. And when they phone to complain or ask for their money back he can be hard to get. Mabel Mugg had phoned Fred. He instantly appeared, took her Ferguson 51J8 (TX99 chassis) set away, and speedily concluded that its line output transformer had snuffed it. Then he rapidly assessed his charge – over £100. Mabel, who earns a couple of quid an hour from her 6 a.m. cleaning job, said no. Four or five phone calls later her set came back to her. Guess who she called next!

When we switched her set on there was just a tiny, faint dot in the middle of the screen: no line or field scanning. We went straight to the little paxolin panel at the top of the scan coils and found that the line joints were a bit

dry. Worse than that, the printed tracks had been severed with a knife where they joined the solder pins. We made this good, switched on and got a snowy raster with no display or functions. This, said Mabel, was the fault that Fred had been asked to repair.

We found that R334, a fusible 4.7 $\Omega$  resistor on the TACS board, was open-circuit. It provides the feed to the  $\mu$ PC7805H 5V regulator chip IC242 which in turn supplies the M494F tuning/analogue function memory chip IC241. Replacing the fusible resistor cured the trouble and made Mabel a happier lady.

### **A Stuck Hitachi**

The next set on the bench was an Hitachi C14-P216 (G7P Mk II chassis) which was stuck in standby. Steven dealt with this one and had it working in no time. The start-up resistor R903 (82k $\Omega$ ) was open-circuit. We've had this before. There were also some dry-

joints around the line output transformer. Some resoldering in this area did the set's reliability a power of good.

### **Arthur's GoldStar**

Arthur's a slow fellow who farms locally. He came in carrying a Gold-Star CIT2175X colour receiver. "Sound's there but there's nothing on the front" he said, looking bewildered at this state of affairs.

We marked the position of the first anode preset carefully, then advanced its setting. Up came a milky blank raster. We suspected the TDA4502A i.f./timebase generator chip IC201, but as we didn't have one in stock we decided to check transistors Q201 and Q202 first. After all, they had fewer legs. But they were all right. So we phoned GoldStar's excellent technical people who confirmed our diagnosis. They supplied a new TDA4502A quickly and it did the trick.

# What a Life!

**Donald Bullock**

"Now that we spend more of our time here in Spain" commented Greeneyes the other day, "why can't you start to get things right? There's that dripping tap for example. And why not fill in some of your time and earn us a little pocket money by doing the odd repair?"

"Because", I said "to start with I'm not a plumber, and once you get into repairs they never finish. Look how it's been all the years I worked from the house. On how many days was I able to sit down to dinner without the phone going or somebody tapping on the door?"

"I would have thought you could manage one or two. Ivor asked you to stop the tape spilling from his video and you put him off. He went to Graspero's and they kept it a month then charged him fifty quid. You could have done it for a tenner, and with that we could have had a good meal out."

Her logic was impeccable. It always is. So when Albert, our local plumber, asked me to look at his video recorder I agreed. It was only a greasy idler, so I did it for free. In return he fitted a new tap for us. "You see" she said.

## **Life In the Sun**

A busy main road runs down the entire Spanish Mediterranean coast. Towns and villages are strung along it. Most of them manage to support a crop of dealers, who are often British. They make a living by providing satellite systems, mainly to UK expatriates. Because Spain is on the edge of the main European satellite footprints the signals are weak. So receiving systems that use an 0.8dB LNB and a 1m or larger dish are common.

When I first came over I bought an 80cm dish and an LNB with a noise figure of 1.2dB, because I didn't know better. Reception was awful. So I upgraded to a 2m dish and a better, 1dB LNB. These produce perfect pictures, but when I see the programmes I wonder why I bothered.

Pirate Sky decoders are common here. Whilst browsing in a satellite shop recently I overheard a conversa-

tion between a dealer and a fellow engineer. The dealer was showing him the decoder he sells for £25. It consists of a simple 2 x 4in. glass-fibre PCB with eight switch contacts that are connected to three surface-mounted i.c.s - a pair of PIC16C84s and a tiny 24C65/CM. It seems that the decoder gets all the programmes and works perfectly.

"We tell the customer to bring it back if it stops working" the dealer said. He jerked his thumb heavenwards. "When the switching is changed up there the boys here crack it again and send over the new code on an EEPROM. This goes into the machine and when the decoder is popped in the new code is written into its chips."

That coastal road takes you to Alicante, though not very quickly. It runs through a very long tunnel which is lit by a series of closely-spaced orange lights to the top at each side. For a long time it's been my impression that as the lights flash past in the car they become redder - a sort of frequency-shift or a visual Doppler effect. But since I'm known for noticing odd effects (and people) I thought no more about it. Until the other day, when some passengers in our car mentioned it. Since I wasn't travelling at the speed of light - I don't, these days - I am wondering whether the mains frequency strobes with the car's speed or something. There must be someone out there who can come up with an answer.

I've built a small workshop and equipped myself with some tools and a Band III aerial. Incidentally there are numerous huge Band I aerials here, larger than anything I ever saw in the UK in the pre-u.h.f. days.

## **Satellite Solutions**

Then I required a satellite signal. I tried splitting, then James and Rebecca wanted signals as well. So it was time to consider a proper installation. The correct approach is to fit a dual-polarisation LNB, run its outputs to a magic box and feed the outputs from this to separate receiver/decoders. But it all seemed rather costly.

Satellite Solutions of Northampton came up with the right answers, and I'm very grateful to their John G. Jones who went to the trouble of faxing and telephoning me with advice and arranging for the delivery of the equipment to Spain. It arrived within two days.

I wound up with some Maspro ST8 receiver/decoders at less than £80

each, a dual-output Continental LNB and a Global magic box, plus the necessary cable and accessories.

## **Pedro's Video**

Pedro runs a local restaurant here. The other day he came around with a Japanese video. "I've half mended it" he smiled, "but it only half works." It was then that I noticed Pedro's hands. Like Popeye's. So I hastily got rid of him and tried the machine out. It accepted a tape and tried to load it, then died. I found a cotton bud sticking into a cracked-open microswitch on the cassette mechanism. As it was unlike anything I had here I made a pair of spring contacts and glued them on with Araldite. To my surprise it worked.

## **His Sister's Samsung TV**

Pedro subsequently recommended me to his sister Carmen, who brought along a Samsung TV set. When I plugged it in a cramped raster that kept shimmering yellow came up. Then the raster died though the sound remained. I took a look at the chassis - I didn't have the circuit - and noticed that some components in the line and power sections were covered with a tacky goo, among them a 2SD288 transistor (Q802) and some electrolytics. The transistor was cooking and proved to be short-circuit. After removing the gooeey stuff I checked the capacitors. C821 (100µF, 100V) and C829 (330µF, 25V) were very low in value, while C415 (1µF, 250V) was open-circuit. Replacing them cured the trouble.

## **A Sony KV1612**

Then a fax arrived from Steven. He had a Sony KV1612 on the bench, its problem being vertical striations that were strongest at the left-hand side of the screen, fading towards the right-hand side. What did I think could cause this?

"Easy" I replied, "something's modulating each line, producing a ringing effect that falls off as the line scan progresses. But don't ask me what!"

He came back a bit later. A 22µF, 250V electrolytic, C801, had been the cause. It's the reservoir capacitor for the line output stage derived 200V RGB output transistor supply.

## **Flashes and Bangs**

By now the sky was leaden and all

was still. Thunder came rumbling round the mountains, then lightning flashes came. Within minutes there was a storm, and we seemed to be at its centre. I disconnected the fax and plugged in the cheap telephone, bought from Rogoes market stall.

Suddenly there was a deafening thunder clap, and a whisp of smoke came from the telephone junction box as our lights went out.

I reset the mains trip and the lights came on again. The phone was as dead as mutton, the junction box reduced to soot.

When the rain eased, Ivor appeared.

He was carrying his Pace PRD900 satellite receiver/decoder. "Struck" he announced.

The telephone line was fixed next day, and we added 'cheapjack phone' to Greeneyes' shopping list. A little later I opened up Ivor's PRD900. Some print on the primary side of the power supply had melted and C6, a 1,000 $\mu$ F, 16V electrolytic, had arced across. The mains fuse was a tube of soot, and the TEA2018A chopper driver chip was blackened, as was the MJE18004 chopper transistor Q1.

I checked the circuit thoroughly before writing out the spares list, but

the only other item that was faulty was C5 (22 $\mu$ F, 16V). It was leaking like a Whitehall secret.

The spares arrived a few days later. Having fitted them, I gingerly wound up the supply to the receiver via the variac. At about 180V it chirped happily and slipped into standby. On test it worked excellently.

## ***Apology***

Our apologies to Jay and Lata Popat for the spelling mistake in last month's column. The editorial department blames a fax which was none too clear.

# What a Life!

Donald Bullock

I was scribbling away in my little Spanish hut the other day when I heard a sudden shout from inside the house. It was Greeneyes. I ran over and found her looking at a fax.

"It's from Steven" she said. "He's taking you to task for being away so long. Says he's redesigned the workshop and has some interesting sets awaiting your attention."

So, pausing only to buy a few £3 bottles of Scotch for me and a gallon of Jalon Valley red wine for Steven, I returned to a proper pint of British beer and another batch of the oddballs who seem to comprise the major portion of our clientele.

## Gladys's Toshiba

Once I'd settled down, the first customer to arrive was scruffy Gladys Mugwump. She brought a Toshiba 213D4B black-stripe colour set in just as I was trying to complete a tricky bit of soldering. I decided that she could wait a minute. Then I noticed a strong smell. Perhaps I'd better get her out quick. So I put the soldering iron down.

"What's your trouble?" I asked briskly.

"Keeps going dead. Then it thinks it's a rainbow" she said. I waved her out and returned to my soldering. Only the smell got worse. It turned out to be the flux in Steven's reel of CEL 60/40 solder.

She'd been right about the set. I opened it up, reached for my giant magnifier and found some dry-joints. First at pins 2 and 3 of the line output transformer, then at both legs of the safety resistor R421. The rainbow effect on the picture was trickier. Its cause turned out to be a crumbling carbon tablet in the degaussing piston.

## Looking Ahead

Later Mr and Mrs Lee brought along a JVC HRD180 VCR. She was thin and baked while he looked like a Spanish gypsy. "You enta spendin' much" he said to her as he stretched his face to the top video shelf. "You enta spendin' much."

The VCR turned out to be dead. I soon found that the STK5481 regulator was the cause. It's like a large, twenty-legged domino. Once a replacement had

been fitted the machine came back to life and worked well. Except that the LP picture was broken up and unwatchable – the accompanying sound was perfect however. After a good deal of work I contacted the boys at JVC, who were keen to help. But they couldn't and it's still not fixed. Any ideas?

Mrs Lee called in alone next day. Instead of asking about her VCR she picked up the cup I'd just put down and studied the tea leaves.

"I see that your life is a string of problems" she said. "As fast as you overcome one, along comes another." I nodded sadly. "Your money line tapers to nothing, and you're the victim of a hard woman. I see only work and worry and a feeling of failure. And there's going to be the pain of an accident. But I can see some fun. A fool will soon enter your life and there'll be rueful laughter." With that she departed.

## Field Collapse

It was time for lunch. Steve decided to have some of his Jalon wine and was quite talkative by the time Mr Creep came in with his Ferguson TX90 set.

Mr Creep talks slowly, as his eyes dart about your face. "The picture cramps up and turns into a straight line" he drawled. "Don't sound like much to me, do it? 'T isn't the tube, I knows that. And it ain't the line transformer thing, the dear 'un. I knows that too. Ent much else in 'em, is there?"

I soon found that R198, one of the string of four 6.2kΩ resistors that provides bias for the field output stage, was open-circuit. It seemed sensible to replace the lot, also the field output transistors TR104 and TR105 as a precaution.

As time goes by I find the thin print in this chassis less easy to work on. Meanwhile Steven was grinning as he reached over for the Avo, which fell on to my foot. I howled – I was wearing sandals. "Well" I said, "so much for the fool and the pain of the accident."

I next picked up a GoldStar CIT2168 Fasttext set – the PC04A chassis. The sound was all right, but there was nothing on the screen. As with most sets these days, the screen blanks out when the field output stage stops working. I advanced the setting of the first anode preset to confirm this – after carefully

marking its original position with a blob of paint. This produced the tell-tale horizontal line.

Visual examination showed that R320, a 10Ω 1W resistor, had cooked. It read open-circuit. I replaced it and switched on and the new resistor went the same way. So I got out the circuit diagram. The field timebase is a simple one based on a TDA1170N chip (IC301), with R320 and C301 (1,000µF) filtering its supply. C301 was obviously suspect but turned out to be all right. Further checks brought me to C302 (100µF, 35V) in the flyback boost network. It had fallen in value to 80µF, thus damaging the chip. Replacing these two items and fitting another 10Ω, 1W resistor cured the trouble. Up came a plucky picture on a model that always seems to me to look as if it has a slightly flat tube.

Before boxing the set up I checked, as usual, for dry-joints. There were quite a few, and I resoldered every one of them.

## Julian's Saisho

There are certain people I can't stand. Julian Jaunty is an example. He brought in a Saisho CM16TT portable and stood too close, grinning at me as though we shared some secret.

"What's up?" I asked, rather coldly.

"Dead as a door nail, Donny old chap" he grinned.

When I tried it I heard the rustle of e.h.t. but there was no sound or brightness. Again I marked and upped the setting of the first anode preset. This produced a blank raster, which was not what I expected. Rather than think too hard I flexed the PCB and was rewarded with a good picture and sound. It didn't take me long to find that one end of D408 was dry-jointed. I resoldered it, to the accompaniment of that strong smell, and that was that.

## A Dead Samsung

When I saw Mr M'Babwa approaching the shop with his Samsung TV I toyed with the idea of popping under the counter.

"This set no good" he announced. "No sound, no picture, no nothin'."

"O.k., o.k." I said, "just leave it and don't worry."

When I tried the set, a Model

CI54129, I found it dead though the channel indicator was alight. Seeking an easy way out I examined the chassis with my magnifier, looking for dry-joints. I found some around relay RL801 and P802, a funny little blue resistor thing. Resoldering them restored the set to good health and made me think of a glass of Guinness.

### **An Old Sport**

Mr Prism is old but slim and sporty. Since I have no interest in any games or sports except fishing, I find him a decent old bore. He sprang in with a Ferguson 2203 and told me that Newcastle had just won six to five and that Sid Munks of Spurs had cracked his ribs. Then he pointed to the set.

"It's a TX100" he said. "Have you worked on TX100s?"

"Like no one else" I replied. Then I pulled it on to the bench.

It was lifeless, though the relay clicked at switch on. I reached for the old cream-coloured Avo that Steven had picked up somewhere and checked at the collector of the BU508A line output transistor TR10. The reading was only 55V. It was no better when I disconnected TR10. So I moved back

to the h.t. supply source where I found that the 47 $\mu$ F, 160V reservoir capacitor C121 was almost open-circuit. A new one brought the h.t. back to 119V and the set came to life.

"Well" bawled Mr Prism when he called to collect it, "didn't Arsenal take a drubbing?"

### **Familiar Fault, Unfamiliar VCR**

I next picked up a VCR and almost put it down again when I saw that it was a Blaupunkt. A Model RTV301, the first Blaupunkt I'd seen. But it looked vaguely familiar. I opened it up and saw that it was really a Panasonic NV370. The fault had a familiar ring about it as well. The clock display was all right, but at switch on the capstan motor shuffled a bit then the machine shut down. I homed in on the power pack at the rear right of the machine and spotted a couple of fusible resistors in yellow plastic overcoats. One of them, R1101, was open-circuit. A replacement restored normal operation.

### **Final Round Up**

"It's ticking" said the sweet little thing who came in with a Ferguson

22B2. It was another TX100. Apart from the ticking it did nothing. When I opened it up I found that the solder joint where the mains lead joins the chassis was dry and arcing. Resoldering it cured the trouble.

Saisho and Matsui sets continue to come our way. This one was a Model 1476 14in. portable, just out of guarantee. At switch on the standby light lit. It went out when the set was switched from standby, but the set refused to come to life. I suspected the STR50103 chopper chip IC501, but cold checks suggested that it was o.k. Though working without a manual, I soon found the cause of the trouble: the chip's start-up voltage was missing. Pin 2 should receive a feed via two 330k $\Omega$  resistors, R502 and R503. One of them was open-circuit. In view of the high value of these resistors, I expect to come across the fault again in the months ahead.

It had been a long day. After our meal Steven and I settled down for a drink – or two.

"You won't believe this" said Steven, "I'm beginning to feel a bit squiffshy."

"Personally I feel fine. Ish because I'm more mature I shpect."

# What a Life!

**Donald Bullock**

I just can't handle the video rental business Steven has built up, nor the customers it attracts. So when Steven decided to take a few days off last week he arranged for young Doreen Dense to look after that side of things.

## **A Pile of TVs**

Come Monday morning I decided to attack the nasty jobs that always seem to edge towards my end of the bench. The first was a 5in. JVC colour set, Model CX60ME, whose operation was intermittent. I'm not always able to open little TV sets. The last time I tried, every screw I undid made something drop off inside the cabinet until I had a sealed box full of bits. I hoped for better luck this time.

I needn't have worried. It opened easily. I noticed a small panel that stood up on one side of the main panel. Waggling it produced and cleared the fault. The joints were dry, and resoldering them cured the trouble. That hadn't been too tricky. I looked towards the next job.

It was a tired-looking Bush 2020T colour set. "Goes envious" said the card, in Steven's writing. He's getting to be quite a wag. The picture and sound seemed normal to me when I connected the set to the mains supply, so I left it running. I was just about to pick up a further job when this French fellow breezed in with a Blaupunkt FM100-21AX colour portable.

"Wonder if you can get it going?" he said. "It packed up some time back and another dealer said it was unrepairable."

When I plugged it in and switched on there was a blank screen, apart from a third of the picture at the top. I didn't have the circuit diagram but spotted the field output chip and noticed a nearby 1,000µF, 25V electrolytic. Thinking of all the Bush field scans I'd restored by replacing capacitors like this one, I took it out and checked it on the bridge. One microfarad. Not enough! A replacement brought back an excellent picture.

Meanwhile the picture on the soaking Bush set had become green at the extreme left-hand side. I blew hot air through the back: as the chassis warmed,

the green area spread slowly across to the right until it covered the whole screen. When I removed the back I subjected the TDA3562A colour decoder chip to the heat and freeze treatment. This confirmed that it was the cause of the trouble. It's mounted on a small subpanel.

The ticket attached to a Toshiba 150R6B 14in. portable read "cuts out when warm". I plugged it in and gave it the hairdryer treatment. After a few minutes it cut out. When I opened it up I saw that there was a huge crop of dry-joints around the line output transformer. I resoldered them then switched on again, full of confidence. This time matters were worse. The set was dead.

A line output transformer as badly dry-jointed as that one would have been sending nasty, spiky r.f. pulses along the paths connected to it. To the scan coils for a start and, heaven forbid, probably to the signal stages. I checked the line scan coil connections and found awful dry-joints here as well. Resoldering them restored a good picture. I was grateful as I boxed the set up.

But I wilted a bit when I saw that the next set was a Sony KV21XMTU. It was dead. This was not surprising when I examined the chassis and found that a dry-joint on one leg of R614 (220Ω, 10W) in the snubber circuit had cooked the PCB and made it conductive: the 2SD1548 chopper transistor Q602 and the mains fuse had also snuffed it. Tidying up the chassis and replacing these items brought the set back to life.

## **Ribald Reg**

Then Ribald Reg minced in with his hands thrust deeply into the pockets of his old Humphrey Bogart trenchcoat. Reg never had a character of his own. He settled for the Humph one after seeing Casablanca. He looked tense and uncertain.

"This set's giving me plenty of trouble" he lisped into my face. "And I'm sick of the hassle."

"O.k., o.k., just bring it in." Just then Greeneyes came in with my tea.

Humph watched her as she clip-clopped out. "Nice dame" said his teeth, "who's she?"

"Mrs D. Bullock, Humph" I said.

He brought the set along later. It was a 10in. Philips portable, Model 10CX1120/05B. The set worked all right when I plugged it in, but as it warmed up the picture developed a faint blue haze. Then it began to flash blue. I've had this fault before with these sets and went straight to the tube base panel, where there are some sealed presets I've never been able to clean. For some

reason it always seems to be the blue adjustment and background potentiometers that play up in this way. Replacing them with open ones, as I've done on previous occasions, cleared the trouble.

## **Tipsey Ted**

My next caller was Tipsey Ted. He runs a village pub on the main road and treats life as though it's one big joke. Perhaps he's right. I can't afford enough drink to be able to find out though.

"You're lucky today Don. I've got a camcorder and a recorder up the creek, and I'm letting you mend them. Only one thing. You'll have to get them from my wagon. I've got a bad back."

"I spend all my life carrying stuff in and out of this workshop" I said. "I'd develop a bad back if I had the time."

The camcorder and VCR were sitting on top of a load of coloured parasols. "What are these for, Ted?" I asked.

"To put over the tables outside the pub. Brings the motorists in. They pinch a few glasses, but we make up by charging them a bit extra when they order their drinks.

"Er, right" I said. The camcorder was a Chinnon one whose viewfinder had detached itself from the main body because the screws had worked loose. As I've had this before I did it while he waited.

I removed the carriage door, dismantled the casing top and bottom then withdrew the four deck-securing screws. After turning the camera over I removed the two screws that secure the lens assembly. This gave me access to the viewfinder section. I fitted two new screws and painted on a couple of spots of Loctite. "It won't come back with that particular fault" I added after reassembling the unit.

Ted's VCR was a Panasonic NVDH8. When I plugged it in and switched on it clunked and died. I opened it up and replaced the STK5339 regulator chip then, as usual with these machines, I checked the low-value electrolytics in the power supply. Several had gone low in value. After replacing them the recorder worked well enough.

"Pop in for a drink sometime" Ted said as he left.

"Join the mugs under the parasols, eh?" I said.

## **A Delivery**

Our postman came in with a parcel from SEME. Another Philips 10CX1120/05B set had come in a week earlier with the usual faulty tube base panel problem, the picture flashing blue. With this set the panel was beyond

repair. Both Willow Vale and SEME quoted £48.36 plus VAT for a replacement panel, bringing the total cost of the panel to £56.82. Rather a lot. Our reaction was not to encourage Philips and scrap the set, but the customer wanted the repair done. So we tossed a coin and ordered the spare from SEME. When we fitted it we obtained an excellent picture.

What with this sort of thing and the incomprehensible manuals Philips produces nowadays I don't feel the same endearment to the company that I did at one time. Can anyone remember the excellent grey covered manuals the company produced years ago? (Of course! – editor. But they came from service subsidiary Amalgamated Electric Services Ltd. Who remembers that organisation?) Like its service and prices, they were wonderful. But times change. It's not so bad for the newcomers. They never knew the good times.

## Two More

It was getting on, but I decided to have a go at a couple more sets. The first was a Bush colour receiver fitted with the T24E chassis. Pretty ancient. "No colour" Steven had written. I poked around the line output and colour decoder sections but couldn't see anything obvious. So I got out the scope and colour bar generator. Eventually I found that R229 (3.6k $\Omega$ ), in the line pulse feed to the colour decoder, had risen in value to 175k $\Omega$ . Should have remembered that stock fault. A replacement cured the trouble. Though old, the chassis seemed to be in almost mint condition. And the picture was excellent, as though the tube was new.

The last set was a Ferguson model fitted with the TX10 chassis, the one with the fold-down panel at the rear of the main one. The sound was o.k., but there was no colour and after a while the picture occasionally rolled for fifteen

seconds. At the same time the whole picture changed from very light to very dark. A few minutes later it began to slip sideways as well, first to the left and then to the right. It all then gradually came right again.

I'd never before seen all these symptoms together on one of these sets: unstable sync, no chroma, video trouble. It seemed to me that the place to look for the cause was around the signal/sync take-off stages. Or maybe there was a decoupling or power supply fault.

I was spared further thought by Greeneyes who came in to see where I'd got to.

"There's more to life than gazing into the back of a telly" she said.

"Yes. I'll just put a mention of the fault in my next *Television* column. Who knows, someone might come up with the answer and save me from further frustration. Meanwhile, let's go kill a little time."

# What a Life!

Donald Bullock

It was my birthday. Greeneyes had been nice to me, and had tidied the workshop. The morning was bright and pleasantly warm. In fact life was good, and I settled down happily to sail through a perfect day.

## Mr Soaker's Sharp

Then I saw old Mr Soaker heading towards the door, carrying a video recorder. Could be troublesome, old Soaker. There was a time when I would back away, but not this morning. Deep down, I felt that Soaker had to be good. The world was at peace, and so was I.

"Never been right since you last did it" he rasped. "You need a proper chap here. Somebody younger – and smarter."

I smiled. Really, I told myself, he was as good as gold. Soaker's machine was a Sharp VCH81, the all-singing, all-dancing digital hi-fi Nicam wonder that frightened me to death last year after he'd washed it thoroughly in sheep dip. Now he was complaining that it jammed.

"What have you done to it this time?" I asked.

"Don't start giving me any old buck" he warned, patting his pockets to locate his cigarettes. "I want this bloody thing right." Then he stumped off.

I opened the recorder and removed a packet of Silk Cut from the carriage. Then I inserted a cassette and tried the machine. It lobbed the cassette back at me. I soon discovered that the gearing had slipped. As a result the microswitch operated at the wrong time, activating the eject mechanism. When I'd reset this and refitted the carriage I tried again, only to find that there was scarcely any capstan movement.

I settled down to examine the motor, which has an i.c. stage on a tiny panel built into it. The input voltages were right, so why wasn't the thing working? I ran it for a while and felt the housing. It was hot. A new motor assembly was obviously required. A check with the SEME catalogue showed the price as £21.60 complete, plus VAT. So I rang Mr Soaker, took some of his good-natured flack, and assured him that I'd have

his machine working in no time. I then ordered the motor and a few other spares, by phone. I was told that the motor was a special order and would take seven to ten days. When the other spares arrived the invoice said that the motor could no longer be supplied.

I then found that CPC had one in stock (part no. VSMT235). But the price was £41.95 plus VAT. So back to Mr Soaker to explain the situation. His reply was, well raucous to say the least. Now I was a rogue as well as a fool. He told me he'd think it over.

Eventually, after telling me that cheats never prosper, he accepted and we ordered the motor.

## Wrong Colour

As I stood smiling at life's adversities I noticed Toby Jugg swaying as he approached the door, with a colour portable under his arm. He'd taken to the bottle some years ago, and I hoped he wasn't in one of his funny moods.

"Mornin' Mr Bull" he said thickly. "This 'un's got an orange picture. Same colour as an orange."

We plugged the set in and a purple picture appeared.

"See" said Toby, "orange. But it comes right after an hour." Then he made his departure.

The set was quite new looking. An Akura CX4, one I didn't know. It was obvious that the green gun wasn't doing its bit. When I investigated I found that the 4.7k $\Omega$  flashover protection resistor R512 on the base panel, in series with the drive to the green gun, was dry-jointed. It had been poorly soldered at the factory, making contact only when hot. This took about an hour.

## A Batch of TVs

Time to turn to the TV sets awaiting attention. The first was an ITT Ideal 3325. "Off tune with a buzz on sound" it said on the ticket. Steven was standing nearby. "Did a couple of those a few days ago" he said. "Remove the large r.f. can and check for dry-joints. It's best to use a magnifying glass – some will look only slightly suspect. Then apply some switch cleaner to the plug and socket connections. This treatment works

every time." He was right.

The next set was an Hitachi CPT2210 (NP81CQ chassis) with field collapse. We've had that one before. Replacing the 220 $\mu$ F, 50V field scan coupling capacitor C610 restored the raster.

Another Hitachi set was next in line, this time a CPT1473 (NP82C-2 chassis). When I opened it up I found that both mains fuses were blackened and broken. The degaussing posistor TH901 was also blackened. I took it out and it rattled. A replacement, along with new fuses, brought the set back to life. Then I resoldered and washed the joints where the two panels are connected: we've found in the past that a build up of fluff here can affect the grey scale.

## Gladys's CD Player

At this point Gladys Grunter barged in with a CD player, a Soundwave CD3000. She always seems to be in a rage about something.

"It's dead" she announced. "Power light thing comes on, but none of the little number things. Last time you did my telly it wasn't right. Had to get Snoddy's to fix it. They charged fifty quid and took six weeks."

"Er, why not give them a chance with your CD player?" I ventured.

"I did. They've got no number things in stock. Said you've got plenty and they're cheap."

"Good old Snoddy's" I said.

When Gladys had left I opened the player and looked hard at the panel. I'd never come across this make before and had no circuit diagram, but I noticed a 2,200 $\mu$ F, 16V electrolytic (C101) that was leaking a little. On test it proved to be virtually open-circuit. All that was required was a new electrolytic. Come to think of it, this wasn't the first time we'd had to replace a capacitor of this value for the same trouble – in various makes.

When Gladys returned she was glowering. I handed her the player and charged her fifteen quid.

"Good God!" she exploded. "Fifteen quid for a couple of numbers! What Snoddy's said about you was right. You'll not see me again."

As she went out I noticed that the blue sky had turned grey. A nasty breeze sprang up, and rain began to tap at our windows. Then Pluto, who delivers our parcels, bowled in with Mr Soaker's motor assembly from CPC.

I wondered whether to stop and fit it in the machine. But by now I'd had enough.

# What a Life!

Donald Bullock

It's over twenty years since I was last in the United States, in Connecticut to be more precise. One day I wandered from my favourite bar – the one where every fourth drink was free – and into Fran's Radio and TV shop on Main Street, Southington. He was a Zenith dealer – “Selling the Best, Servicing the Rest” was his motto. I was given a great welcome and wonder how Fran is fareing today. Coming across his card in some old papers reminded me of the visit.

Apart from the genuine friendliness and helpfulness of the folk there, from the television point of view I remember that visit for two reasons. First, the awful quality of the colour reception – I watched a cow in a field turn from brown to purple to red all within a minute. And secondly the equally awful programmes. There seemed to be little of a cultural nature, and there was no way of escaping the advertisements. These occurred constantly during sponsored programmes.

## A Bang and Olufsen 7733

I could see that Mr Thesp was an oddball as soon as I caught sight of him trotting towards the shop carrying a B and O 7733.

“You'll be Mr Bullock” he bawled, “I know all about you.”

“Good God” I said, “let's talk about your set.”

“Keeps cutting out. And when it does work the colour keeps disappearing.”

When he'd departed I pulled his set on to the bench. The mains lead was only about a foot long, so to work on the set I'd no choice but to replace it. Getting the back off wasn't easy, and when I did it fell on to my foot, half crippling me.

The chroma panel nestled in the centre left of the chassis. It was full of dry-joints. I reached for the soldering iron and Steven's reel of romantic solder. This led to a double achievement: I cured the intermittent colour fault, and made the workshop smell like a Casablanca ladies' powder room. At this point Phyllis Puke came in carrying an Hitachi VT150E VCR.

“Good heavens!” she sniffed, “that smell won't get into my machine, will it?” I filled in one of Steven's job cards, then waved her out and returned to the B and O.

The second fault was that the vision would disappear, leaving a snowy raster. But the sound remained! At this point I almost felt like searching for the manual, but decided not to because I can't read B and O circuit diagrams. Nor Philips ones, come to that. Instead, I tapped about on the signal panels and found that this produced and cleared the fault. There were a number of dry-joints, which I resoldered, in the area. But this didn't cure the fault. I eventually found, on the control panel, a 1k $\Omega$  potentiometer with a wiper that made intermittent contact with the track. A new one put matters right. It was R33. Next time I'm feeling really spry I'll look out the circuit diagram and try to find out what it does.

## Phyllis's Hitachi VT150E

Then I picked up Phyllis's VCR, when smelt like Phyllis. It was dead and kept blowing the 2.5A power fuse F851.

The last time I had this the cause had been capstan motor failure. So I sniffed around the one in this machine. It smelt all right, but it was very stiff to turn. When I'd cleaned and lubricated the motor the machine still blew the fuse. I found that the M54648L-D motor driver chip IC602 was the cause of the trouble. It had probably died trying to drive the tight armature.

## Bud's Decca

Bud Blowfly came in next. He's an inveterate hoarder who buys strange things for which he has no need. Then he spends money on them before finally storing them away. He boasts that if he keeps this up long enough his wife will divorce him. This time he'd got a Decca DV1259 with him.

“Cost me twenty five quid” he said, “but the colour, brightness and volume controls only work sometimes.”

Because I like old Bud, I took a look at his set while he produced clouds of St Bruno from his pipe. There were some dry-joints at plug/sockets MR11 and MR12 on board 306A, to the left of the chassis. As I soldered them Bud skipped about, coughing.

“Where's that poncy smell coming from?” he enquired, looking under the bench and into the corners of the room.

## A Ferguson 3V55

Cuthbert Wirewound came in next, with a Ferguson 3V55. “It just died on me” he announced.

When he'd loped off I opened the machine and looked towards the power pack. Fuse 1 (315mA) was open-circuit. As we've had some awful thunder storms recently I fitted another fuse and started the machine up, gingerly, via the variac. The fuse stayed intact, but no current was drawn. Then I noticed a plasticity smell, mixed with the smell of the solder flux, Phyllis and the St Bruno. The mains transformer was cooking.

The clock lit up when a replacement was fitted, but there were no functions and the machine wouldn't accept a cassette. So I took a look at the main board where I found that C605 was short-circuit. After replacing this the machine powered up but the E-E picture was poor. A tap on the tuner PCB brought it up to full strength. One of the joints was starved of solder.

## Gladys's Fergie

My last visitor that day was Gladys Winegum. “Me little Fergie has turned into a tiny line” she complained.

“Sorry to hear that” I replied. “This might be a silly thing to say, but, er, have you got it with you?”

“It's in the car” she said.

When I'd brought it in I found that it was a TX100 with field collapse. As the 12V line was low I disconnected it and checked the regulator, IC8. It was o.k. Then I took out the TDA3652 field output chip, which doesn't seem to be available any longer. So I fitted a TDA3654, making sure that pin 7 was left disconnected, and changed R96 to 3.3k $\Omega$ . When I switched on again there was a full frame and an excellent picture.

## My Own Problem

Finally to my own problem. It took me three attempts to produce this article. I lost the first two about half way through, by selecting the 'save and continue' option in order to save what I'd written while I slipped into the house for a

cup of tea. Each time when I returned the screen said "disc format not recognised". When I selected 'retry operation' or 'ignore error and continue' I lost the output of the disc, which then refused to reload.

I'm not yet sure what's gone wrong. This third attempt is being written on another machine, a PCW9512, with a different set of discs. If any Amstrad word processor buffs are reading this and could throw any light on these happenings, I'd like to hear from them – write in via the magazine.

The machine that gave me the trouble is a PCW8512, and at present I don't know whether it's the discs, the disc drive or a problem with the memory board.

I've been wondering lately whether to upgrade to another word-processing system, but I'm not sure of my way around the jungle out there. In addition it took me about three years to get the hang of Locoscript, though I think a great deal of the trouble here was with the presentation of the original manual.

# What a Life!

**Donald Bullock**

It's amazing how the news has got about in this small corner of Spain that my life affliction has been in the TV/video trade. It comes up all too often in fatuous conversations in bars, while people keep showing up at the door with sets I can't work and don't understand.

I was relaxing with Greeneyes in Paco's bar the other night, watching his TV set doing its best with hardly any field sync, when this huge roughneck came and sat at our table. We soon learnt that after losing all his money running a bar he'd decided to take a postal careers course. "I'm now a physiotherapist" he said. "You mends tellies doncha?"

Using the skills of a lifetime, I changed the subject. But it was no good.

"Which is the best set?" he said, "and do you reckon they'll ever get the colours right? I only watches the sport meself." After that I got a potted history of his set, those of his friends and neighbours, and of all the rogue dealers from whom they'd suffered. Then he noticed the missing sync on Paco's set. "Hey Paco" he bawled, "this man's a telly mechanic."

Fortunately Paco doesn't understand any English. I'd entered Paco's with a spring in my step. I left it thoroughly choked.

## VCR Troubles

Harry was at the gate, sitting on an up-ended video, when I got back from the village the other day. "It ain't much" he said, setting me up to work for nothing. The machine was a Sony SLV270 which, when I tested it, was lifeless except for a faint whining noise. I quickly developed the same trouble. Then I recalled that I'd had the fault before, and made for the power pack. C1326 (16µF, 25V) was open-circuit. A replacement put everything right.

As I was boxing it up a lady called in with her Samsung SI7220 VCR, which is identical to the Goodmans VCR2550. "I can't get a tape into it" she said, "not even with my foot."

On test the clock lit up but there was no on LED illumination and no loading motor operation. I soon found out why she couldn't get a tape into it: there was one jammed in there already. When I dismantled the machine and took it out I found that it was shredded and broken. My experience has always been that the motor in this model is a bit sluggish, but this one was worse than usual. There was less than a volt across it. As the windings checked out all right I made for the STK5333 regulator chip IC101 on the power panel. It was the cause of the trouble. I don't know whether it comes in different qualities, but the prices quoted vary enormously.

## Edgar's CD Player

Shortly after that Greeneyes clopped round with Handsome Edgar, whom I don't like. "Edgar's got a Sony CD player" she announced. "We've all got our troubles" I replied nastily, "what's up with it?"

"Doesn't plaih" said Edgar, smiling like a dish of treacle. Then he disappeared up the garden path with Greeneyes.

It was an M35, minus the amplifier and speakers. It

accepted a disc, read the TOC, then played the disc without skipping or jumping. In fact it behaved perfectly. I peered through the window, trusting that Edgar was doing likewise.

Then I noticed that the disc was vintage Sinatra. So I connected an amplifier and some speakers. There was no sound. On opening the player I found an identical dry-joint on both output sockets – where they connect to the board. Resoldering them brought excellent results.

## A Grundig T55-340/90A Telly

"Jumps about and flickers when cold" was Maisie's complaint about her Grundig set, which was fitted with the CUC3490 chassis. I opened it up and looked around for dry-joints – I've worked on Grundigs before. Sure enough the chopper transistor was dry-jointed. Once again a bit of resoldering put matters right.

## More VCRs

Old Mrs Sorrel struggled in with her Pye DV291. She was widowed a month after settling here and now devotes her life to raising funds for her favourite charity. The DV291 is the same as the Philips VR6290, but whatever clothes it comes in the machine frightens me to death. This one had died during a recent lightning storm. I was worried about being able to fix it, but fortunately the damage was confined to the primary side of the power supply. The BUT11AF chopper transistor had suffered, and safety resistor SR3 had failed. When both had been replaced the machine came autocratically to life.

I've had mode switch trouble with several Amstrad VCRs of late. Often the machine is a VCR9500 (Goodmans TX3650). The symptoms are malfunctioning. When a cassette is inserted you may find that the machine selects rewind and the heads spin. Sometimes the only symptom is failure to eject the tape. I now have a routine procedure for dealing with this situation.

I remove the fascia and the bottom cover by taking out the two screws near the front. Then I remove the clamp and screw at the centre, rear of the deck. This leaves the deck retained by two block connectors at the rear. After disconnecting these the deck can be lifted out. The mode switch is beneath the deck, to the right at the rear. I remove and examine it. If it's simply dirty, I clean and lubricate it. If there's wear I replace it.

A word of warning. It's easy to damage one or both of the two sensors at either side of the PCB. Another point. Fluorescent lights in the workshop will activate the sensors when the machine's cover is removed. No amount of striving will 'cure' this. To test the machine, turn the lights out or refit the cover.

After doing a couple of these recently I picked up a Sharp VCA63HM which was also suffering from mode switch trouble. It was about two years old. While it had updated panels, the deck was the one I'm used to, with the same troublesome mode switch and motor assembly. The symptoms were failure to eject, then lacing and unlacing when the stop button was pressed. Repairing or replacing the switch usually takes only ten minutes, so it's not too bad.

After putting this one back together I decided that it was time for a break. So we made off for the local open market in the next village. Several stalls were selling a wide variety of electronic equipment, much of it quite sophisticated. A stall that appeared to be devoted to Panasonic items was doing particularly good trade. Only there was something odd about the Panasonic trade mark. It was spelt Panasoanic!

# What *a Life!*

Donald Bullock recalls some of the troubles that beset him during the month

**F**our or five people called upon me this week for help in resetting their TV sets and VCRs following a couple of power cuts. They were well educated people – one a surgeon and another an ex-airline pilot – and three of them had the maker's handbook, yet none of them could operate the equipment they'd paid so much for. And since it's confession time, I have to admit that I was little better off.

I suffer of course from the disadvantage of having had a sensible and practical education by proper people in a proper world. I can't begin to think like today's whizz kids, and tend to throw in the towel when I find that once simple jobs have been turned into complex games. When, I wonder, will manufacturers discover that the bulk of the products they now offer can't be used for their intended purpose by those who have bought them?

My problem these days is not in repairing the stuff that folk bring to me: it's in trying to discover how to operate them. More than once I've spent valuable time trying to repair an apparently dead set only to discover, sometimes from my kids, that it's been child-proofed or that it isn't supposed to come to life until this, that and the other has been pressed or keyed or activated.

If any designer boys are reading this, let me offer them some advice that may well make their companies rich. Design a TV set that anyone can work, with a proper on-off switch coupled to the volume control and a set of knobs for brightness, contrast and colour adjustment. And, not too far from them, a set of easily tuned pushbuttons for programme selection. While these are being snapped up by ninety per cent of the population, sit down again and design a VCR along similar lines. You'd make a lot of people happy and unfurrow a lot of brows, including mine.

## Ethel's TX10

"They call it a TX10" said Ethel McCrapenny. "It clicks and crackles then the mute light comes on and the picture flickers."

I switched it on to confirm the symptoms then checked carefully for

dry-joints, especially around the chopper and line output transformers. Sadly, every joint was sound and my thoughts of a fast buck quickly evaporated. On switching back on again I thought I could hear a faint crackling from the area of the tube's neck. I was right! A huge bluebottle had wedged itself into the spark gap on the tube base board. When it was removed the set worked well. The bluebottle didn't.

## Fred's Sharp VCR

Fred Horsefly brought in his Sharp VCA615HM VCR. It was pink.

"Painted it mesself" he said proudly, "only it won't accept a cassette and the clock is stuck at 10.59 a.m."

"What time did you paint it?" I asked.

In fact the reason for the failure to accept a cassette was the usual one with this deck – the mode switch. And when we'd fitted a replacement the clock started to behave.

## Another Sharp

"My boyfriend could mend this if he had a meter thing" pouted Fiona Fossett, who brought in a Sharp VC780HM. "The tape shoots back every time we put one in."

As some of the case screws were missing it seemed sensible to treat the unit as a hostile witness. I soon found that the cassette sensor LED and its holder were broken in half. In view of the fact that the machine had been tampered with, I tried it out before doing any work. To fool the mechanism I switched on, inserted a tape then pulled out the mains plug as soon as the cassette had been accepted. Then, after a few seconds, I plugged it in again and pressed the operate button. The cassette loaded properly and the machine worked well in every way. My fears had been groundless. After ordering a new LED and holder, which arrived from Willow Vale next day, I was able to complete the job.

## Mr Emery's Hitachi

As I moved the VC780HM off the bench Mr Emery entered. "I've called for my Hitachi telly" he said. I couldn't find it anywhere. "When did

you bring it in?" I asked. "Half eight this morning. I left it next door, they said you were quick."

I collected his set and put it on the bench. It was a CPT2508 (G7P Mk 2 chassis) and was dead. I opened it and followed my nose, which took me to the pretty blue 4.7nF, 2kV disc capacitor C919 in the chopper transistor's snubber circuit. It had cracked open. The BUT11A chopper transistor had died, so had the fuse. Fortunately the TDA4601 chopper control chip was o.k., and the set worked well after replacing the items just mentioned.

## A Bush 2059NTX

"Thrup, dead, thrup. That's all it does" said Mr Renton of the Bush 2059NTX he'd brought in. I carried out some checks and found that there was no 17V output on the secondary side of the chopper circuit. This was an easy one: the 6.8Ω surge limiter resistor had popped open, just to be awkward and make us a few bob. After fitting a replacement the set ran cool and survived some current checks and a soak test.

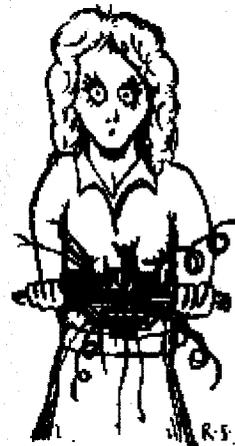
## Screeching

Steven had written "screeches" on the ticket attached to a Panasonic TX2231. For once he wasn't guilty of understatement. When I plugged it in there was a horrendous noise that I could have sold to Hammer Films.

As far as I could hear, before tugging at the speaker leads, the sound was all right. But I fancied that I could smell some health-giving ozone. So I put out the lights, drew the blind and settled at the set. The line output transformer was producing an impressive e.h.t. display that crawled around the focus and first anode areas. As I disconnected the set Greeneyes came in with my tea.

"Why are you in here alone with the lights off and the blind drawn" she wanted to know. "You're well over sixty you know. And what's that funny smell?"

A new line output transformer from Willow Vale cured the trouble. The original type is no longer available, but Willow Vale supply an alternative that works. ■



"My boyfriend could mend this if he had a meter thing"

# What

# a Life!

Donald Bullock recalls some of the troubles that beset him during the month

There had been thunder storms all day and the workshop was cold and damp. I'd just put my feet up and poured myself a smallish whisky when there was a frantic banging at the door. I went to answer it. My first mistake. It was Mr Snide.

"Hello Don. Got a bit of trouble with the old Philips telly. Can you open up the workshop?"

I nodded. My second mistake. Then we paddled off towards his car. As I did so he started to rub his back. "Got a bit of back trouble" he wheezed, "can you get it from the car?"

I struggled through a car full of old lumber, yanked the set out and took it back to the bench. Then he came out with his punch line.

"Do it if it comes to a tencer or less."

For once I was too tired to straighten him out. Not that it mattered. I've been straightening out customers for over forty years. They're worse than ever now.

As he departed Greeneyes came in then started her vacuum cleaner up. That was all I needed. It crackled then emitted a cloud of dust and a nasty burning smell.

"Must have it" she said, yanking out the plug. I hate having to mess about with vacuum cleaners.

The mains lead was cooking where it had worn, as it enters the body of the cleaner. I had it done it no time. Then back to Mr Snide's set.

## **The Philips 2A, Part 1**

When I opened it up there was a 2A chassis inside. I plugged it in and got a pattern of sparklers at the front right. On closer examination I saw that it was damp – and smelt of gin. Several chopper circuit components had been the sparklers I'd seen. "Up to ten quid, eh?" I mused.

When Mr Snide called first thing next morning I pushed the set back to him. "Try Snoddies" I said. "They like to do these. I can't manage it at the moment." Well, it was one way of dealing with the situation.

## **The Mighty Grundig**

Then I looked about me and saw a huge white cabinet with a massive

tube. I struggled to get it on to the bench. Another mistake.

It was a Grundig set fitted with the CUC4620 chassis. This has seven large subpanels connected to it and two more panels slotted into the front. With no circuit diagram, and realising that I'd be little better off if I did, I peered through its spaghetti junction of pretty wiring and wondered whether I had any whisky left. "Be a man" urged a little voice in my mind. "Who, me?" I answered as I looked at the card.

"Was plugged in and on standby in a thunder storm" it said. "The mains supply flicked off then back on and the set died. Only the green 'on' LED lights."

There was voltage across the mains rectifier's reservoir capacitor, but there were no chopper circuit output voltages. Maybe there was a short-circuit across one of the outputs. I checked the line output stage, to no avail. Then I noticed a wad of ceramic resistors and decided that it would be easier to check these than try to think. They were all o.k. Oh dear. I wished I had stayed at that local newspaper job all those years ago. But I didn't. Time to face up to the chopper circuit.

I checked the chopper transistor, which was o.k. Then I went on to check the rest of the components. Some time later I'd cleared everything except the TDA4601 chopper control chip IC631. I replaced it, counted the remaining stock, then reached for the variac and the waste bin.

I switched on gingerly and wound up the variac's output by degrees. Suddenly four thumps shook the room and a raster came up before I could dive for cover. I plugged in an aerial feed and breathed a sigh of relief. "That wasn't too bad, was it?" coaxed a fat, cross-eyed lady on the screen.

## **Richard's Colour Portable**

As I boxed the Grundig set up I noticed that Richard Renton had sidled in. He was standing at the counter looking down.

"It's gone all red" he protested about the Toshiba 143R4BR portable he'd

brought in. I looked at the door and off he went.

I plugged in the set which wasn't red, it was dead. But I don't mind working on this model. It's a tidy, well planned set. I went straight for R801, the 6-2Ω ceramic resistor in the power supply. It was open-circuit. When I replaced it the set, to my surprise, came on fully: it should have come on in standby. Then I noticed that my nice new 6-2Ω resistor was glowing like a hot poker.

The thing to check was the over-voltage protection diode D808, which was short-circuit. So I replaced it then turned to C813, a 47μF, 50V electrolytic capacitor that's connected to pin 2 of the STR50020 chopper regulator chip. You sometimes find that it has gone low in value, triggering such troubles. But it was all right this time.

I connected the set to the mains via the variac and wound up the input. At 100V the ammeter needle shot over and the over-voltage diode said goodbye. As I was fitting a replacement Richard Renton returned. "Oh, Mr Butcher. . ." he began.

"Hang about" I replied.

I took out the STR50020 chip and found that it was short-circuit. After fitting a replacement I gingerly wound the set up again. This time it came on in standby. When I switched on there was a picture, but it was red. I noticed that the tube base was slightly askew.

"That's the fault" he volunteered as I pushed the base on properly. "Oh, you've cured it. Wasn't much, was it?"

Incidentally Toshiba is the only major manufacturer I know of that still gives technical help to non-dealers. What's more, the engineers are cheerful, polite and eager to help. They usually can, knowing their sets well. We don't sell new TVs now, but if we did we'd be after a Toshiba agency. We recommend the company's sets whenever a customer decides it's time to buy a new one.

## **An Amstrad CTV2210**

Our next customer was Timothy Tapworth. He had an Amstrad

CTV2210 in his arms. "Oh no!" I cried. But I like Tim, so I decided to look at his set while he waited.

It was dead. Fuse F502, which lives – and dies – in the centre back of the chassis, was blackened. I took out the 2SC3156 chopper transistor for test, without much hope. But it was faulty, a new one restoring the set to life. The picture was excellent.

"Wonderful" shouted Tim, pulling out his wallet. "'S nothing" I said, "fifteen". He dropped a couple of coins on to his fivers. "Have a drink" he said.

He went off, leaving me happy. Then a dark cloud came along. It was Mr Snide, clutching his Philips telly, the one with the 2A chassis. I was unhappy again.

### **The Philips 2A, Part 2**

"Did what you said Don. Took it to Snoddies. They've got a new engineer, a Mr Bathwater. He tried, but couldn't fix it. They said they'd put a lot of stuff in but it still blows the fuse at switch on. Charged me thirty five quid. When I complained the tall chap with the rotten teeth got nasty, so I paid. Will you have a go? Forget the ten quid bit."

I felt sorry for Snide this time, and curious about his set. So I offered to have a look at it. Sure enough Snoddies had dried out the chassis and replaced several components – the mains fuse, the line output transistor and a number of items on the primary side of the power supply, including the BUT11 chopper transistor, C2664 (1.5nF, 1kV) which often splits, transistors 7685 and 7686, the CNX62 optocoupler, all the diodes and a lot of resistors. Every other component had been unsoldered and tested, and the chopper transformer had been taken out. They'd then moved to the secondary side of the circuit, where the tale was similar.

I studied the chassis, looking for unintentional shorts or cracks, but couldn't find any. The soldering was awful and lumpy, and the print covered with old flux. So I got to work with solder braid, tidied up the soldering and cleaned off the flux. Then I studied the bench, swept the floor and thought about coffee. But I couldn't put it off any longer.

After fitting a new 2A fuse I started the set up gradually via the variac. The fuse blew almost immediately. I disconnected the load from the mains bridge rectifiers, leaving the reservoir capacitor C2659 connected. When I tried again the fuse remained intact and there was 300V across C2659. This cleared the input circuitry. I next set out to clear the line timebase by disconnecting the supply to it and

loading the h.t. line with a 100W bulb. On my next try the lamp lit brightly for a split second then the fuse blew violently. I replaced the chopper transformer, but this made no difference. At any rate I'd established that the cause of the trouble was on the primary side of the circuit.

I decided to check the transistors first. They were all of the right type and good. Then I checked the diodes similarly. I turned to the capacitors, checking each one for leakage and capacitance value. I still couldn't find anything wrong.

Short of something really odd, this left only the resistors. Most were new, and none looked discoloured. But there was nothing for it but to check each one. I found the cause of the trouble when I got to R3666. It should have been 1.5Ω but was actually 15Ω! I studied it and realised what had happened. The replacement that had been fitted was colour coded brown, green, black, plus the tolerance band. It should have been brown and green plus the tolerance band. Fitting the correct value restored the set to perfect operation. An easy mistake to make, especially as a chap becomes increasingly disorientated by a tricky repair. For once I almost felt sorry for Snoddies. I also wondered how poor Mr Bathwater would fare in his new job.

Then I thought of the time I'd spent on Mr Snide's set, and wondered how much to charge him in the circumstances. Then I thought of me, and wondered how on earth I'd managed to become a TV repairman.

### **Variac Tip**

Incidentally when I made up my variac I took a tip or two from Richard Pollock. I've mentioned him before – he's retired now and lives close by. He housed his in a wooden case, and included in series with it an old Ferguson 2A mechanical cutout (as used in the 3000 series chassis). This trips in the event of an overload. He also fitted amp and volt meters, so that he can monitor the voltage applied and the current consumption as the variac's setting is advanced. I wired mine up similarly.

The trouble with a chopper power supply is that it won't normally come to life until the variac's output has reached about 100V. The primary side of the circuit then starts up and, if there's a short-circuit on the secondary side, current is drawn suddenly and heavily. This is where the 2A cutout comes in. Often the cause of the trouble is in the primary side of the circuit however: in this case the variac can be very helpful.

# What a Life!

Donald Bullock recalls the Luxor set that wore him down – with a little help from his customers

**A**s our VCR had been taken over by our two youngest children, I arranged for Santa Claus to present each with an Alba VCR7200 for Christmas. When they arrived I rather liked the look of them. So much smaller than many others, very well styled and bristling with features that even I might be able to cope with – given time.

One reason for choosing Alba was that the company has been particularly helpful whenever we've had servicing queries or needed circuit diagrams. With so many manufacturers nowadays, the dealer is on his own unless he has a substantial account with the maker.

## The Good and the Bad

The day started off all right, with the Reverend Goode giving me a raffle ticket.

"Just one left. Number 13. Somehow can't sell it. Can't think why. We're going to make the draw this afternoon."

It was the Luxor set that wore me down as the day went on. Mind you the Bush 2020 had weakened me. And when I was at my lowest the crowd started to come in.

The Luxor was a 18067849 – a nice easy model number. It was brought in, while I was wrestling with the Bush 2020, by the local character who looks like the Pied Piper gone wrong. He stood puffing and blowing for a while, then

pursed his lips to produce a tiny, thin voice.

"It's lost. . . it's lost its. . ." He rubbed his brow. "It's lost. . ."

"It's memory?" I bawled.

"Yes, yes!" he piped, "that's it, it's lost its. . . er. . ."

I drew a card towards me.

"Name?" I said.

"Luxor" he replied. So I wrote down "Luxor" and waved him out.

## Trials and Tribulations

For most of the time the Bush 2020 had no proper colour, just random flashes of colour over a monochrome picture. But as soon as I got near it with a meter or scope the colour returned. The sound was all right. I'd changed all sorts of things, including the TDA3562A colour decoder chip, but had got nowhere. So I decided to look at the Luxor, in the hope that I'd be able to mend it quickly.

I popped the back on the Bush, slipped it on to the soak test bench and left it running. Up came a perfect colour picture. . . I then managed to tune in a picture on the Luxor set, at which point a reptile wearing a cravat bounced in with a VCR and a portable TV set. It seemed that he had just been wound up.

"Bought this from Crubb's Foodstore, chum" he breezed. "Right price too. And a year's supply of caraway seeds, and forty plastic cups. They said you're the chap to tune them together. Said it takes only a few seconds."

I hissed an evil word in his ear and he raced off, looking daggers at me over his shoulder.

Back to the Luxor. As I didn't have a circuit diagram it was a matter of surmising and trying. An hour later I was no further forward, so I put it aside and took the Bush set back.

The colour was still there, and I couldn't get rid of it – not with the hairdryer, the freezer, a selection of bad language or a bout of violence. I put it back on soak test and

returned to the Luxor set.

## A GoldStar CIT4785

Then Mr McGorickle danced in with a GoldStar CIT4785 14in. portable. He put it on the bench, brought up his arms and started to wave them to and fro.

"It's gone all like this" he said, "all like this."

I waved him off and tried the set. The screen displayed a milky raster with flyback lines. Sound was o.k. Steven came in and I thought I'd consult with him.

"There's vision trouble with this GoldStar" I said, "but the sound is all right. Now if you think of the signal path, the sound and vision travel together until they get to the end of the i.f. strip. The fact that the sound is o.k. though the vision is bad points to. . ."

"It's the TDA3560 chip" Steven cut in. "I'd fit a TDA3561. That'll cure it."

I did and it did. One up to Steve. Puffed up loon, I thought, he's getting like Greeneyes.

## The Bush and the Pye CTX-E

I turned once more to the Luxor set, suffered a while, then had another go at the Bush. Maybe there was a print break somewhere around the TDA3562A chip. As I looked for my huge illuminated magnifier, Steve glanced at the screen.

"Break in the panel around the TDA3562 chip I expect" he said, "had one like it the other day."

I tapped and flexed the board in the vicinity of the chip and found that I could make the colour come and go, especially when I was working around the key end of the chip. Then, homing in on it, I found a break in one of the tracks. Remaking the connection with a jumper lead cured the fault. At least that one had been put to rest.

Meanwhile Steve had pulled a Pye 43KT2196 on to the bench.

*Isn't Daddy good to buy us a video each. Shall we have a look inside and see how it works . . .*



It's fitted with the Philips CTX-E chassis. When he switched the set on the colours were all wrong. A ploughed field was green, so was the post office van. The grass was red.

"Had this before" he said, "it'll probably be coil 5153." But he got nowhere. "Seems to be ident trouble" he said.

"No it's not" I said, noticing that the sky was purple. "Take out the degaussing posistor and rattle it." Sure enough one of the tablets in the posistor had crumbled, the odd picture colours being the result of the tube's severely corrupted purity.

## Some VCRs

"Can't be much" said Mr Hardshaw as he popped his JVC HRDX22EV VCR on the counter. "Only I'm a pensioner, and the missus has gout. Have a look and give me a ring, then we'll see."

This machine remains in the fully laced-up position when in the stop mode: it unlaces only for eject, fast forward and rewind. The complaint was that it occasionally left a loop of tape that would get caught up when the cassette was ejected. The capstan, which should have turned at the last second to activate the mechanism, didn't do so - because the mode switch didn't tell it to. It was dirty. Cleaning it cured the trouble, and while we were at it we made sure that the screws which earth the mode switch panel were tight. With early models the panel isn't properly earthed if they are not tight, giving rise to the came trouble.

Just then Miss Peach glided in with her Panasonic NVL25B. "Can one of you clever gentlemen tell me why it has died?" she asked. Steve went straight to the power pack and checked C9, a 1µF, 400V electrolytic. It was open-circuit. Once a replacement had been fitted the machine was back in health.

As she departed, Greeneyes came in with our tea. "What an awful looking girl!" she said.

"I know, terrible" I replied.

Incidentally we always fit a capacitor rated at 105°C in this position now, after some earlier bounces.

## The Luxor Finale

The day was wearing on and the Luxor was still there. It wasn't much fun trying to deal with it without the circuit. I spent more time getting nowhere, then I got around to taking out the front

panel. Behind it I found a PCB with a 1.2V back-up cell that had died. A replacement cured the trouble. As I was boxing the set up the piper returned.

"I've got it done" I said. "It turned out to be a tiny battery behind the front panel."

"Thought it would be" he replied, dropping a one pound coin on the counter. "It's happened before."

## That Evening

"I can't understand why you get so nasty over these sets and customers" Greeneyes said that evening.

"Can't you really?" I retorted. "I've had a frustrating day with nearly twenty awful sets and just as many prats. It's now twenty past eight and I still can't be sure I've finished. That phone might go at any minute. It did."

"Sorry to ring so late, Mr Bullfight, but you mended my sister's husband's set in 1965. He's dead now, and she married a Turk. But they've a lovely cat and they now live in Wimbledon. She's put a bit of weight on, but haven't we all? Ha, ha, ha. What I rang to ask about is this. Which really is the best set?"

I said a certain word to the phone and put it down. Then it went again. It was someone in a noisy pub.

"I've just bought a shet offofa mate Mr Blooper. And I'm gonna let you mend it. I'll be with you as soon as I can get a push in my car. You can give me a push to get me going again, can't you?"

Another naughty word and the phone went dead.

Then the doorbell rang and a shifty gent in a mac poked his head around the door.

"Sorry to call at the house" he said, "but that set you mended last June wasn't really right when we had it back. We kept hoping it would settle down, but it's gone again. Can you look at it now? Only we wants to see the Chain Saw Massacre afore we goes to bed?"

I had a word in his ear and he quickly departed.

The phone rang again. I snatched it up and snarled.

"Oh, er, sorry" said the voice of the Reverend Goode. "I've dialled the wrong number! Sorry to have troubled you. It was Mr Bullock I wanted, to tell him he's won the raffle. I'll try again." ■

# What a Life!

**Donald Bullock on how it might have been if he repaired cars. Instead, he has devilish difficulties with CDs, electrolytics and other things**

**M**ore years ago than I care to recall I attended our local technical college, where the rudiments of this trade were driven into my head. Although I didn't realise it at the time, I emerged a socially deprived person – in at least two respects.

Had I studied something else, say motor engineering, then got myself a job in a garage, I'd have been able to hold a conversation about it with anyone in the local. Might even have profited from it. Let's see how the conversation would have gone.

"Had a terrible car in yesterday. Everything wrong with it. Kept cutting out – only when warm. Back bumper kept falling off. Petrol gauge read half full all the time. And there was this squeak. Took me hours to find the source. He was back with it today. Both front wheels punctured – wanted 'em fixed under guarantee!"

Laughter all round.

"Have a drink on me, Don!"

"No, let me get him one!"

A television engineer on the other hand tends to be isolated, even distrusted. Suppose I was to have a go. Might be something like this.

"Had this terrible set in yesterday. Sync waveform kept varying. Field oscillator ran too fast. There were line striations, but only on monochrome. And intermittent Hanover bars."

Shuffling and cringing all round, plus dark looks. A general edging away – and no free drinks.

The other deprivation? Well the

motor engineer can charge hundreds of pounds for his work, because cars have risen in price umpteen times. My work has to be done for peanuts.

## Unlearning

Then there's my brain, which is so crammed with useless information that I can't seem to get current things into it. I sometimes wish I could attend an untechnical college, to become an untelevision engineer. First I could be untaught the resistor colour code. Then pFs and  $\mu$ Fs and the nature of electricity.

I could be untaught all I know about Collaro record changers, and that company's dreaded two-way tape transcriber. And the Philips' changers, for which the only remedy was a suitably sized box addressed to Croydon. And oh to be untaught the misery of restringing wireless dial drives. ("What? Twelve and six for a bit of string!") Then there are all those valve types, pin connections and equivalents that keep running around in my mind.

These thoughts started off when I noticed that valves and valve equipment seem to be making something of a comeback. There are advertisements in *Television* for old valves, and some of the prices offered are surprising. I still recall the day we finally decided, after postponing it for ages, to throw away our stock of hundreds of the things.

I gather from BBC radio that valve amplifiers and equipment are

now commonly used by entertainers and recording studios. Apparently they stand up better to overloading, and produce a 'rounder' sound. Well, yes. But they produce a great deal of heat, consume much too much current, and amplifiers with good chokes and transformers are heavy. Now they are very costly. Some cost thousands of pounds!

## Contrasts

Our Spanish place sits in a large plot, with the front gates a tidy step from the house. Some while ago I decided to fit a bell push at the gates, in parallel with the one at the front door. When I looked into this I found that our electric doorbell was designed to work directly from the mains supply. There was no transformer, and the bell push and its wiring were at full mains potential. I soon did something about that. Then someone suggested a radio operated bell, the bell push being a transmitter.

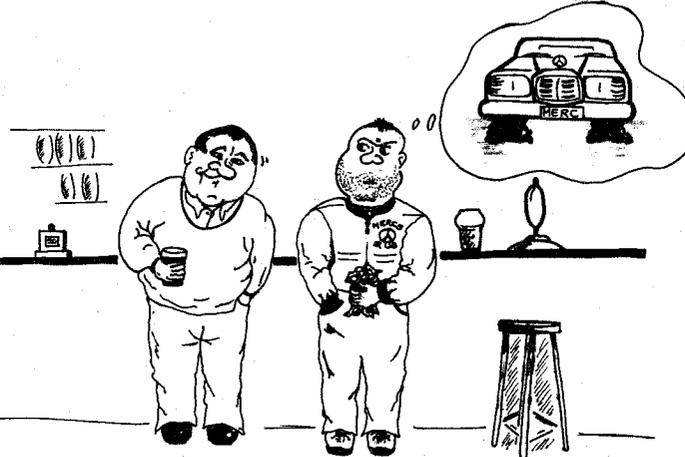
We were given one as a present. It was manufactured by a Middlesex firm called Busybody Products (24 Windmill Road, Brentford). It's neat, robust, digitally designed and produces loud, harmonious chimes that can be heard even beyond the claimed range of fifty feet. Well it did, but after a few months it gave up the ghost, perhaps because of the hot Spanish sun.

As it was a present we had no guarantee. So I wrote to Busybody Products to ask whether they could help. When they received my letter they telephoned me in Spain, offering to post me a replacement free of charge.

I find this commendable indeed. It's very unlike some of my recent experiences in our own trade. We needed a number of satellite receiver/decoders for example, and sent off faxes to several firms back in the UK. There were no replies.

## A Disc Problem

My Sony stacking system required attention recently. As Steven was trying to sort out a Fisher colour set that made him nasty, I decided to



*I've been listening to this bloke now for nearly two hours and he hasn't mentioned a big end or an exhaust pipe yet – wouldn't be surprised if he wasn't quite the full shilling...*

have a go at it myself.

The tuner, Model ST-V50L, uses a 6V orange pilot lamp to illuminate the display panel. It had gone out. This had happened before, a year or two ago, and Sony had charged me over £6 for a replacement. Since the manufacturing cost could be little more than coppers, I was thinking about a possible alternative solution as I dismantled the cabinet. I needn't have worried. The trouble was caused by a dry-joint in the supply line.

There was also a problem with playing CDs. The player, Model CDP-M30, was skipping. But only with some discs. And one of my most valued discs, a wonderfully cleaned-up compilation of Bix Beiderbecke 78s, wouldn't play at all.

The discs that were skipping didn't skip at the same place each time. This seemed to rule out the discs, and I couldn't see any obvious blemishes on them. A closer examination of the Bix disc showed that there were some very faint blemishes, so I cleaned it carefully. But it still wouldn't play.

I opened up the machine and gave the player the once over. When I came to the laser I noticed that its lens looked grey. A cotton bud moistened with alcohol removed a noticeable amount of dust from it. When I reassembled the unit and tried it out I found that all the discs played perfectly.

A more careful examination of the discs, with a magnifier, revealed that they all had blemishes, some very slight indeed. The moral is that a dirty laser lens and a slightly blemished disc add up to failure of the unit to get the message. Don't forget that the discs contain a great deal of information in addition to the recorded sound.

### Electrolytic Problems

Having dealt with the stacking system, I decided to help Steven with the Fisher set – a Model CFB2144. It had a snowy raster with no picture.

"Tuner" I said.

"It isn't" he said.

"Tuner supply voltages" I said.

"They're all correct" he said.

Then, before our eyes, BBC-2 appeared, followed by BBC-1, Channel 4, ITV then back to BBC-2. After a few more minutes the snowy, blank raster returned.

"The set behaves all right when it's been on for a couple of hours" he said.

I shambled off towards the kettle.

Making tea is easier than thinking.

Meanwhile the set started to search tune again. Once we'd got all the channels in turn it came right. The picture was stable and we could change them with the selector.

We pooled our immense brain power and studied the panel. There's a hot spot around the 5V and 12V regulators in this chassis. So we connected a pair of voltmeters across both lines and watched. The voltages fell in sympathy with the symptoms. Time to replace the two regulators, but this made no difference. Then we spotted a pair of 100µF, 25V electrolytics. We took one out and checked it with the capacitance meter. It measured spot on. We did the same with the other one, with the same result. We put them back. I was beginning to feel nasty too.

Some time later we'd made no further progress. The pictures were perfect. So we tried spraying the regulator area with freezer. Back came the search tuning, followed by the snowy raster.

We then used our bit of card with the small hole in it, so that we could freeze components individually – not the electrolytics, as they'd checked OK with the meter. As this had no effect, we sprayed the whole area. The fault symptoms were back.

We again gave those electrolytics dark looks. For want of something to do, Steven took one out and checked it with the capacitance meter. It seemed to be perfect. Steven left it connected across the meter.

"Can't understand it" he said, wearily. "Jo wants me to get a job in insurance." Then, as we watched, the meter reading began to fall – and continued until it was 70µF. When we touched the electrolytic's leads with the iron the reading rose to 100µF.

We fitted a replacement. This stopped the search tuning.

When we took out the other electrolytic (in the 12V supply) and checked it the results were much the same. It measured full capacitance at first, fell to 80µF, then returned to full value when its leads were touched with the iron. A replacement cleared the snowy raster, restoring a high-quality picture.

What had obviously happened was that in removing them for test we'd warmed them, restoring their full value. Thus our original readings had not indicated their value when cool.

### Yet Another

We boxed up the Fisher set and, flushed with our success, pulled a Matsui VX1000Y VCR on to the bench. Drifts off tune it said on the card!

The machine worked all right for a few minutes, then began drifting. I studied the picture on the monitor while it was stable (Steven had made his exit) and noticed that a very faint hum bar moved up the screen. A quick look at the power supply revealed a 47µF, 100V electrolytic capacitor (C504) that had a white, cheese-like crust on its top. When I took it out and checked it I found that its value had fallen to 25µF. I examined it and noticed that there were pinch marks on both sides, as if the machine that had popped it into the board had been too heavy-handed. A replacement cured the trouble.

Steven returned as I was boxing it up.

"That took you only five minutes" he said. "How did you manage it?"

I ran my nails across my teeth.

"Cleverness" I said. ■

# What a life

**Satellite dealers, James' first TV repair, chip resistance tables – all in a day's work for Donald Bullock**

The long road that stretches down the east coast of Spain is dotted with satellite TV dealers. They seem to be mainly German or English owned and are generally unpretentious places with little by way of a showroom. You often enter to find a simple counter, a few repaired TV sets and satellite receivers in the middle of the floor, and a sign advertising sound conversions at quite reasonable rates. One or two sets will be showing a very good picture.

The dealers themselves are an assorted bunch, always casually dressed. They are usually quite informal and are happy to sit soaking up the sun that floods through their windows, occasionally sipping at the yellow brew that passes for beer in these parts.

I've got to know one or two of the British ones. They reckon to be just getting by, and are happy enough with that. For most installations they use an 80cm or 1m dish with an 0-8dB LNB.

**Senor, you wanna buy a video or maybe discuss some football, eh?!**

## Competition

Smaller dishes can be seen as you drive about. I assume that they are for reception of transmissions with a narrow footprint. While flicking

through the channels the other day, I was struck by the vast number and great variety of non-scrambled programmes of German or similar sounding origin. This made me wonder why most British-language satellite transmissions are of Murdoch origin, and how it is that the Germans (amongst others) manage to finance and produce so many channels without the need for scrambling.

Since Mr Murdoch went over to his latest card technology, dealers here can only make promises when approached for pirate cards. This means that unless people are prepared to fork out something like £300 for the privilege of watching rather banal commercial programmes, a proposition that would have seemed to be a non-starter to me, they have only Sky News – which, to give it its due, could be worse – and the TNT film channel. I wonder how long it will be before Mr Murdoch sees some proper British competition?

## First Steps

I go to Spain to write in peace, but it never happens that way. The word has got about that we are the local Mr Fixits, and items keep being brought along. Fortunately son James, who is now fifteen, can step in and work with little help.

The other day someone brought us a 14in. Spanish colour set, a First Line 1433GR. It had a Toshiba tube and a Toshiba look, but I couldn't place it – and we had no circuit diagram. James reported that it was dead, and that the chassis looked sweet and innocent.

"Appearances can be deceptive" I said, glancing at Greeneyes. "Mark the setting of the first anode potentiometer on the line output transformer, then advance it gingerly to see if a bright line appears across the screen. If it does, this will indicate that the cause of the trouble is field collapse." Shortly afterwards

James announced that there was indeed field collapse.

"Is there sound?" I asked. "If there isn't, the cause of the problem could be a power supply that's used by both the audio circuit and the field timebase. The correct course of action would be to check any 18-20V lines. If the sound is all right, we have to concentrate on the field timebase."

The sound was all right. "How do I find that field timebase?" he asked.

"Look at the scan coils on the neck of the tube" I replied. "They consist of a pair of line drive windings and a pair of field drive windings. The line windings work hardest, so they are wound on the inside, closest to the tube. They will also have the fattest connecting leads, which will trail off towards the line output transformer. Follow the other pair. They will take you to the field output stage. This could be based on a pair of flat transistors on heatsinks or a flat i.c., again on a heatsink.

James reported that the pair of field output transistors, a 2SC2073 and a 2SA940, tested perfectly out of circuit and that their 20V supply was present and correct.

"Check nearby transistors" I said. "Something has to generate a waveform to drive the output transistors."

He found a 2SA1013 transistor that was dead short-circuit and started to get excited. After lots of searching he discovered a transistor with similar characteristics and fitted it. He then switched on, expectantly. Still no field scanning. His face fell.

"We're winning" I said. "That transistor needs 12V or so to make it work. Is this supply present?"

It wasn't. "Now check the resistors in its collector circuit. Check back until you find the missing 12V." He did. "R256" he said, "it's colour coded 33Ω and has over 12V at one side, nothing at the other. But it looks all right."

"Looks can be deceptive" I said, as



Greeneyes brought us some tea. She stiffened slightly and gave me a look.

"It's open-circuit" James cried, holding the resistor across our meter. He replaced it in no time and switched on. It started to burn.

"Finger on the new transistor" I barked. It was cold. "Switch off and measure the resistance between your new resistor and chassis, both ways round. He got two dead short-circuit readings.

"Something on that line is shorting it to chassis" I said, "check for it."

The cause of the trouble turned out to be a 12V zener diode which was dead short both ways. When he fitted a replacement and switched on the field scan came up. After resetting the first anode potentiometer there was a perfect picture.

"Congratulations Jim" I said, "you've just done your first TV set repair!"

### Parts Problems

Obtaining spares for products that are Spanish or made for distribution in Spain can be tricky. They won't have been heard of in the UK, and it's difficult to know where to start. But some of the advertisers in *Television* are particularly helpful.

We recently needed an on-off switch for a Kneissel TV set and some belts for VCRs that were unknown in the UK. We did a careful drawing of the switch and wrote a note outlining our belt problem and faxed these to JJ Components. Shortly after the machine had grunted to a halt Jay Popat phoned us to say that the switch would be in the post that day, also a handful of various belts. As always with this firm, it all happened. When the package arrived here a few days later we were able to complete our repairs.

Jay also sent us his latest catalogue, which is in A4 format, has a colour cover and runs to 125 pages. The layout is excellent, and Jay commented "I cannot tell you how much midnight oil its production cost me".

### Some Toshiba's

The gate clanged the other day and Senor Edgie ran into the drive, carrying a Toshiba colour set. "I shall hit him" he cried. "I will... and when I do..."

"What's up?" I asked, "hit who?"

It seemed that Grasperos had quoted him £60 deposit to look at his set and told him that it could take a year to obtain the spares required. He left the set with us, still foaming like a bull.

It was a 215R8B whose problem

was field collapse. Being familiar with the set we checked plug P570's sockets on the main panel. It provides the scan coil connections and as usual was an oasis of dry-joints. Easy enough and, fearful of a clout from Senor Edgie, we priced it at a tenner.

He was all smiles when he came to collect it. Then Senor Loper sprang in with another Toshiba set - slightly different model number, but the same chassis.

"Dead" said Senor Loper. "Yesterday the cat died. Now this. These things come in threes."

"Better do the set quick" I said to James.

F801, the 2A mains fuse that lives on a little subpanel with the switch, was open-circuit. So we checked the R2M over-voltage avalanche diode D808 which was short-circuit. The 6.2Ω surge limiter resistor R801 would also have failed, wouldn't it? The bin clanged again.

We looked at the STRD4420 chopper chip Q801, but this seems to be a pretty rugged device. So we replaced the items we'd found to be faulty and started the set up with a variac. There was a flash and the 2A fuse and D808 said goodbye.

We took out the chip and checked it against the figures in our notebook, where amongst other things we keep a pin resistance table for this i.c. The readings didn't tie up. As it was clearly defective we fitted a replacement, then started up again via the variac. When the input reached 100V the set sprang to life, bringing smiles to our miserable faces. The picture was excellent.

### An Hitachi CPT2578

Our next caller brought along a dead Hitachi CPT2578. It's fitted with the

G8Q chassis - the one with the odd power supply that uses two chopper transistors. On test the set didn't even make it to standby. There was HT at the output from the mains bridge rectifier but nothing more. The start-up circuit contains a thermistor, TH902, that's given us trouble on previous occasions. We went straight to it and found that it was open-circuit. A replacement restored the set to life.

### An Amstrad WP Monitor

The Amstrad PCW8512 wordprocessor monitor we were presented with suffered from field collapse. Most of the field timebase circuitry is contained within an LA1385 chip, and we didn't have one to hand. Again our little book came in handy. We turned to the appropriate page and read off the resistance readings for a good LA1385. These are shown in the accompanying table, measured using our meter's 20kΩ range.

The letter R indicates the pin to which the meter's red probe is connected: connect the black probe to the other pins in sequence. Where no reading is shown, it should be above 20kΩ. We found that the chip in question was full of shorts. Field scanning was restored after ordering and fitting a new one.

It takes only a minute or two to chart the readings for a good chip, with one of you taking the measurements while the other jots down the readings. The resulting table will save on diagnostic time and can avoid the dreaded business of ordering an expensive chip you find you don't need. With VCR signal processing chips, creating such charts can be positively therapeutic! ■

LA1385 resistance table

Pin	1	2	3	4	5	6	7	8	9	10
1	R									1.44
2		R	0.38					13.3		
3		0.38	R					13.7		
4				R						
5					R					
6						R				
7							R			
8		1.33	1.37					R		
9	1.44								R	
10										R

Connect the meter's red probe to the pin shown as R and the black probe to the other pins in sequence. A blank space in the table above shows that the reading should exceed 20kΩ. Measurements carried out using the meter's 20kΩ range.

Tables like this can be easily drawn up with a known good chip and will save diagnostic time with suspect chips.

# What a life!

## Donald Bullock finds the solution to an Amstrad PCW8512 problem and deals with a crop of TV faults

**A** while back I wrote about the troubles I was experiencing with the Amstrad word-processors I use here in Spain, especially the two PCW8512s. Both started to give trouble when taken to Spain, after years of perfect operation in the UK. Field collapse with one of them was the first problem, caused by a faulty LA1385 chip. Then both of them became temperamental. They would gobble up writing that had been saved and which I thought I had for ever.

Two *Television* readers came to my aid. S. Pearson of Chipping Norton said that the fault was likely to be either with the discs or drive B. He suggested that I try to copy anything of importance on one of the suspect discs then reformat it with the PCW9512. If reformatting worked, the disc was OK. This would point to drive B as the cause of the trouble. He points out that the drives are belt driven, and that a slipping belt will result in the disc rotating at varying speeds, corrupting its format when an attempt is made to save data. This would explain the "disc format not

recognised" message on the screen. In passing he said that he believes the 3in. Amstrad discs are made by Matsushita, and also commented on my son Steven's "romantic" solder – the stuff that makes our workshop smell like a Casablanca ladies' powder room. He says that this sounds like a new product which is starting to gain popularity with some manufacturers. It differs in containing a synthetic flux that doesn't coat printed circuit boards, as rosin flux does, but requires a hotter iron (about 420°C) to activate it. Another advantage is that it makes the use of ozone-destroying solvents to clean off flux residues unnecessary. We live and learn!

Colin McCormick of Plymouth suggests that I retire the Amstrads and change to a PC with the LocoScript Pro 2 wordprocessor program – it's similar to the one I use, and would therefore be easy to change to. This is an interesting possibility, but I had to get the Amstrads right since only their format can handle every disc I have.

### Belts

Anyway, I opened one of the PCW8512s, removed the B disc drive and dismantled it to examine the flat belt. It was stretched, and when I removed it I found that it was permanently pear shaped and stiff. I then looked at drive A and found that the belt was in the same state. When I opened the other PCW8512 the story was the same.

I ordered the right belts from JJ Components, then called at the village TV shop for some flat belts to tide me over. I bought four, all slightly different though similar in size and width. They got the machines working reliably, and I was able to work on. But the PCW8512s wouldn't handle each other's discs: obviously there was a

slight difference in the way in which they were being driven. I was glad when the JJ belts arrived a few days later. Both machines are now working perfectly.

My thanks to Mr Pearson and to Colin McCormick for their interest and advice.

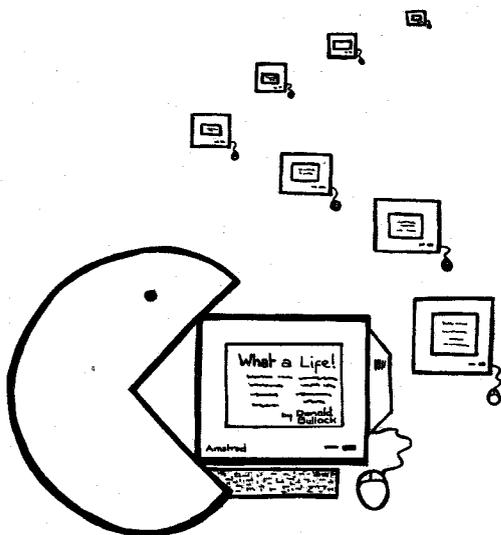
I soon tumbled to the reason for the sudden demise of the original belts. They'd led a hard life before they went to Spain, where my Amstrads live in a 12 x 10ft wooden chalet in our garden. In summer the heat inside is unbearable from mid-morning onwards. My printer ribbons have suffered similarly – the ink has dried out, so that even 'new' ones print faintly. My remedy has been to erect a covered gantry above the chalet to protect it from the sun and provide a draught between the chalet and the cover.

### Disc Drive Tip

Here's a tip for anyone about to dismantle an Amstrad PCW disc drive. The drive uses a three-quarter inch long brass pin, about a millimetre in diameter, to detect the disc's write-enabling shutter. This pin is located, but not secured, in a hole in the disc drive's cast deck, in line with the disc shutter. It can drop out and be lost without you knowing that it was there. You don't discover this until you've reassembled the drive, refitted it, reassembled the machine and then tried to use it. You find that the drive is prepared to write to your disc whether it's write-protected or not.

### The Difficult Ones

Steven reckons that the difficult sets come in every time I slip off to Spain. I'm not too sure. I think he does the easy ones and saves the rest for me. He likes a quiet life, but doesn't get it. He's in the wrong trade for that.



The other day he presented me with a GoldStar CT2168P that was completely dead – there was not even a standby glow. This is unusual as these sets normally get stuck in standby. We didn't have the circuit diagram, but I dived in and checked the fuse and the 2-2Ω, 5W surge limiting resistor. They have sometimes been the cause of this symptom, but were all right. So I moved to the primary side of the chopper circuit and found that there was no drive at the base of the chopper transistor Q801P. A check on the 100μF, 16V coupling capacitor C805P showed that it had fallen in value to only a couple of microfarads. As it didn't look up to the job I fitted a 35V replacement, which restored the set to life.

### A Philips CTX-S

Steven took the GoldStar set off and brought along a Philips receiver fitted with the CTX-S chassis. It was unwilling to start up, tripping three times at each of our first attempts. When the set did stay on it seemed to be suffering from a migraine attack. The picture was hopelessly scrambled, with no colour except some thick bands of green flashing about. Then the picture improved a little.

"Electrolytics" I said. Steven nodded and headed for the ones in the power supply. He found that the 4-7μF, 63V chopper drive coupling capacitor C2351 and the driver transistor's 220μF, 10V emitter decoupling capacitor C2323 were both very low in value. When they had been replaced the picture was all right at low brightness/contrast control settings, but as soon as the controls were advanced a host of ragged black stripes appeared on the picture.

Steven checked the various electrolytics around the colour decoder chip and found that C2205 (4-7μF), which decouples the slider of the preset contrast control, was short-circuit. The rest were all right. He then moved to the sync circuitry where most of the electrolytics were low in value. When these had been replaced the set produced an exceptionally good picture.

### Kirk Douglas

A decided oddball arrived with a Grundig set which turned out to be fitted with the CUC3400 chassis.

"I'm Grewsome, Mr Buckland" he said, putting it down. "God, you look like Kirk Douglas."

"What's up with the set?" I asked.

"Dead" he said, "but it works". I looked at him for a second or two then waved him out.

I put the set on the bench and switched it on. It came out of standby, and the channel indicators lit up. It also changed channels. But there was no sound or raster. When I took the back off I found that the tube's heaters were out and there was no EHT.

A check on the voltages around the line output transformer showed that they were all haywire. So I removed the transformer and checked the resistance of the windings. Every pin read short to every other one. A new transformer cured the trouble and I prepared to make out the bill, intending to add a couple of quid for Grewsome's wisecrack. Then I looked in the mirror and added a pound.

### Mr Gravel's General VCR

Mr Gravel is usually to be found in our local, nursing half a pint of lager. I've never seen him drink any. He shoved an ancient General VGX520B VCR across the counter.

"Not good enough" he complained. "Ain't had the thing long. Even bought a Testoscope to mend it, but no good." He waved a neon tester at us.

The machine's Panasonic deck had a tie-pin wedged in the mechanism. When this had been removed the machine worked well mechanically, but the video was haywire. We soon found that the RF converter's tuning screw had been screwed and screwed, mangling the circuitry inside.

Even MCES couldn't help with this one, saying that it was beyond repair. Still wanting to help, though I can't think why, we contacted General and were told that spares are no longer available, the machine dating from 1984. So we handed it back to Mr Gravel, who gave us his Testoscope. It was his way of saying thanks. Some readers might wonder why we don't learn. So do we.

### A Vodka and Orange

Glenda Glenthorn's Ferguson 14M9 portable (TX86 chassis) led us a dance for two reasons. First because we'd not seen one before, though they've been around for four or five years. And secondly because she'd spilt a large vodka and orange into the back. The set was dead. A panel assembly to do with 12V DC operation is set on the back. It has to be removed before the rear cover can be taken

off. We found it difficult to remove the panel, but managed it. Then we dismantled the set.

The switch-mode power supply uses a TEA2018A chip that was short-circuit. The 1-25A mains fuse had blown, as had the surge limiter resistor R88. Two of the bridge rectifier diodes were short-circuit. The TIPL791A chopper transistor TR6 was also short-circuit. When we'd replaced these items the primary side of the power supply was all right, but there was an HT short on the secondary side. Disconnecting the 95V feed cleared the short. We headed for the line output transistor, which is also a TIPL791A. It was short-circuit, and when this had been replaced the set sprang to life.

We stopped for a mug of tea before embarking on the job of reassembling the set and its 12V appendage. I won't mind if we don't see another of these sets for four or five years.

### Groucho Marx

Bill Branson walks like Groucho Marx and seems to use his scripts. He strode in with a Tatung TN1616 portable (160 chassis).

"Tube's gone" he said, "line across the screen."

I pointed to the door. In fact the field collapse was intermittent. I took off the back and made for the TDA3651 field output chip I301. As nearly every one of its pins was dry-jointed, I reached for Steven's romantic solder and carefully resoldered them. Then I switched on, reasonably confident that I'd see a full picture. I didn't. There was still field collapse, and safety resistor R411 had popped open.

Feeling a bit like Stan Laurel, I replaced the chip and the resistor. Up came the picture, but after about five minutes it began to roll and I feared the worst. I needn't have done. All that was required was slight adjustment of the field hold control R303.

### An Hinari CT18

Marilyn Murgatroyde came in with an Hinari CT18 portable that was stuck in standby. This set uses an STR50103A chopper chip (IC801) with an SR2M protection diode (D813) across its 112V output. The diode was short circuit and the 6-2Ω, 10W surge limiter resistor R801 open-circuit. The HT voltage had obviously risen drastically, as it does in these sets. When I replaced IC801, D813, R801 and switched the set on it sprang to life. ■

# What a Life!

**A number of interesting TV faults came Donald Bullock's way between visits from Jeremy Hopsack, the opulent optician**

A smart new Range Rover drew up outside. It was driven by Jeremy Hopsack, a local optician. He works one day a week, when he does his eye tests and orders his stock. For the rest of the week his girl sits there taking his bookings. I've never come across anyone who is so expensively dressed, so relaxed and oozing such opulence. His set was a 26in. Loewe model. It would be.

"Can you get it from the car old chap?" he breathed. "Got a bad back you know. It's the darned polo."

## The Loewe M124

As Jeremy departed for his club we struggled to get his M124 on to the bench. It was dead. When we removed the back we found that the 1-6AT mains fuse had blown and the power supply had gone up. The TDA4601 chopper control chip was short-circuit. This had all been caused by the failure of the small, blue thermistor in the start-up circuit.

Steven sat down to fit the replacements, then started the set up gingerly via our variac. It came on in standby. When he used the

remote control unit to switch it to fully on the standby light went out but there was no raster.

Steven's next step was to disconnect all the outputs on the secondary side of the power supply, adding a 100W bulb as a dummy load across the HT reservoir capacitor C652. It lit brightly, removing any suspicions about the power supply circuitry. A check on the BU508D line output transistor T539 then showed that, to our surprise, it had gone very high resistance base-to-collector. A new one restored the raster, but the HT was at 160V instead of 142V.

When the HT preset was used to reduce the HT voltage to the correct level the set squealed. C652 (47 $\mu$ F, 250V) had dried up. So had the associated HT smoothing capacitor C653, which is also 47 $\mu$ F. After fitting a couple of new electrolytics and setting up the HT voltage the set worked satisfactorily, though the tube was flat.

The next day a colourfully dressed huntsman called in, complete with whip and bugle. It was Jeremy. He looked utterly miserable.

"Look at this ridiculous get-up" he moaned. "The things I have to get up to, just to fill in the time."

Tears almost welled up in our eyes. But not quite.

## Snoddies Strikes Again

Wendy Whitstable brought in her Sanyo CBP2145 (E2 Chassis). "Gone to a line" she announced, "and the sound crackles and cuts out."

When we opened it up we saw that someone else had been there first. The field scan had collapsed all right. This part of the circuit was full of dry-joints, and two small capacitors in the power supply had each been replaced with a couple of huge ones for which there was

insufficient room – wire had been used to extend their legs!

We attended to the dry-joints first, then checked with the circuit to find out what the capacitors should have been. The circuit told us that the value was 10 $\mu$ F, 25V. They had been replaced with a pair of 3,300 $\mu$ F, 16V capacitors. When we'd put this right we had perfect field scanning.

We finally looked for the cause of the intermittent sound. In order to remove the chassis, someone had cut the speaker wires and afterwards simply twisted them together. Replacement leads were fitted.

We were curious to know who had previously 'looked' at the set, and asked Wendy when she returned.

"Snoddies" she said. "We got tired of waiting. They had it for six weeks. Said spares were difficult."

## A Strange Display

Tricia Tripmeyer was clearly a lady in a hurry.

"Helloe . . . Got this set here. Akai I think. Yes. Can you fix it? Can't stop now . . ." Then she ran off across the green.

The set was an Akai CT2179N-UK. When we switched it on we found that the newsreader's face was severed from top to bottom. The right side was on the left-hand side of the screen while the left side was to the right.

"Line oscillator speed too fast" I said. Then I noticed that every set in the shop was displaying random interference. We opened the Akai up. The chassis is in two parts, the power supply and line timebase circuits sharing one panel. To the rear of this, behind the line output transformer, there's a blue, 222pF, 1kV capacitor – C416. One side is connected to chassis. This leg had been burning in its solder joint,

*The things I have to get up to just to fill in the time.*



melting the panel support peg. As a result R412 (10k $\Omega$ , 0.5W) had gone open-circuit.

Replacing these two items cured the set. Pity we can't do anything about its owner.

### Delayed Start Up

A Philips 21GR9752/25B (G90B chassis) was awaiting attention. The ticket said "no picture for the first five minutes". I switched it on and found that there was no raster, though the tube's heaters were alight. After marking its position carefully, I advanced the setting of the first anode preset, expecting to see field collapse. In fact a bright raster with flyback lines appeared, and the remote control unit had no effect on the set. So I wound the first anode control back to its original position and waited for the five minutes to elapse.

The screen suddenly flickered a few times, then a very good picture came up. In addition the remote control unit now worked. I reckoned that the delay was probably caused by a low-value reservoir/smoothing capacitor and, with the set now warmed up, got busy with the freezer.

The fault condition returned when C2660 was cooled. It's a 680 $\mu$ F reservoir capacitor which, with D6660, produces about 9V to feed to the 5V regulator. We checked it and found that it read 400 $\mu$ F when hot, almost open-circuit when cold.

### An Amstrad TV/video

Neither I nor Steven felt like tackling the Amstrad TVR3 combined TV/VCR that someone had brought in for attention. In the end I tried it. The unit was dead, with a cassette jammed in it. While I was checking around Mr Drripp, the unit's owner, shuffled in.

"Ah. Gollimup then. Good. It's all caused by the tape. When you gets it out, the set'll be all right."

I removed the recorder and started to work on the TV chassis.

"You won't find nothing wrong there" said Drripp.

I immediately saw that C310, a pretty, Smarty-sized blue capacitor (3,300pF, 1kV) had cooked and split. So I snipped it out and handed it to Mr Drripp. The 4AT fuse had also blackened, and the STK7348 regulator was faulty. As I worked on I noticed that Mr Drripp had crept out.

I replaced these items, reconnected the recorder (this is necessary) and switched on. The unit chirped a few times but refused to switch on – the

power supply wasn't oscillating. So I separated the two sections and got to work again. The value of the 1 $\mu$ F, 50V capacitor C307 in the feedback circuit had fallen to 0.002 $\mu$ F. I replaced it with a 105° type. Then I saw that C314 (470 $\mu$ F, 16V) had been leaking.

As I replaced these two capacitors Mr Drripp crept back in, holding a bank card and some blues. When I'd finished I reassembled the unit and switched on. Up came a picture with good sound. Mr. Drripp seemed to be pleased.

"There we are" I said, "that seems to be all right, doesn't it?"

"But what about the tape in the recorder?"

"Ah" I said, pressing the eject button. Out it came. I popped it back and pressed play. The recorder sprang to life, playing Drripp's tape in all its glory.

As I disconnected the unit Steven pulled out his pen and reached for the invoice pad. Mr Drripp started to say goodbye to his blues.

### A Samsung Camcorder

I picked up the Samsung VPE808 camcorder that Steven had taken in. The playback was grainy. So I immediately pushed it to Steven's end of the bench.

He opened it and announced that the heads were worn. A check with CPC revealed that the part no. was SS69063-213-651, that it was available only to special order, and would take seven-ten days to arrive. It came rather sooner. While the invoice clearly referred to the upper drum assembly, a complete upper and lower assembly had been sent. This is, we supposed, the way it comes.

Steven fitted it by removing the camera's top casing then gently lifting out the deck/PCB assembly. The drum assembly is secured by a couple of flat plastic connectors and three screws. The trade price of the assembly is £57.14 inclusive of VAT, and I've never seen a head change done faster.

### CPC

Mention of CPC reminds me that the company's new catalogue arrived the other day. It's quite the largest spares catalogue I've come across for our trade. CPC is to be congratulated on several counts: on the vast range of items stocked, on the prices, and on the speed and efficiency of the delivery service.

The catalogue's layout and presentation are wonderfully clear. Its indexing, which is the key factor,

couldn't be better. And the catalogue is free to those in the trade. I also find CPC's frequent, well-produced 'flyers' with special offers welcome.

Well done CPC!

### Return of the Range Rover

An angler, complete with oilskins and waders, climbed out of the Range Rover that pulled up outside. He walked to the back and pulled out fishing rods, baskets, nets and giant umbrellas. Then he came into the shop. It was Jeremy Hopsack again.

"Hello folks" he said. "Can you bring in the telly in my car? It wants putting right."

When we went out to get it we saw that it was a Loewe. Our hearts sank.

"So it's gone again" I said.

"Not art all" he replied. "It's my brother's set. He was so impressed with the job you did on mine that when his failed he asked me to bring it along."

Phew! We put it on the bench and noticed that it was exactly the same model.

"It works when the weather's warm" Jeremy said. "When it's cold it doesn't. Give us a ring." Then he looked himself up and down. "Look at this lot. I've to go off fishing, but don't really want to have anything to do with the slippery things."

We plugged the set in. The workshop was warm and the set worked, but it chirped as well. We felt that the suspect was probably in the primary side of the chopper supply. So we switched off and brought the freezer into play, spraying the electrolytics one at a time and trying the set whilst the selected capacitor was cold.

When we got to C624 (100 $\mu$ F), which couples the drive to the base of the chopper transistor, we found that the set wouldn't come on until we warmed the capacitor with a soldering iron. We took it out and connected it to the capacitance meter. When it was hot the reading was 80 $\mu$ F. The reading dropped to about 5 $\mu$ F when the capacitor was cold. But fitting a replacement didn't clear the fault!

We persevered and found another electrolytic that behaved in much the same way, C638 (1 $\mu$ F). This is the reservoir capacitor for the feedback voltage to the control chip. It read 0.8 $\mu$ F when hot, open-circuit when cold.

When this one was replaced the set behaved perfectly. It ran well when both hot and cold, and didn't chirp any more. ■

# What a Life!

**TV sets contribute mainly to Donald Bullock's tribulations this month, though there was also an errant satellite receiver**

**P**irate Sky TV cards have long been available in Spain at a fraction of the price of the genuine article. They seem to come from Germany. Originally they worked well then, as the genuine cards were upgraded, the copies became temperamental and were periodically switched off. The boys in Germany would work frantically to overcome the problem. It would usually take them a few days. Having done so, they would store the new decoding system in an EEPROM and send it to Spain. Armed with one of these, a dealer would be able to switch pirate cards on again. It would all take about a week.

I've seen this done. The delinquent card is inserted into a scruffy mass of wires. A switch is then touched, you wait a minute or so and out comes a reformed

character. To prove the point, the dealer pops the card into a decoder-receiver connected to a TV set and up come the encoded channels.

But the German code busters don't seem, as yet, to have managed to crack the code used since the latest card appeared on the scene. I wonder why? Could it be that the current system works on a constantly progressive vectoring system?

Sky has the ability to switch an individual card off on a short-term basis. I recently bumped into a very disgruntled Englishman here. He had brought his Sky card to Spain on holiday and had asked his wife to record a golf match while he was out on the links. His wife didn't succeed with the recording, assumed that the card was at fault and telephoned Sky to get it put right. Sky spotted that she was telephoning from Spain, explained the situation then switched the card off. It was turned on again when they phoned Sky after returning to the UK.

But enough of this. Work continues apace at the English end.

## Slow Picture

I pulled a set fitted with the Philips CP110 chassis on to the bench and switched it on. The sound was all right, but there was no picture. The tube's heaters were alight, there was EHT at the tube's final anode and enough voltage at the first anode. What was going on? Then the picture began to appear. Very faintly at first, then a bit brighter by degrees. But it never got bright enough.

Using my formidable mental powers, I concluded that we were up against a temperature-sensitive problem. Now which type of component is most likely to change significantly with temperature? An

electrolytic capacitor of course. I turned my attention to the HT filter circuit and found that smoothing capacitor C2621 (22 $\mu$ F, 250V) brought the original fault symptom back when given a burst of freezer. A replacement put an end to the trouble. Out of interest I connected the faulty capacitor to our bridge and gave it another dose of freezer. It's value fell to 19 $\mu$ F. But that had been enough to cause the problem.

## No Picture

Mr Pyesner parked his car opposite and sidled in with a 20in. Ferguson set - TX90 chassis.

"It's got nothing at all. Absolutely nothing" he breathed in a voice that sounded like Peter Lorre. "But it's funny, I can hear it."

He likes to stay and talk. After I'd raised the job card he lit a cigarette and looked about him for somewhere to perch.

"I think it's the valve" he said.

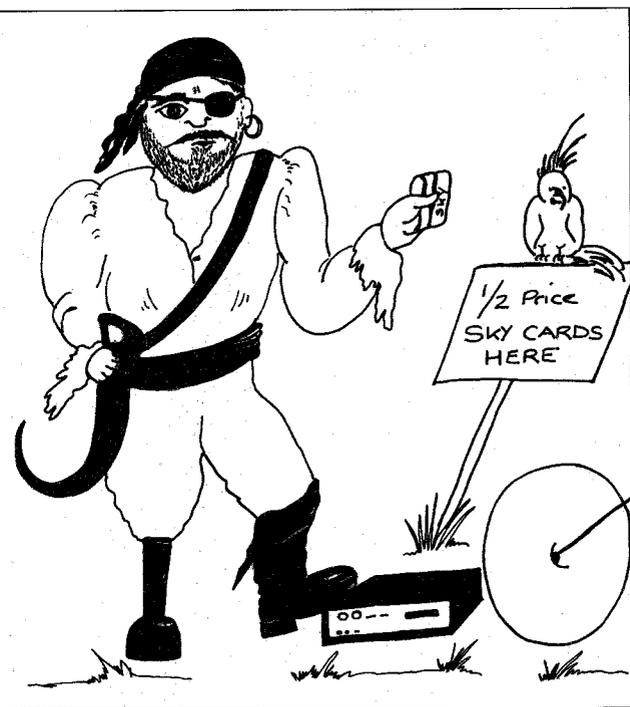
Someone passing his car stopped to tie a shoelace. "Someone seems to be tampering with your car" I said. That got rid of him.

Pyesner's set had sound but no raster. The tube's heaters were out, the voltage across them being low at 2V. I checked in the line output stage and found that the 22 $\mu$ F boost voltage smoothing capacitor C191 had fallen in value to only 4 $\mu$ F.

After fitting a replacement I switched on and began to blow on my nails. But a tripping sound intruded. I joined combat again and found that R229 (39k $\Omega$ ) in the set-HT network had risen in value to 99k $\Omega$ . A replacement restored perfect operation, and I boxed the set up quickly before it changed its mind.

## Satellite Trouble

Mrs Brawn doesn't mince words. She dumped an Amstrad SRD610



satellite receiver on the bench.

"This sod's gettin' dumped if he won't come right" she said thickly. "It's died on me."

"Er. . . right" I said, stepping back slightly and reaching for my pen. "Can I have your name?"

I don't like satellite receivers much, perhaps because I don't like satellite TV. So I called Steven over.

"It'll be the usual" he said. "Both 47k $\Omega$  start-up resistors in the power supply will have gone open-circuit or high in value."

I tested them. One was open-circuit and the value of the other one had crept up to 50k $\Omega$ . Replacements brought the set back to life, but with a rolling, juddering picture.

"Er. . . what do you think might be causing this?" I asked.

"Dare say it's a dirty normal/band switch" he said airily. "If you turn the receiver over you'll see it underneath. It should be set to normal."

It was. Touching it with a trimming tool made matters worse. I cleaned it and the trouble went away. The results were perfect.

### A Whining Philips

As I put the Amstrad receiver down Walter Wingnut minced in. He was carrying a 14in. Philips set that looked new to me.

"It's like my missus" he said. "Does nothin' but whine."

It was a 14PT155A/05 (Anubis A chassis) and was dead and whining. I checked the HT voltage and found that it was struggling. So I jumped into the line output stage, looking for a short-circuit. As the transistor and the hotter diodes were OK I decided to disconnect the HT feed to the line output stage. When I switched on again the whining had stopped and the HT voltage had come up.

Something was clearly amiss in the line output stage. I switched off and checked various capacitors and diodes, all to no avail. The transformer maybe?

I gave it the nose test and detected a slight smell of resin. After checking and finding that there were no shorts across the secondary outputs I reconnected the HT feed, switched on again and let the set run for a few minutes. Then I felt the transformer. It was warm.

"You swine" I shouted and began thumbing through the catalogues for the best bargain. There weren't any! The only one I could find was in the SEME catalogue, part no. LOPTX 773 at about £25 plus VAT. I

ordered one by telephone and it arrived before I put the telephone down (well, almost). It cured the trouble, and I telephoned the good new to Walter.

"It's ready, Walter."

"Oh good, how much?"

"Forty five quid" I said joyfully.

"Oh god" he said and hung up.

### A Blow Up

Phyllis Puke came in and jerked her thumb towards her car. Nice girl.

"In there, Mr Bullthing" she said.

I walked out to her car and collected the Matsui 2092T. This 20in. model worries me to death, since I can't make out the very expensive and blotchy circuit diagram.

"Blew up last night" said Phyllis as she lit up her cigar butt.

"Thought I was being bombed."

I feared the worst and opened her set with trembling hands. The posistor had blown up, sprinkling the chassis with blackened grit. I cleaned it all off and fitted a replacement. It's a square, black device, type 140M. When I switched on again a perfect picture came up.

"Thank you Mr Bill. . . Boll. . . Bullthing" said Phyllis as she forked out. Then she hoisted her set, marched out and smacked it into her boot.

### Another Blow Up

The next caller, Bud Bluffer, brought in an Hitachi CPT2198 (G8Q chassis).

"Don't get me wrong, Mr Bullring" he said. "This 'un's dead. You don't have to tell me. Big trouble."

"How do you know?" I asked, drawing up a card.

"The fuse was blackened" he said. "Don't get me wrong. I fitted another and, whoosh, up it went again."

"Right" I said, and off he went.

I opened the set up. The fuse he'd fitted was rated at 4A instead of 2.5A. It was a tube of soot. Trouble in the power supply I thought, and got stuck in. But the only thing that seemed to be defective was the start-up thermistor TH902. One lead was just making contact and was intermittently open-circuit. When it did make contact the device drew a lot of current and the fuse blew. A replacement cured the problem.

When Bud called back he had a wad of tenners in his hand. "How many?" he asked.

"Two" I said, stopping him in his tracks.

"Cooo" he said. "Thought it would cost a fortune." Then he stopped and pointed a finger at me. "Don't get me wrong" he said.

### Wobbly Picture

As I was making the tea, Steven attended to the next customer. I looked over.

"It's my Fergie" she said. "Keeps jumping about like somebody mental. Couldn't be worse."

Steven collected her set, which was a TX10 (1550 series). When it had been on for a few minutes the picture started to wobble and sway – as if a dream sequence was being shown. Then the set tripped and shut down. He switched it off and handed it over to me.

Some sort of spurious waveform seemed to be modulating the line scan. But what could it be? I reckoned that something, somewhere in the line output stage was acting like a spark gap. So I switched the set on, put out the lights, pulled down the blind and gazed intently at the line timebase in the dark. I saw nothing helpful. On with the lights etc.

Then I gazed at the chassis. There didn't seem to be any dry-joints. Hm. . . A capacitor can arc inside, especially when subjected to a pulse waveform. So can a resistor, though I would have expected external signs in this case, like cooking. Diodes can also arc. I looked around at the larger diodes.

D831, which is connected between the base and emitter of the line output transistor as a protection device, seemed to be a likely suspect. It's a bullet-shaped, green BY188B diode. So I connected the scope, via a high-voltage, low-value capacitor, to the base of the line output transistor and switched on. The pretty waveform was perfect when the picture was normal. But a series of sharp pulses appeared and blew the waveform about as the picture began to wave. I took out the diode and checked it while using a soldering iron to warm it. After a minute the readings began to dart about, as I had hoped. A new diode restored normal operation.

For the pedants, in earlier TX10 sets a BY226 diode was fitted in this position. In the later PC1560 series the diode is renumbered D743 and is type BY588. There were also three different line output transistors – BU208B, BU208A and BU508A, some of which have a 47 $\Omega$  resistor in parallel with D831/743. ■

# Get a Life!

**We all know what our Donald is really like - kind, patient, courteous etc., etc. Daughter Rebecca Bullock has hijacked his wordprocessor to fill us in on the etcetras. . . . .**

**H**ello! I'm Rebecca Bullock. My dad repairs TV sets and things and writes about some of them. He's a good dad, but when customers annoy him he kicks at our dogs and cat and walks over them saying "out of my way". He also gets nasty with my mum, and she says things to him that make him even more annoyed. Right now he's very annoyed, and my mum said I should write an article telling you what he's really like. I slipped into his hut to write this one.

## Likes

I like my dad, even when he's annoyed, but he doesn't seem to like people. Well, he likes some. He likes my Aunt Lillie, but not my Uncle Tom, who works at the Weights and Measures and says he's important. My dad says he's unemployed and a prat and ought to be hung.

He doesn't like Mrs Brown. She brought along a plug and asked dad to fit it to her video lead. Then she came back and said he'd blown up her video. He told her to go to a place I mustn't say, and my mum told him to stop causing trouble.

## Sundays

My dad likes to read the *Sunday Telegraph*. But when he opened it this morning the telephone kept ringing and apologetic people asked my mum which set is the best, and did my dad have a fuse, and was their set ready, and that their husbands thought it was a valve. My dad refused to speak to them and my mum put the phone on the table and hissed at him to grow up fast.

He always does what she says, because she's always right. So he talked to some of them. But meanwhile more apologetic people knocked on the door and came

round the back, and crouched and smiled and waved at him through the window when we were having our dinner. They told him their set still wasn't quite right, and could he sell them a plug, and tune in their new video from Crubbs Foodstore, and stop their's rolling because they were expecting visitors. He got annoyed and told them to go to the place I mustn't say.

Then he caused trouble with my mum and said she was like my gran, only worse. He asked my mum to buy him a spade and some cheap crocodiles, but I don't know why.

## It takes all sorts

Garth Palmer's mother is nice. Garth takes her radios and hair-dryers to pieces, then she brings them here and my dad throws them away for her and she gives him money. My dad likes Mrs Palmer and my mum thinks he's good at being funny.

My brother Jamie asked dad why his hair is going rotten and my mum said it's because he's old. But my dad said it's because my mum nags him. He said his hair was all right before he met her, and that he was four inches taller. The chemist down the road thinks he's old too. He thinks dad is my grampie. My dad said that the chemist is a prat and can go to that certain place as well if he likes.

Herbie Millar knocked his mother's radio over at Easter and my dad had to send off for a new cabinet. Mrs Millar and Herbie came to collect it yesterday. She said a new radio would have been cheaper, but my dad said she asked for a cabinet not a new radio and he wished he lived on the moon. Mrs Millar smiled and asked him to knock up a rocket. Then her Herbie

started jumping about, making noises and saying he was a rocket. When she asked him to stop he screamed at his mother and knocked the radio on to the floor and the cabinet broke again.

Mrs Millar told Herbie he'd been very naughty and started to cry. But Herbie stamped his feet and screamed and wouldn't be quiet. Then my dad came over from the bench and smiled at him and whispered in his ear. He shut up at once. I heard what my dad said, but I don't think his soldering iron would have fitted and anyway it was very hot. Mrs Millar dried her eyes and said how good my dad is with children, and how lucky my mum is.

## Outside calls

My dad doesn't like calling at people's houses, but a man who wore a round hat and a frock sat in the workshop and talked quietly to him for two hours and said his set hadn't been right since dad had done it. In the end my dad agreed to go and took me along.

The man ran along the pavement behind our van and was puffing when he caught us up at his house. He unlocked the door and my dad went in and walked quickly round the table and out again. The man watched us drive away. When I asked my dad why he came out so fast he just said "stunk". He told my mum that the set had a Snoddies sticker and that the man could go to the place I mustn't say.

## Holidays

When we go on holiday my dad is really happy and my mum likes him a lot. We don't tell anyone that my dad mends sets because if we do they all tell him what sort of set they've got and what was on when it went wrong and how the man

they called was a crook and it was only a loose wire. This sort of thing makes my dad nasty and he rows with my mum. She tells him to get that look off his face and he tells her she should have had a husband who clouted her. She jabs him and says nobody would clout her and his side of the family are all mental.

My dad likes listening to BBC radio programmes. When we go to Spain he picks them up on our satellite dish and transmits them around our house and garden using a little home-made transmitter. My mum can hear them on her VHF radio while she's ironing on our sun roof or in the garden.

Not long ago dad mended our neighbour's radio. The neighbour called him over the garden wall, gave him two bottles of wine and said he was the best engineer there ever was, because his set now even picks up Radio 2 "all the way from Britain".

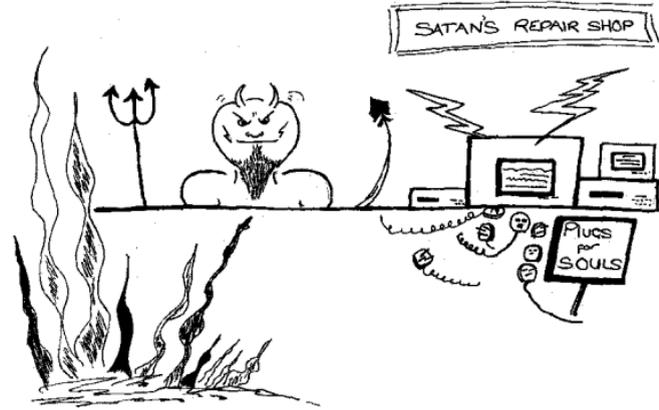
Last night we went to Paco's to have a meal. The TV set there kept going to a line. Paco started looking at my dad so we left and went to Manuel's. Half way through our dinner a bullfight came

on and the set binged and smoked and my dad said "bloody good job". He said he hoped the bullfighter had blown up too. He wished every set in Spain would blow up and that all the so-called engineers would go to the special place and stay there for keeps. He said next time we go to Spain he's going to take with him a special remote control to switch off all the sets everywhere he goes.

### At home

Our telly isn't on much when dad is at home, because the people on it annoy him and make him call my mum names. He says when he was a boy he never saw anyone like the people he sees every day on television – they were all in asylums or hung. He wants them hung now.

My dad wears sandals. He says it isn't because he cares about the world and that those who do are prats. He likes a laugh though. Once when I was with him at Mrs Blair's house he purposely told her a lie. When she made a joke about his toe poking through his sock he said "I know, but it's the only pair



***"I wonder if this is going to be a god day for Donald, or am I going to be rushed off my feet"...***

I've got". She took two pairs of socks off her clotheshorse and tossed them over to him. Her husband looked up from his paper and said "hey, hey there." But my dad kept the socks. They were good ones.

When my dad is out my mum says she doesn't know what she'd do without him. I like my dad. Even though he keeps telling people to go to the place I mustn't say.

# What a Life!

**What is it about people when it comes to paying for TV/video repairs? As Donald Bullock recounts, even pleasant, sensible folk can become difficult**

**W**hen I first got a toe-hold in this trade my customers were folks I'd got to know in the course of my daily life. One used to fix my car, another was a fishing mate and a third our postman. Then there was Mrs Poltroon, who kept the local shop. All were pleasant and sensible people, folks you could have a laugh with and who would do you a favour.

But I soon learnt that each had a Jekyll and Hyde aspect. And what switched them from one to the other lay within their radio and TV sets. Mrs Poltroon became funny with me when Mullard reduced the prices of its rebuilt tubes by a fiver. Four months earlier I'd replaced the Mazda tube in her set. Because she was waiting to see "how it settled down" before paying me, she'd still not payed her bill when Mullard made its move. No words of mine could overcome her conviction that she'd been done, and I was grateful when she finally paid me her bill less a fiver – which was a lot of money then.

## Tuning Problem

The garage man was no better. He brought his huge wireless set to me

because it wouldn't tune. Its dial-drive cord had perished and become mangled on the pulleys and springs. Its shredded remains lay on the dusty floor of the set.

His attempts to remove it had resulted in his jamming a spring into the exposed aluminium vanes of the tuning gang. To compensate for this foolishness he'd "tightened up" all the RF trimmers and IF cores in the set. Needless to say he didn't say a word about this. I found out the hard way. When I finally mentioned it to him he scoffed and blamed the manufacturers.

"Fancy leaving the screws half undone" he said.

Those open tuning gangs were terrible once they'd been disturbed. Time and time again I would think I'd cured one, only to find that it grated and died at a particular spot. And clearing that often only moved the trouble.

I had no signal generator – we didn't all run to such things in those days – and while I could face a misaligned IF strip, or even a bit of RF misalignment, a combination of both in the same set was daunting.

Any veteran of this trade will tell you that broken dial drives were pure hell. In fact the curse of the trade. You could spend hours, or even days, trying to work them out. One would sometimes reluctantly shell out for a manual only to find that it contained no answer to the problem. Philips alone could be relied upon to provide a detailed drawing, together with the cord length and stringing procedure. I finally obtained a manual, but it didn't help.

I wore out yards of dial drive in my experiments, and was exhausted when I'd finally wound my two yards of drive cord around the gang

drum and its succession of pulleys. But I felt victorious and went to bed contented. Next morning I noticed that the cursor ran backwards along the dial glass. The Light Programme seemed to be coming from Luxembourg . . .

When I eventually won I charged him a pound and lost his friendship for life.

"A pound for slipping a bit of string around a couple of pulleys?" he gasped.

## Loss of Signals

One Sunday, while we were eeling by the Severn, my mate mentioned that his TV picture had faded away. We had a pint or two on the way to his place, then took the set to my deserted workshop. It was the awful Philips monochrome set with the angled metal chassis that swung out like a gate – the one with a pad of megohm value presets which imprisoned half-watt megohm fixed resistors that used to go high in value together.

After taking enough pulse voltage from the line timebase valves to ward off rheumatism for life, I replaced the video output valve and restored the picture.

A couple of weeks later his wife complained that the sound had failed. I rolled up at the house and replaced one of the dreaded PCL83 valves to restore it. But she wasn't going to pay because, she said, I'd "weakened the set in doing the last repair". That was my fault, not hers.

Next week I fished alone.

## Duff Tube

Our postman, who'd already had the frighteners from another dealer before he brought his set to me, sucked in six gallons of air when I confirmed that his tube's heater was open-circuit.



*Mrs Poltroon turned out to be another of my Jekyll and Hyde customers.*

"You'm no better than that other lot" he pronounced.

"Do I look sappy or summat? That's what the other rogues said. But I knows better. Faulty tubes puts a line across the picture. Mine just won't come on. It's the switch. Anyone knows that."

It wasn't long before I decided to straighten out customers who talked such nonsense to me. The result was a series of spectacular rows, and I never changed anything. Today people seem to be even worse.

### An Ancient VCR

Albert, a neighbour who works in a nearby town, asked me to look at his ancient Panasonic VCR recently. It had become intermittent, then died.

Steven put it on the bench, and found an open-circuit fusible resistor on the power panel. The faulty resistor wasn't immediately apparent, because it was enclosed in a woven, asbestos-type cover. A replacement brought the machine back to life, but only intermittently.

We then found that a fuse on the power panel was making only intermittent contact, though it looked all right. We studied it more carefully and found a dry-joint where the wire joined the metal cap.

When we'd replaced the fuse the machine stayed on, but it wouldn't operate and the clock was haywire. We unplugged it from the mains, then plugged it back in again. The clock came right and the recorder now worked, but only for a while. Then the clock went haywire again and it was sometimes necessary to unplug and plug back the machine several times before we struck happy and had both the clock and the machine's operation right.

I suspected the main micro-controller chip, and recalled that a colleague of ours in the town where Albert works had an identical scrap Panasonic. I phoned him and he offered it to us free of charge, provided we collect it. I decided to charge Albert a tenner for the work we'd done and to offer to fit the microcontroller chip at no further charge if he'd pick up the scrap machine.

So I popped over to make the offer, explaining that a new micro-controller chip would be costly but that we could use one from a scrap machine if he would pick it up. As soon as I got to the bit about a new chip being expensive, Albert cut in.

"A tenner's as much as I want to spend on it" he said.

I tried again. "But Albert, this machine works only when it wants

to. Now this friend of mine has . . ."

It was no good. I was cut off again. So I shut up.

A few days later Greeneyes and I saw his wife at a local shop. "Ta for making our recorder go" she said. "Pity that the rest of the trouble was too expensive to put right."

"But we were prepared to do it for nothing" I said.

"Oh no, that wouldn't have been possible" she replied, "we called Snoddies along. They charged us £25 to come and told us the job would cost £75 and wasn't worth doing."

It was nice knowing you, Albert.

### Just a Blur

The customer who brought in a Saisho CT141X said that all he could see on the screen were a few patches of blurred colour. We switched it on and a few patches of defocused chroma appeared. When we took the back off we saw that the 48-pin UPC1420CA chip IC401 was sitting in a patch of damp green mould.

We removed the chip, cleaned the chassis carefully and fitted a replacement. Up came a picture with chroma and luminance, but it was still completely defocused. Tracking on the tube base was the cause of this final problem. After fitting a replacement the set produced a good picture.

### Field Collapse

I felt sorry for the chap who came to mend our grandfather clock. He was a straightforward and careful craftsman who wasn't happy until he'd got it right. Before leaving he offered to give me a fairly new Hitachi colour set which, he said, was dangerous. It had field collapse and couldn't be repaired, so he'd now bought a new set.

"When it went wrong I called the cheap chap with the answering machine. He doesn't give his address. He made it go and charged me twenty quid, but it failed when he left and he would't ring back. Then I took it to Crubbs Foodstore. They wanted eighty pounds and said I had to get them a manual. So I took it along to Snoddies. They charged only fifty quid, but it went again next day. The second time they kept it for four months then asked me to collect it. The tall chap there said the frame chip explodes as soon as you switch on, giving them no time to check on what's wrong. He said the last time it nearly took his fingers off!"

I've often commented that no customer can say anything that's

new to me. But I hadn't heard that one before.

We got the set and put it on the bench. There was nothing wrong with the field output chip, and nothing exploded. The cause of the trouble was a tiny strip of print that earthed pin 1 of the chip. It had been damaged by someone's carelessness, with the result that the chip was floating.

### A Monster

At this point Steven went off to do a field call, having failed to persuade me to go. Greeneyes helped me to get a huge Sanyo CBP2558 on to the bench. This monster (the set, not Greeneyes) is fitted with the E3 chassis. It should come to life at switch on. This one did, or didn't, fifty per cent of the time. Even when it did come on it died after five minutes. When the set wouldn't work the channel LEDs nevertheless came on and it changed channels. Otherwise it was dead.

When I withdrew the chassis to check voltages the set refused to fail. I finally phoned Sanyo, which still gives excellent technical advice to us ordinary mortals. I was told to check for the standby 5V supply at pin 1 of plug K3C. I'd already done that, and it was present. The next suggestion was that I check the standby transformer T325 for dry-joints or, less likely, a high-resistance or open-circuit primary winding. I'd also done this. Check the voltage monitoring diodes D310, D312, D318 and D319, also the optocoupler D325, I was told. They were all OK.

I eventually soldered leads to various voltage lines, reassembled the set, and monitored them with the meter outside the cabinet. What eventually transpired was that the 12V supply was unstable, often dropping to 8V or so and sometimes as low as 2V. When the supply was stable at 12V the set would spring to life. When the voltage dropped, the set would fail until it was switched off and on again. The cause of the problem was the 12V regulator IC380, which is a Sanyo device marked 3122V. Its input was OK, but its output varied.

We ordered the replacement from Chas Hyde who handle Sanyo's spares. When I removed the old one I was able to make comparison resistance checks with the new one. This proved the diagnosis. I also noticed that the original mica washer was cracked. The replacement regulator, plus a new mica washer, put matters right.

# What a Life!

## Donald Bullock had a hard time with son Steven's oddball clientele while Steve was away on holiday in Greece

I've had a terrible time while son Steven has been away on holiday somewhere in Greece. Before he went he wired his soldering iron to the front of the bench. Since I don't walk like a German, I kept getting my foot caught in its long lead. He's nothing like as intellectual as I am – follows Greeneyes I suppose – and seems to encourage thickheads and oddballs just for the laughs. For the last fortnight they've all converged on me. I've had about enough, I can tell you.

### Drop of Solder, Please

The first was Norman Kneejer, the happiest sap I know. He called last Monday morning, when it was raining hard. I'd just caught my foot in that cable again and upset my tea down my shirt when he marched in with a Panasonic TX2 television set in his arms and a screwdriver in his

mouth. Since he's a walking warehouse of jokes that make you cringe, I decided to get rid of him quickly. I shook the tea off my cuffs and pulled a job card towards me.

"Mornin' sunshine" he bawled, "likes your drop of tea then."

He plonked the set down. "Bunches into lines when it's hot. But have no fear – Norman's 'ere." That was followed by a peal of insane laughter.

Then he slipped the back off the set and pointed to the line driver transformer T531. "This 'un's dry-jointed" he blared. "Drop a bit of solder on his legs, will you?"

I did as I was told and he quickly reassembled the set, put his screwdriver in his mouth and swept out.

### Liney Pictures

After changing my shirt I returned to see the postman arrive. "Duck" he said. I looked around me then saw that he had left the post. Electricity bill. Gas bill. Rates . . . And they're big money nowadays. As I stood nursing my misery, a thin dark cove with bright eyes pranced in nursing a Panasonic VCR. He smiled and pointed at me.

"Super forehead" he said, "but it's being liney." I decided to ignore the jibe and drew up a job card.

"Name?" I asked.

"Ramonshab Habeshamwee-Skwy!" he smiled.

I put my pen down. "Pop in tomorrow" I said.

The machine was in NVJ45 – Super 4 head. I tried it in the E-E mode and the picture was terrible – all lines and interference. Then I played a tape. The results were even worse. Was there one fault or two?

I decided to concentrate on the E-E fault symptom first and approached the power supply with

the hairdryer. A single blast at C27 (330µF, 10V), the slyest looking electrolytic I could find, made the picture much worse. A blast of freezer improved it. The same applied with the playback picture. Our meter said C27 was OK, but a replacement cured the trouble.

### A Dead Maspro

Then a lanky misfit sauntered in. He looked like a dyspeptic question mark. "Where's Steve, mate?" he asked.

I looked behind me, then at the questioner. "Greece" I said.

"You any good?" he asked, producing a Maspro SRE250S satellite receiver. "Cos this 'un's dead, mate."

He was just too much. I waved him out and opened the Maspro. It's identical to the Pace PRD800, and as usual required a full rebuild on the primary side of the power supply.

I reached for the usual bits and replaced the TEA2018 chopper control chip U1, the BUT11A chopper transistor Q1 and the various capacitors and resistors. After this it sprung to life. I wondered what sort of kit would be required to get its owner right, and decided that a ten-year spell in the army might be a good start – but tough on them.

Just then my journalist daughter Rebecca popped in. "What's a spin doctor, dad?" she asked. "Dunno" I said, and she fled.

### Sprained Wrist

The next caller looked like a sprawling birthmark. As though he'd been bleached then unsuccessfully dyed strawberry pink. He had a couple of feathers in his ginger hair and was clutching a Matsui 209T TV set.



"Hwahna hwuppnah hweep chwah" he said. His guttural voice made Jimmy Knapp sound like a falsetto. I looked at him and passed him a job card and a pen. "I've sprained my wrist" I said.

He picked up the pen, shut one eye, pulled his mouth open and wrote "Herb McHaggis" and a phone number on the card.

When he'd left I pulled the set on to the bench and tried it. The picture was good, apart from a bright line across the centre - like field collapse superimposed on a normal picture. The set has a discrete-component field output stage, with complementary pnp and npn transistors.

"What causes that bright line?" asked Greeneyes.

"The spot that writes the picture is writing two lines in the same place before carrying on." I said.

"Why?" she asked. "Well, one transistor writes the top half of the picture, then the other takes over to write the lower half." I said. "There's a bit of a problem where they meet, and while it's waiting for instructions the spot is hanging about and writing away out of cussedness."

I spied a 10µF, 50V bootstrap capacitor nearby (C302). Now I don't like low-value, high-voltage electrolytics. Their crime rate is high. This one added to it. Its value had fallen, a replacement curing the fault.

## The Mouse

A bit later Nick and Doris came in. Doris and Greeneyes went into a huddle and Nick dived his hand into his pocket.

"I've brought you my mouse" he said. "Perhaps you can do something with it. It won't work."

I looked at him. Didn't even know he kept mice, let alone working ones. Then he produced this computer mouse.

When I looked inside I saw that there were three tiny, round pressure switches. They were sticking. I picked up an old VCR front that used identical switches. When the faulty ones had been replaced the mouse was OK.

"That's clever of you" Nick said. "You know I recommend you all over our club."

As they were leaving Nick pointed to the sun blind above the shop front. "There's a big belly of rainwater up there" he said. He picked up the sweeping brush and pushed the blind up - just as McHaggis came to collect his set.

He collected the deluge first.

"Hrupplahnnoo. Kwaahahruppnah Twoe n hwopper" he bellowed. "Ai cannah fwalpren. Bluddahwhall sokenwhaait!!"

"Sorry" said Nick, skipping off.

## Crackles and Flickers

A huge old car pulled up. The Reverend Goode clambered out, hugging a Panasonic NVL20 VCR.

"Good to see you, Donald" he boomed. "You've met Curate Blande before I think . . ."

"Er, good to see you" said the Curate, three octaves higher.

"Crackles and flickers like the devil" bawled the Reverend. "Not the bally Curate, the set!"

"Like the . . . er . . . devil" said the Curate. ". . . the set."

"Always did, mind, but it's intolerable now" the Reverend continued.

"Intolerable now" squeaked the Curate.

The E-E picture and sound were unstable, and touching the PCB almost anywhere made it worse. I took out the tuner subpanel, resoldered some very dry joints, then reassembled it. The fault was still present. Further tapping and flexing took me to the RF demodulator can. There were a couple of poor joints inside, but resoldering them made no difference.

Then I noticed a ribbon of fifteen conductors that connected the main PCB to the clock/control panel. It was connected to the main PCB directly, but was connected to the front panel via a plug and socket arrangement. Or rather half connected. The plug wasn't pressed fully home, and its covering of dust showed that it never had been. Pressing it home cured the trouble.

## James's Problem

As I was boxing up the Panasonic VCR unit son James came in, looking a bit down in the mouth.

"The disc drive motor in my Amiga A500 computer seized last night" he said. "So I took the computer to my room and carefully removed the motor assembly. It's mounted on a 9 x 7cm PCB, with its metal backing plate, and there's a sync magnet attached to the rim. I slid the disc platten off the motor shaft, placed it carefully on a keyed drawing on the desk, and took the motor to the workshop to clean and lubricate it. The motor's all right now."

"Good" I said. Then he told me

the bad news. While he was in the workshop Greeneyes had gone into his room, seen the mess on his desk and tidied it up. The platten and keyed drawing were separated. So far his attempts at achieving the correct reassembly position have been unsuccessful. The motor spins, but fails to boot up the disc and stops.

Does anyone have any alignment information? Or perhaps someone has a surplus replacement motor panel assembly or replacement disc drive?

## Jammed Switch Mayhem

My last tussle of the day was brought in by Phyllis Puke. It was a 20in. NEI set, Model 2051R.

"There can't be much wrong with this set" she announced, "it's almost new. My husband always reckoned it to be a loose wire or the valve. He's dead, that's the problem."

"I'm sorry to hear that" I said, "er, what happened?"

"Dunno" she said, looking at the set. "He was OK last night. When I tried him today he was just dead. Can you get him right by tomorrah?"

I waved her out and pulled her set on to the bench. If I pressed the on/off button enough to close the mains switch, but not enough to short the pulse contacts, the set went into standby and couldn't be brought out by either manual or remote control. If I pressed the switch in all the way there was a rustle of EHT but nothing appeared on the screen.

I marked the position of the first anode preset carefully, then turned it up. A milky raster with pronounced flyback lines appeared. Then I noticed that a button on the front panel was jammed in the on position. It was the 'select' button, for colour, brightness etc., and was made of flimsy plastic. By jamming in, it had disabled the micro-controller chip. I found a better replacement in our junk box and this cured the trouble.

I boxed the set up and, as I was putting it down, caught my foot in Steven's loop of soldering iron lead. The hot iron flew up and I did an impromptu juggling act with it and the set as the phone rang and rang. When I picked it up it was Steven calling from Greece.

"I've had a terrible time" he said. "It's been raining every day. I've never seen so much."

A wicked smile creased my face. "Good!" I bellowed, "good, good, good!!"

# What a Life!

## An answering/fax machine, VCRs, satellite receivers, TV sets and people give Donald Bullock trouble

**S**teven has become indispensable to me. I can't repair half the stuff that comes in nowadays. It's not that I'm technically incompetent – any more than I ever was, that is – it's that I cannot operate so many of today's household electronic items. As Steven can work most of them, I need him to make sure that the dead set I'm trying to repair is dead because of a fault, not because it uses some quirky switch-on technique.

The present obsession for remote control doesn't help either. Half the time the customers don't bring the remote control units in with their sets, and when they do I've got about as much hope of working them as I have of piloting a Boeing plane across the Atlantic.

It seems that we are stuck with all these gadgets that bristle with features people don't want. Is it simply because the technology is there and the designers feel they have to incorporate it, or are the marketing people responsible? Whatever the answer, there's something wrong when a chap who fully understands the theory and practice of say colour TV can't switch one on. Why can't we have proper rotary on-off switches, and ordinary brightness and volume controls? Oh to see the back of flashing displays and masses of incomprehensible foreign symbols!

### The Fax Machine

I rue the day I spent £600 on my fax-cum-answering machine. It too looks like an aeroplane flight deck, and is a pain in the neck if I want to record telephone messages while I'm out. Although the machine is the biggest one I've ever seen, it uses a tiny tape about the size of a domino and has control buttons like tiny pills that live recessed under a flap.

Whichever button you find and press, the tape starts to race in one direction then the other, while the

machine bleeps and hoots like a demented canary. Its makers stumbled across a chip which stores a fleeting travesty of the sound that goes into it. When I record an answer message, which for my £600 mustn't last longer than twelve seconds, it goes (I think) into the chip then from the chip on to the tape. The tape dances around for a while, then the machine plays back what I've recorded. Twice. And despite my wonderfully clear diction, I end up sounding like Jimmy Durante in his cups.

I keep this machine as far away as I can – in Spain, where power cuts are frequent. Some last for only a second, but that's enough for the answering machine. While we're all wondering where the lights went, it plays my message back to us. I'm tired of this and of the machine! Will someone swap me a simple fax-cum-answering machine with two tapes, no voice chips, no all singing and dancing exhibitionism and controls that I can see and work? There's only one condition: I shall never want to see or hear of it again.

### No E-E

Yesterday we had three power cuts. As my message was played for the third time a grinning blob plodded up the drive. He was carrying a dismantled VCR.

"Ah, the man with all the answers!" said the blob.

"I don't even know the questions" I replied. At that he handed me a bottle of whiskey and I began to find him tolerable.

"All I did was to move it to another room" he said. I waved him away and decided to try the whiskey. The machine was an Amstrad 4600 Mk. 1, with no E-E pictures. Sound and playback were OK.

"Nice man" said Greeneyes, "do it cheaply. It can't be much if he only moved it to another room."

"But it's all in bits" I said, "some journey!"

I headed for the signal stages and spied a nasty-looking 1,000µF, 6.3V capacitor, C817. Was it a coupler? I set the machine to record and touched one side of the electrolytic with my scope probe. There was a nice, dancing waveform. At the other side there was nothing. A capacitance check showed that the electrolytic's value had fallen to 2µF. A new one restored the E-E pictures.

### A Pair of PRD800s

When the blob returned he was carrying a Pace PRD800 receiver. Intact, too.

"You won't believe this Mr Belcher" he bawled.

"I do believe it" I replied. That shut him up.

The trouble with the PRD800 was the usual power supply failure. I soon got it going, then found that while it produced unscrambled programmes it wouldn't produce the scrambled ones – nor even the nasty little order to insert the card. I got the manual out, felt a migraine attack coming, put it away then homed in on the decoder. Everything looked OK at first glance. Then I noticed that link L20, which sits proud of the PCB, was leaning over slightly. When I straightened the link it seemed to be loose. One end was dry-jointed. Soldering it properly cured the trouble.

### Deceptive BUT11A

When Mr Blob came to collect the PRD800 he had another one under his arm. It was identical. "This 'un's dead too" he announced.

I made for the BUT11A chopper transistor, which read all right. So did the mains fuse and the mains bridge rectifier. I then tested some of the parts I distrust. R14 (100Ω) and R8 (1Ω) were open-circuit

while C5 (22 $\mu$ F, 16V, 105°C) had fallen in value to 3 $\mu$ F. Just to be on the safe side, I also replaced the TEA2018 control chip. Then I plugged the machine in again, switched on and the fuse blew.

I sat back and reflected. Why hadn't I been a traffic warden or a social worker?

I looked at the BUT11A. Just the chap to blow fuses. So I checked it again, very carefully. It was apparently perfect. But I decided to replace it. Then I fitted a new fuse and plugged in again. This time it worked a treat.

Later I sent Steven a riddle. "When is a perfectly good BUT11A not a perfectly good BUT11A?" I asked.

"You've had Pace trouble" he replied. "I know. It seems to happen only with Pace receivers. The BUT11A reads perfectly but blows fuses. I always replace it regardless."

### Desoldering Braid

"By the way" he added "have you noticed how expensive desoldering braid is? £22 plus VAT for 100 feet! That's £66 for a 100 yards. And it's only fine screening wire impregnated with resin flux. You can buy 100 yards of heavy coaxial cable for less than a third of that."

"You can always make you own" I said. "Buy a 100-yard reel of light screened wire and a half litre of resin flux. It's not much of a job to strip the screening off to make your own."

### An Akura VX150

Harry Hogwash is a likable chap. It's just his silly manner. He called in yesterday with a VCR that didn't produce a clock display – an Akura Model VX150

"Only got back from Mexico last week" he said. "Wife dropped dead yesterday, and my daughter's just run off with an Eskimo."

"I suppose this recorder thing's troubling you as well" I said.

The video looked new but was out of guarantee. Being a budget machine, I could work it. The VCR accepted a tape, then immediately returned it.

I opened the machine and removed the top PCB. This took longer than it takes to say, because all the plugs and sockets have to be parted. Having won, I found that the cause of the trouble was obvious. Safety resistor R601 (2.2 $\Omega$ ) had been located in its holes but left unsoldered at one end. As a result it was making intermittent

contact. Resoldering it did the trick.

Harry, pleasant as ever, collected it the next day. "Must trot along" he said after paying up, "my father's had a heart attack, our garden wall has just fallen down and my boss has gone mental. Just one thing after another, innit?"

### Flighty's ITT TV

Then Mr Flighty pranced in with an ITT TV set. Greeneyes likes Flighty. I don't.

"Ha ha, Donny old chap. You're looking older, my boy. What is it now? Seventy? How's that lovely wife of yours? Never could see what she saw in you!"

Greeneyes appeared, smiling nicely. "Ooh hello Mr Flighty" she cooed, "nice to see you again. What's new?"

"I'm glad you asked that" he began.

I interrupted. "What's up with the KB – I mean ITT, Flighty?" I asked.

"Whining" he bawled, waving his arms. "Well it would here, wouldn't it? Har har har!!" And off he skipped. I gave Greeneyes a dirty look and she clopped off.

The set was one fitted with the CVC803 chassis, and the squeal was coming from the power supply. The HT voltage was very low. I've had this on several occasions. The cause is C757 (10 $\mu$ F, 350V), the smoothing capacitor at the HT output from the series chopper circuit. This one had fallen in value to 3 $\mu$ F. A replacement restored normal operation.

### A Gentleman?

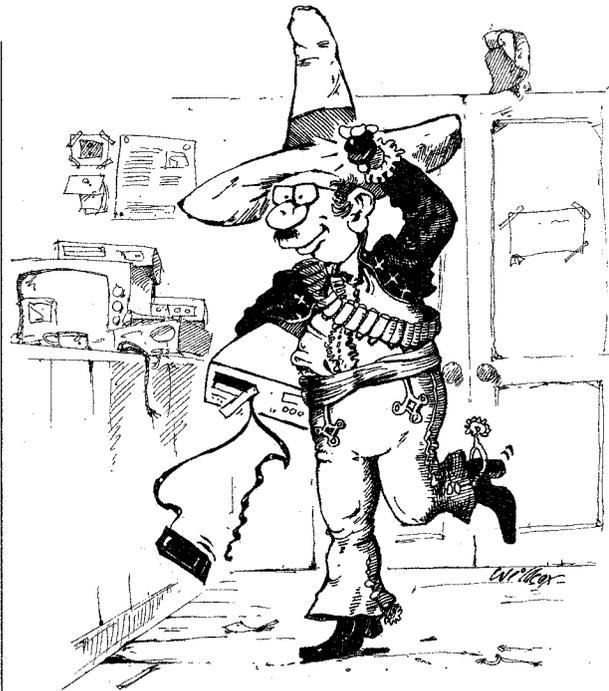
Our next customer looked normal enough. And well dressed too. I felt grateful. He came in, smiled and raised his hat. Then he waved to another fellow to bring the set in from his car.

"Pleased to meet you Mr Bullock" he said. "My name is Hodd. My set has been very good but has gone all snowy. Mrs Smith recommended you. I'd be glad if you would have a look at it."

"With pleasure" I replied.

The set was a Grundig C7500 (CUC731T chassis). There was no picture or sound, just a snowy raster. I made for the large tuner/IF can, opened it and found a burnt spot on the panel. After removing the carbon I bridged the print and up came a picture. But it was juddering, and there was no teletext. Two extra faults, field and text? As this seemed unlikely, I stayed with the tuner/IF unit.

After a thorough visual



"Only got back from Mexico last week"

examination I adopted my usual approach in such cases. I carefully removed the electrolytics, starting with the lowest values, and checked them on the bridge. Some were low and were replaced. When I switched on again I was rewarded with a good picture and perfect teletext. Just as I'd boxed the set up, Greeneyes came in with the tea.

"We need more customers like that" I said. "It's a treat to deal with a normal, tidy gentleman for a change. Makes you feel the job is almost worth doing."

Mr Hodd's big car showed up again next day. He came in, smiling, and raised his hat. Then Greeneyes came in and he raised his hat to her. A perfect gentleman.

"Ah, I see it's ready! Very good of you Mr Bullock" he said. "I hope it wasn't too much trouble."

I smiled, said it wasn't and reached for the bill.

He called his man in to carry the set to the car then, after a few moments' pleasant conversation, buttoned up his coat.

"Watch this, Mr Bullock" he said.

With that he walked out to his car, got into it and closed the door. The engine fired into life and the car purred smartly away.

Greeneyes watched it disappear, then turned to me. "Did he pay?" she asked.

"No" I said.

She looked me up and down and shook her head. "So he's a normal gentleman and you want more like him!"

"I didn't know he'd turn out to be Hodd" I said, "I mean, er, odd." ■

# What a Life!

## Uncertain and suspicious customers, various different makes and models, Don Bullock gets them all

There we were soaking up the sun and helping the Spanish to erode their vast surplus of plonk when Shy Victor Smallpiece minced in carrying a Samsung VCR.

"I don'tt wantt to be pushy, Mr Bullock, I'm shewer. Ack-chew-alley I've broughtt you a repair."

It was a VXK306, a sleek, new-looking machine with one of those centre-mounted decks. When I switched it on the clock display came up brightly then went out, leaving no sign of life. I hoped I could fix it without my capacitance meter, which blew up the other day, or the oscilloscope, which Steven has pulled to bits. When I removed the top I saw a fairly full chopper power supply board enclosed in a shiny tin box, about six inches long by two and a half inches square.

Without a circuit diagram all I could do was to carry out a few checks. It was likely that the chopper had stopped oscillating for some reason, possibly because of a short-circuit across one of the outputs.

I made sure that AC was reaching the bridge rectifier circuit and that its DC output, measured across the reservoir capacitor with its negative tag as the meter's earth connection, was healthy. It was, and there was plenty of HT at the collector of the chopper transistor. As the transistor itself checked out OK, it was time to move the meter's negative lead from the live earth point to an isolated earthing point on the secondary side of the circuit.

Fortunately the chopper power supply's output voltages are marked on the panel. I didn't expect to find any. But voltages there were – those I measured were all exactly double what they should have been! Hmmm.

At this point two things happened. Our neighbour, Mrs Sweet, showed

up with her VCR, which was also a VXK306. And Greeneyes collared me to go out shopping. Son James was around, so I explained what the situation was and asked him to take over.

When we returned, James had both VCRs working.

"Mrs Sweet's machine had a cassette jammed in it" he said.

"That was easy to deal with. So I tried her power pack in the other machine, which then worked with the correct DC outputs from the chopper circuit. After refitting the original power supply boards in the two machines I tried capacitor substitution – swapping over the reservoir/smoothing electrolytics at the outputs. When I transposed C35 (470 $\mu$ F, 16V) from the faulty machine to the good one it produced the same symptoms. So I fitted a rreplacement and everything is now OK.

He's learning fast. "Good work!" I said, "I wondered how long it would take you to work that one out. . ."

As he'd reassembled both machines I left it at that. But I put the faulty electrolytic aside. It'll be the first to greet my capacitance meter when I get it back.

### Mrs Runner's TV

When I returned to the UK my first customer was Mrs Runner. She was followed by her son Clarence, who was carrying an ITT TV set that turned out to be fitted with the CVC1175 chassis.

"Tell Mr Boolock, Clarence. Do as I say."

Clarence opened his mouth but she cut in again. "Flagpole" she shouted, "nothing but a bloody flagpole."

I fingered my chin and wondered what the weather was like in Las Palmas.

"Tell Mr Boolock what was on when it happened, Clarence."

Clarence breathed in, then she started up again. "It was that la-di-da chap who spouts about the stars: and with Jupiter in conjunction with Mars the prospects are pretty poor aimafraid. . ." She laughed at her good imitation then left.

The set had line collapse, which is an unusual fault these days. I glanced uncertainly at the line output stage and noticed that L502, which is part of a series LCR network across the scan-correction capacitor C518, was leaning a bit. Sure enough one of its two tails had parted company with the board – it had never been properly tinned. I made it good, thanked my lucky stars for an easy repair and switched on.

There was a whooshing noise and R512, a 100 $\Omega$  safety resistor which is also part of the LCR network, sent out a smoke signal that read "goodbye". I fitted a replacement then looked around the circuit again. C518 (0.47 $\mu$ F, 400V) had lost one of its legs and cracked open. No wonder there was no line scan.

After replacing C518 I dropped below bench level and wound the set up using our variac. To my relief it sprung to life, displaying a proper raster. When the aerial had been plugged in there was an excellent picture.

In the fullness of time Mrs Runner returned. "Ask Mr Boolock, Clarence. Go on."

Clarence shuffled his feet and breathed in to speak, but the voice I heard was Mrs Runner's.

"Why don't you ever speak" she shouted, "just like your farther – 'e never says a word." Then she turned to me.

"Ready. Fifteen." I said.

"Bloody 'ell" she said. Then,

looking at Clarence, "it's all your fault. You wouldn't speak. They takes more notice of a man."

## Mechanisms

Dick Flotsam padded in with a Philips FCD285 stacking unit. As usual his feet were at a quarter to three. I retreated a bit. Having been brought up on early Philips wireless sets with their remarkably sophisticated RF circuits and resultant knife-edged tuning, I've always had a good respect for Philips' electronics - in spite of their bulky, pitch-covered capacitors and a tendency to use pesky, high-value resistors. But having also suffered from Philips autochangers and, more recently, VCRs, I run from the mechanics.

This reminds me of the time about forty years ago when I worked for a firm that used to sell a lot of nameless radiograms, each of which housed a nameless autochanger. The changers were troublesome and inscrutable, so we used to pile them on a spare bench awaiting the attention of Blenkinsopp, whom I suppose you would call the company's TLO in today's jargon. He used to pull out a pair of pliers and bend the thin wire rods and levers this way and that, and eventually got them going. For a while, anyway.

Then, as our sales grew and our piles of faulty autochangers also grew, his visits became fewer and fewer and we eventually realised that they had stopped. We knew that he still called on another dealer up the road. So one day, knowing that he was due, we kept an eye open for him.

This was easy. Our workshop, above the sales area, looked down over the main street. The huge plate glass windows of the shop opposite gave us a clear reflection of our own shop front and pavement. Eventually we spotted Blenkinsopp a few hundred yards away on the opposite pavement, striding towards us. As he drew closer he crossed over the road to our side then, doubled into a crouch, ran past close to the wall.

But back to Dick Flotsam "Can you mend this for me?" he asked.

"I doubt it, Dickense" I said. "What's up with it?"

As it was dead I took it on and opened it up. This required more time than it takes to say so. The mechanism controls are a long way from the front panel, long plastic bars being used to connect them.

When I eventually had the main chassis out on the bench I switched on. There was nothing except for a crackling noise that seemed to come from the mains transformer. But it was cold. Then the unit came on and the crackling stopped.

Thinking that the on/off switch might be cooking, I removed it from the panel and carefully slid off its metal retaining cover. Bits and springs flew everywhere. So this was the end of that switch. But the bits I eventually found seemed to be OK.

I then noticed that the pins of the mains transformer, which is panel mounted, had recently been resoldered. When the solder was removed I discovered that one of the pins for the primary winding was blackened with corrosion. It sat as good as gold in its solder blob, but was virtually insulated by its coating.

## Oddballs

Mr Nutt called in with a Panasonic KXF2060 fax machine. He's a picture of health countryman but is convinced that everyone is out to get him. It must be five years since we managed to persuade him that his neighbour's satellite dish wasn't a secret listening device.

"Had the telephone man out to move the socket. Crafty fellow bugged it" he said, his eyes darting around the workshop. "People can bug phones, you know. The so-called engineer reckoned my line isn't bugged. Yet he bugged it himself."

"What makes you think that?" I asked.

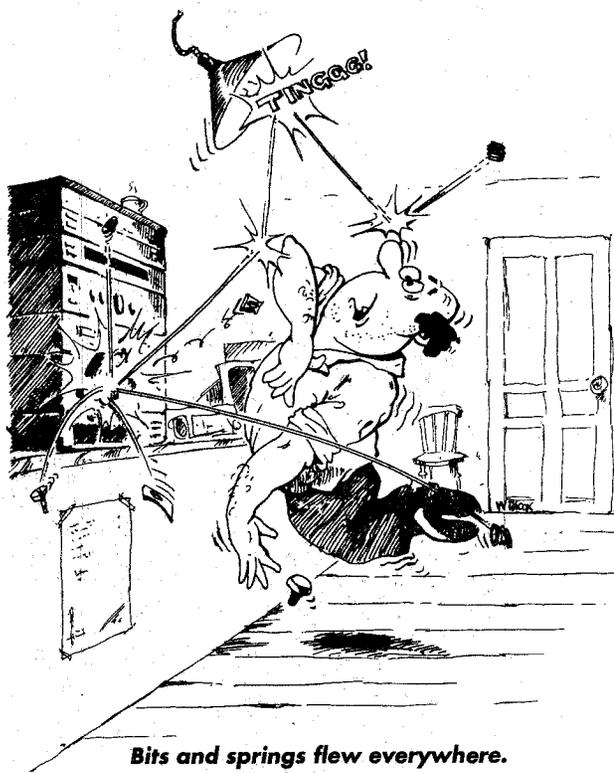
A knowing smile came over his face as he pushed the fax machine towards me. "Why else would he disable my fax? It was all right when he came, but when he left it wouldn't accept my outgoing messages. Still won't. Stops me calling for help unless I use the bugged phone."

He studied our faces then left, looking uneasily about him.

As Steven began to open the fax machine Major Hagger strode in and tapped his brass-topped stick on the counter.

"Who the devil was that paranoid cove?" he barked. "Squinted through your door blind like a bally quisling. I'd execute that type if I had my way. Make the country a better place."

Then he removed his gloves, took a parcel from under his arm and placed it on the counter. "I've got an assignment for you" he said,



*Bits and springs flew everywhere.*

"and I'd like it completed by 1700 hours if humanly possible."

"What's the matter with it?" I ventured.

"Ticking like a bally bomb" he said, "reminds me of the day I took issue with Monty in Tripoli. One of those dashed natives . . ."

"Ah! The phone" I said, running off. "We'll phone you before five, major."

"Didn't hear a phone" he said as he left.

I opened the parcel. It contained a Pace PRD800 satellite receiver. On test it turned out to be dead though quietly ticking. The chopper transistor and its control chip were OK, so I checked the capacitors that worry me most in these sets, C7 and C8. They should both be 10 $\mu$ F (25V). C7 had fallen in value to 7 $\mu$ F while C8 measured 8 $\mu$ F. I'd expected them to give lower readings, but replaced them and tried the set again. It was now OK. Then Steven came in.

"I've fixed the fax" he said. "Mr. Nutt was right on one count at least. The telephone man had disabled it. Look at this bit of telephone cable sleeving he'd carelessly dropped into the paper feed slot. It was moving around with the roller, which couldn't make contact with the paper."

I walked outside and looked towards the Prince Albert. "Come on" I said to Steven. It seemed the most sensible thing to do. ■

# What a Life!

**It would be a lot simpler if TV sets didn't have owners. That would halve the problems. But we have to put up with both sorts, as Donald Bullock reports**

Every time I see a chap who is going grey the wrong way round – from the crown of his head downwards – I know I'm in the company of a classic worrier. There are quite a few of them about. Eddie is one – forty five, emaciated and a complete stranger to self-esteem. He brought in a Samsung CI6229T colour TV set and stood there, looking downwards.

"It's only an inch tall" he said. I looked at him intently. "'Er said it's no good to anybody, only an inch tall."

"Let's take this one step at a time" I replied, noting down his name and telephone number. "What's only an inch tall?"

"The picture" he said. "It's my sister's set. 'Er wants me out o' the 'ouse. Says I'm crazy."

"How many beans make five?" I asked. He looked up.

"Beans?" he asked.

"Just leave it here" I said.

I pulled the set on to the bench and sought the field output chip, which turned out to be a TDA3654 on a pretty large heatsink. It was very hot indeed. A replacement restored the field scanning, but it still seemed hot to me. Before returning the set to Eddie I ran it for a couple of days and fitted an extension to the already huge heatsink.

When he came back to collect it he pulled out a purse and began poking about in it with his long fingers. They always do, these chaps who go grey the wrong way round.

"'Er said to get outa her house" he announced. "Said I'm crazy, keepin' fish in the bath."

"Do you keep fish in the bath?" I asked.

"'Course I do" he said. "'Ere, don't you start causin' trouble." And with that he strode out.

## Salora J Chassis

Our next caller was Hank. He does a bit of servicing in a nearby village.

"Hey, you two are smart, aren't you?" he called out.

"Sure are" I said, "and if we get any smarter we're going to give this trade the slip."

"This Hitachi CPT2060 is fitted with the Salora J chassis" he said.

"Christ" we said in unison.

"As it wouldn't tune I took out the little tuning board with the picture controls and the tuning circuit on it and soldered some very dry-joints. That brought back the search tuning, and the set will tune and store channel 10. But not the rest. Why's that?"

"Dunno" we said, and off he loped.

We could have been more helpful if the set had been dead. In this event we make sure that the set is switched off at the front button and plug it into the mains supply. If the little red dash in the display lights up, this tells us that the power supply is OK. So we move over to the line output side of the Ipsalo (integrated power supply and line output) circuit. If it doesn't light up we go first to the two 4-7 $\Omega$ , 5W surge limiter resistors RB711 and RB713, then to the MJE13005/BUW41B chopper transistors TB700 and TB701 which often go short-circuit. A clue that this fault is about to occur is provided by the fact that the set takes an increasingly long time to start up.

These sets can fail repeatedly if the repair is not done properly. It's

essential to replace the two 4-7 $\mu$ F, 63V electrolytics CB712 and CB726 that couple the base drives to the chopper transistors. We use the type from Willow Vale. Make sure that you apply heatsink compound to the chopper transistors, and that all three solder tags on the heatsinks are well soldered to the panel – they are used as circuit links. Then check the whole power section for dry-joints.

When we think we've repaired the set and it seems to be working, we switch it off then plug it back into the mains supply. If the dash comes on we know we've succeeded and that the set will spring to life at switch on.

If we suspect the line output side of the Ipsalo circuit we go to the 0-33 $\mu$ F scan coupling capacitor CB532 first. Its left-hand pin becomes dry-jointed. This capacitor is to the right of the square control cutout on the main panel, four inches from the top of the chassis.

All sorts of faults occur when one or more of the legs of the huge heatsink/partition screen become dry-jointed. The screen is silver coloured and wraps around the bottom left-hand corner of the chassis. This item is also used as a conductive link for the print on the panel.

## Norman's Mitsubishi

Our next customer was Quiet Norman Glutton. Short and squat, he likes to eat. And eat. He brought in this Mitsubishi CT2124BM colour set.

"He don't switch on like 'e used to" he said.

I leant forward. "So how does it switch on now?" I asked.

"Different" he said.

I filled my lungs. "Right" I said.

"An' the colours be wishy-washy" he added. Then he looked about and fished his penknife from his pocket.

"What's the pasties like from over the road?" he asked. And with that he waddled off.

By the time he came back, carving into a pie, we had his set on the bench. Sussing out the 'wishy-washy picture' didn't take long. His kids had fully upped every control on the remote handset. But he was right: the set didn't switch on as these sets should. Instead of coming to life when the on-off switch was pressed it went into standby. To make it come on we had to press the standby button.

I dived into the power supply panel, which is to the right of the main chassis. A 100 $\mu$ F, 50V electrolytic (C964) had leaked so much that its legs had rotted away. A replacement cleared the fault, and by the time the job was ready to go Quiet Norman had finished his fourth pie.

Another fault we've found to be quite common with this model is loss of tuning memory. To deal with this look for IC702 and check for 5V at pin 1 and -30V at pin 2. If either voltage is missing, check back to the power supply and then, if necessary, replace the chip.

### Cassandra Grant

It was stark and awful yesterday morning. Then Cassandra Grant glided in. The sun shone, the breeze dropped, blossoms burst from their buds, songbirds sang and the world fell into soft focus.

"I need your help, Mr Bullock" she purred.

"I know" I said, understandingly. "And what would you like me to do?"

"Repair my Grundig TV" she breathed, in her husky voice. I need it as soon as possible."

The set was a TSS340, which is fitted with the CUC3400 chassis. It was dead, with the 800mA fuse SI624 in the feed to the chopper transformer open-circuit. We declared the BUT11A chopper transistor T661 guilty without trial, and sure enough it was short-circuit. So we fitted a replacement, which blew up as soon as we switched the set on again. Time to look farther in the chopper circuit. In this version of the chassis C667 in the snubber network consists of two 2.2 $\mu$ F, 385V capacitors that are connected in series. One of them had dried up completely, while the other had fallen to 0.5 $\mu$ F in value. Replacing

them both cleared the fault. So we phoned the lovely Cassandra to tell her the good news.

Half an hour later a gangling, white-faced piece of string appeared at the door.

"I've called for Cassandra's set" he whined. "Carry it to the car, will you? I've got a bad back."

I did his lackeying and watched them depart. In my day a prat like that wouldn't have aspired to even a Pansy Potter or Keyhole Kate.

### A Matsui Portable

Terry Tic came in carrying a Matsui 1455 14in. colour portable. "Like a bladdy bomb" he announced, "just like a bladdy bomb". Then he departed.

Steven tried the set and found that it was dead: inside there was a Snoddy's job card. "Blew up in standby" it said. C301, a small 47 $\mu$ F, 63V electrolytic that lives by the line output transformer, had disintegrated - it's the reservoir capacitor for the supply to the field output stage. Its innards were everywhere. And C310, an 0.0022 $\mu$ F, 600V damping capacitor that sits by the line driver transformer, had melted. We replaced them and started the set up using the variac. There was a rustle of EHT but nothing else.

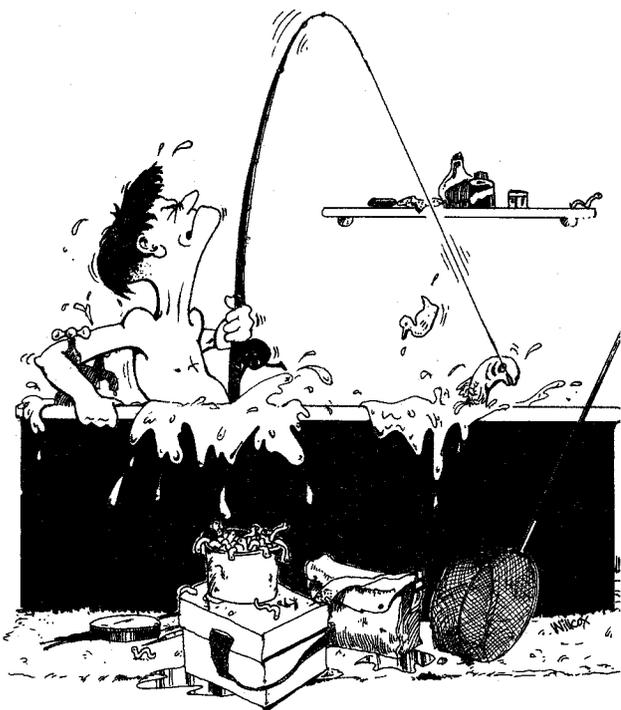
When we checked the voltage across C301 it was negative to chassis! Further checks in this supply showed that the surge limiter resistor R310 (10 $\Omega$  fusible) was open-circuit. After replacing it we had a 50V supply but the set was still dead.

It seemed logical to check the two field output transistors, Q302 (2SC2073) and Q303 (2SA940). They were both short-circuit. After replacing them and carrying out a few more checks we dared to switch on again. There was still field collapse.

I left it to Steven. After spending about four hours on it he stood up and shook his head. He looked shattered. "Can't understand it" he said, "I've replaced or checked just about everything". Then he mused: "wonder if the field scan coils have gone as well?"

There was a similar set under the bench. He borrowed the scan coils and fitted them to the 1455. Up came the field scan, and after some adjustment we had an excellent picture.

"You've got to give Snoddy's one thing" Steven said, "they know which jobs to grab and which ones to turn down".



"Said I'm crazy, keepin' fish in the bath."

"And that's everything" I said.

Then Terry returned. Steven pulled up the 1455 for him and noticed that he was carrying another identical set.

"I won't go on having that set done, Mr Bullfrog" he bawled. "It was only my son's computer monitor. I've found another one for him at the car boot sale. Cost next to nothing. Just put 'im back together and I'll take it out of your way."

### A Call to the Bar

The phone rang. It was the Horseflies, who run our local pub. Their lad had managed to yank the coaxial plug off the aerial lead. As Greeneyes had come in to tidy up, Steven and I decided to go off together.

Having fixed the lead we were about to depart when we saw Pervy Fletcher, a right shallow, extrovert showman.

"Ah, Donld" he rasped, "let me get you a drink!" He guzzled the last of his and ordered a round. "These two look singularly dry to me" he commented.

Then a one-eyed fellow lurched in, looking the worst for drink.

"Hm... inebriated" observed Pervy. "If he's any trouble, leave him to me."

We made a hurried departure. I keep telling Horsefly he should put more water in the beer if he wants to avoid trouble...

# What a Life!

## *A mixed batch of TV problems and customers of various sorts. Donald Bullock's workshop scene*

**W**hile we were in Spain last week our neighbour, the Widow Twerpy, called us over. Her Sky News channel had suddenly deteriorated – it was just possible to see and hear what was going on through the snowy screen and hissing sound. We weren't all that surprised, as there had been a spell of winter storms with strong gales (those who only visit Spain for summer holidays have no idea!). But the other channels were all OK. In fact apart from Sky News her reception was excellent.

We tried another receiver-decoder, but it made no difference. So we connected a new download from her LNB to the receiver-decoder. This made no difference either. Time to take the LNB to the workshop for investigation.

It's an older type, with an open-ended horn. As I was wondering whether the damp had got into it, out bounced a huge jumping spider. They are common in these parts. I have seen one pounce from nowhere on to a bluebottle, then grip and eat it in a trice. I was frightened to death.

But the spider cleared off. I studied the LNB carefully and decided to open it. Then I saw a pair of powerful arms protruding from behind the Avo. All further work was swiftly delegated to son James.

He connected the LNB to our workshop dish, and found that the fault was still present. Sky News was virtually unviewable. So he shone the bench light into the horn, picked up a pair of tweezers, and in no time had removed a huge ball of cobwebby stuff from deep inside the horn.

Then he reached for a screwdriver and hesitated. He looked worried. "I hope there isn't one of those jumping spiders inside" he said.

"Don't worry" I replied. "It's gone. Jumped out and disappeared some-

where behind the Avo. James got up and fled.

After a while I managed to coax him back. He opened the LNB, removed the rest of the debris, and reassembled it. Then he tested it again. Sky News was now perfect. The reception I mean, not the programme.

### **More LNB Trouble**

As the boys took the LNB back to the Widow Twerpy I returned to the house to find Greeneyes peering at a mass of snow on the screen of our 27in. Sanyo set, which is run from a separate LNB feed.

"Look what's just happened to Sky News" she said. "It was all right a minute ago."

I looked at the picture. It was as bad as the Widow Twerpy's had been. And the other channels were all perfect. More spiders?

As the LNB is a dual-output type, I decided to swap over the downloads. What with the rain and the winds, one of them might have become waterlogged. But this made no difference. It was going to be another workshop job.

When I opened it I found that rainwater had got in at the cable exit points – there was a small area of green corrosion. I cleaned this off, carefully valeted the unit with a just-warm hairdryer, then reassembled it. It worked perfectly after that. When I refitted it I sealed it up like Fort Knox.

### **More Sound**

A man who looked like a ransacked ferret approached the workshop the other day. He was nursing an Hitachi colour portable, Model C14 P216. There's a stock sound fault with these sets, and I sniffed easy money to be made.

"Come in, er... Sir" I smiled.

"Wollitis Mr Block, is this" he

said, holding up the set. "Wollitis is the sound."

"Good, good" I said with great sincerity. "Tell me what it really is, what it really is."

"Wollitis, Mr Block, is I wanted the sound louder. So wollidid, Mr Block, is I opened it up and connected my big hi-fi speakers."

"You stupid twi – er – oh, I see. Ha ha. And why not, eh?" I reached for a pen. "And what name is it?"

"Stoat" he said, "Mr Stoat."

I opened Mr Stoat's set. The original small 8Ω, 2W speaker was both disconnected and ravaged. The wires that had previously connected it lay over the panel.

In this chassis the 10V supply that powers the audio output chip is derived from the line output transformer, via R402 (4.7Ω) which is a safety resistor.

R402 had departed. For reasons that I applaud, the TBA820M audio output chip has been superseded by a KA2201. A new chip, a new speaker and a new safety resistor put the set right.

Mr Stoat came back the next day. "Wollitis, Mr Block, is I've come for the set" he announced.

I hoisted it on to the counter.

"Wollitis, Mr Stoat, is twenty quid" I said, "and wollit'll be if you do it again is forty."

### **Pffh etc**

As he left a large lady barged in carrying a big, clumsy looking set. "He goes 'pffh', Mr Bloop, then the tube goes" she said, throwing her arms apart. "Funny, innit. 'Pffh' an' the tube goes!"

The set was a Pioneer SV2102. I longed for the old days, then faced up to the present. The "tube going" was in fact intermittent field collapse. And when I opened the set I found that it wasn't too frightening – the cabinet contained a Ferguson/

Thomson chassis. I soon saw that the cause of the trouble was a dry-joint at one side of CL54, a 250V, 0.56 $\mu$ F capacitor in the field scan circuit. Resoldering the joint cured the problem.

### Davey Ruggles

Our next caller was Davey Ruggles. A decent loser, Davey makes a meagre living from collecting scrap in his battered little lorry. He'd be better off on the dole, but he's not the type. He and his wife have two children and live in a converted bus. They are the most contented family I know.

"I've got some decent customers, Don" he said. "One of 'em gave me this set. If it's worth mending I might make a bob or two. It's the wife's birthday next week, and trade ain't been so good lately."

The set was a Matsui 2086. There was no brightness, and when I advanced the setting of the tube's first anode preset control, after marking it carefully (easier than searching for references later), I found that field collapse was the cause of the trouble. Then I noticed that R419, a safety resistor, was glowing red hot.

We didn't have the circuit diagram, and I didn't feel rich enough to buy one nor well enough to face up to trying to read one obtained from the boys who, to me, are still Mastercare. So it was a matter of attempting a bit of logical diagnosis.

The supplies involved in generating the field scan would probably be derived from the line output transformer. R419 provided a clue. When I traced its wiring, I came to the line output transformer via rectifier diode D406 and safety resistor R421. The associated reservoir capacitor is C423. What was cooking R419?

On the other side of R419 I found a 12V, 1W zener diode (ZD401) that seemed to be short-circuit. But when the set was switched off it read OK. So I switched on again. The field scan jumped up for a second or two then collapsed as R419 began to get hot under the collar. Was it the zener diode or something else? There's a 220 $\mu$ F, 16V smoothing capacitor (C422) in parallel with ZD401. I removed and tested it, but it seemed to be OK. Because I've an inborn prejudice about and suspicion of electrolytic capacitors however I decided to replace it. This time the field scan came up and stayed up. All was well.

Curious, if not paranoid, about this

I connected the electrolytic to a bench power supply via a cut-out. I wound up the supply gradually: when the output reached 8V the cut-out tripped and the capacitor became warm.

When Davey returned we got him to join us over a cup of tea and told him that the set was a write off. He went a bit quiet, but soon brightened up. "Oh well, it didn't do any harm trying" he said, "what do I owe you?"

We waved this question aside and topped up his tea. Steven went out. When Davey had finished his tea he went back to his lorry – then returned almost immediately.

"Hey" he said, "that set's on my passenger seat with a sticker on it saying 'Mended, no charge'. What's it all about?"

"Compliments of the house, Davey" I said, "give your wife and family our regards."

### Card Trouble

Jim Sawney is a keen pike angler. He was wearing his waders when he came through the door and put an Amstrad SRD400 satellite receiver-decoder on the bench.

"I've had this blasted thing in my fishing bag for over a week" he said. "Forgot all about it. Now the wife wants to record 'The Princess and the Grinning Prat' tonight. Any chance of saving my life? The Sky card is with it. Can I pop in tonight, on my way home from fishing, to see if it's done?"

I noticed that it was raining hard. "Are you going fishing in this?" I asked.

"It'll soon blow over" he replied as he plodded out.

When he'd gone Steven tried it out. It seemed to be all right. Then he put the card in and a message came up on the monitor – "your card is invalid".

Steven checked that the 5V supply was correct at the test point just above the ten-pin connector CN01. It was. Then I saw him blow into the slot before reinserting the card. This time it worked. I looked at him.

"What sort of magic was that?" I asked.

"It's the card contacts" he replied. Then he dismantled the receiver and cleaned them. "Third this week" he commented.

### Fidelity ZX4000 Chassis

I picked up a Fidelity CTV1405R (ZX4000 chassis) which was dead, and started to look for the circuit.

"Are the fuses intact?" Steven asked.



### A commotion outside...

They were.

"Then replace D21" he continued. "It's a BY299 diode and you'll find that it's short-circuit."

I took out the diode and checked it. Steven was right. A replacement got the set working again. I looked at Steven.

"What does it do?" I asked, "and how did you know?"

"Dunno what it does" he replied, "but when the set's dead and the fuses are OK it's always that diode."

Actually it's the HT rectifier.

### Jim's Return

Somewhat later Jim Sawney loomed up outside. He looked drowned and worn out, but he'd had a successful day – there were two fifteen pounders tied to the handlebars of his bicycle. He propped the bike up carefully and came in.

"Hi chaps" he said. "I don't think I've ever felt so knackered. I've walked through twenty miles of river bank mud spinning for them pike. Any luck with the Amstrad? Dare I go home?"

"It's ready" Steve told him, "only a matter of some tarnished contacts."

"Magic!" said Jim. "I can look forward to an evening of peace. I can do with it, I'll tell you."

Just then there was a terrific crash outside. A passing dog had spotted a cat sniffing round Jim's bike and had leapt at it, tripping the owner.

We ran out to confront a general mêlée. Tripped dog owner, barking dog, spinning bicycle wheels and a cat up a lamppost. Then Jim came out.

"You did say you wanted a bit of peace, didn't you?" I asked him.

"Not just yet awhile though!"

# What a Life!

**Is the world full of oddballs, Don Bullock wants to know. Or is it just that they all home in on him?**

I left the shop to stack up some old sets. When I returned, Steven was grinning.

"Had a right oddball crone in" he said. "Name of Swampe. Wanted us to traipse through a mile of riverside weeds and scrubland to refit a coaxial plug. I've had dealings with the couple before. Call you back forty times and keep you waiting ages for payment. Then you get the equivalent of seven and six pence. So I referred her to Snoddy's."

## **Greeneyes' Microwave**

Just then Greeneyes came in, breathing fire. "What's Snoddy's number?" she demanded. "The microwave's playing up again. You took a week to fix it last time and it's never been right since. What's the matter with it - and you?"

"Hang on" I replied. "I'm clever, yes, even brilliant, but not clairvoyant. Last time it was the magnetron, and we had to get one. What are the symptoms?"

"When I switch it on it goes 'tuh, tuh, tuh'. It doesn't produce its usual droning noise, and refuses to stop when I try to switch it off.

"Yes, you'd better ring Snoddy's. And you could tell them to send the bill to Crubb's Foodstore. They're into electronics."

Anyway, we naturally took a look at it. It's a Sharp R8880, which has a grill as well. After opening it up we noticed the small motor under the magnetron. It opens and closes a little flap at the back, depending on whether the grill or oven is being used. It was trying to do this but failed: the flap was offering physical resistance because it was sticking on some gunge. A thorough clean restored normal working.

"Snoddy's indeed" I commented.

## **Aerial Leads**

Then Steven came back. "I've to pop along to Mrs Senile" he said, "to unplug her teamaker and plug in her TV set instead. I have to do it about once a week. When she finishes watching TV at night she plugs the teamaker in ready for the morning. Then she doesn't understand why she can't watch TV while she drinks her tea."

I understood the situation all too well. About half a century ago I had a similar customer. She had a Decca monochrome set with separate aerial sockets for TV and VHF radio. In those days TV closed early. Each weekend she'd plug her TV aerial into the VHF socket to listen to late-night radio. Next morning she'd find herself without TV and give us a call.

## **A Goodmans C1401R**

As Steven left, Mrs Bustler came in. Her husband followed, carrying a Goodmans C1401R colour portable.

"Watch that step" she said over her shoulder, "we don't want anything to happen to our TV." Then she looked at me. "Where's the usual nice young man?" she asked.

"He's gone for a crate of matches" I said. "He's a firebug, you see. What seems to be the trouble?"

"This thing" she replied, nodding towards the set and her husband. "He does nothing, just blinks at me. 'Ere, didn't you used to be old Mr Bullock?"

I agreed to take on the set, and they tramped off. We've had this trouble before with these Goodmans. The cause is usually the STR5412 chopper chip. I sensed a quick buck, but it took a bit longer.

The first thing to do is to check for about 100V at pin 2 of the chip.

It was there all right, but not at the other side of the 1N4937 diode D806 which was leaky. As we didn't have a 1N4937 I fitted a BYD33D. This brought the set to life, and I boxed it up. A soak test proved that all was well.

"Old Mr Bullock" I muttered as I put the set to one side, "used to be old Mr Bullock. . ." I went back outside to finish stacking my sets.

## **Down by the Riverside**

Greeneyes came in to say that there'd been a call. "If you feel up to it. Actually she said she wanted the old man, not Steven. At the back of Deadend Lane, down by the riverside. Ever such a nice old girl. Name of Swampe, place called Bodkin's Shack. Something to do with an aerial."

I made to reply, but her eyes darkened. So I got together some coaxial cable, connectors and clips, and set off.

As I neared the river it started to rain. The road became a track, then a footpath. I gathered my bits and pieces, got out of the van and continued on foot. I could see Bodkin's Shack in the distant, misty scrubland. Before long I'd got to the door and knocked.

An emaciated old girl opened it. "You'll be old Mr Bullock, hasn't it?" she said, "Pop and I have been expecting you."

I went into the barest room I've ever seen, with an old iron woodstove whose chimney flu rose through the roof. An ancient, thin man with glinting eyes sat in a rocking chair close by.

"Connie, get Mr Bullock a chair" he said. Connie did as bidden.

"Now fetch that plug for Mr Bullock." A used coaxial plug was brought at once. They looked an odd couple, as she stood beside him.

"It came off the aerial lead by our bed, look you" said the old man. "And I want you to put it back on. Show Mr Bullock where the cable is, Connie."

Connie pulled open a curtain, and we walked through a cloud of dust into their dingy bedroom. An ancient Ferguson monochrome set of the 1400 chassis type sat on a stool beside the huge bed. The plugless cable hung beside it.

I refitted the plug and tried the set. To my surprise there was a reasonable picture – with the usual vision modulation buzz on the sound.

We went back to the old man to report that the job had been done.

"I'll send you seven and six next pension day" he said. "Now Connie, show Mr Bullock out."

As we went out into the rain, Connie pulled the door behind her. She touched my arm.

"Please understand" she said, "he's not my husband. I'm his daughter."

The old man's voice came through the gap in the doorway. "Connie. Come here, now" he piped. Connie turned and fled inside.

It took me a while to reach the van. Once inside I sat and thought. Is the world full of these oddballs, or do they just home in on me?

### The Porkpie Hat

When I got back I found this chap in sunglasses with a cravat and a porkpie hat. He had a cigarette in a long holder, and his fingers were encrusted with rings. He also had a gold watch as large as a mantle-piece clock, and a loud, ringing voice.

"Slimey" he said. "Nigel Slimey, and pleased to meet you." He pumped my arm as though I was the village pump and idiot. "It's about this old Fergie portable. Got it here. No picture, though the sound's all right."

He removed his sunglasses and screwed a monocle into his eye socket. Then he stood back to look at me. "Now, can you mend it? Eh?!"

I took the set and waived him out. It was a 16in. model, fitted with the TX9 chassis (series 1044). When I switched it on there was EHT but the screen remained blank. I soon discovered that the tube's first anode voltage was missing. R233 (300kΩ) in the feed to the first anode supply potentiometer was open-circuit. A replacement

restored the picture.

While the set was on soak test I noticed that it emitted a discordant, high-pitched whine when the beam current was high – on bright scenes. So I made a simple stethoscope with the outer of a length of coax, made sure that it was dry (I'm not stupid), jammed one end into my ear and moved the other end around the chopper and line output circuits.

It didn't take long to pinpoint the source of the whine. The graphite core of the chopper transformer was cracked. I glued it with epoxy resin and the set stopped its whining.

### A Dead Hitachi

Old Miss Brittle stepped into the workshop gingerly. She was accompanied by a small, watery-eyed man who was carrying an Hitachi TV set. He put it on the counter and Miss Brittle waved him away.

"This set's no use to me as it is, Mr Snoddy" she said. "What's the use of a televisor that doesn't televise?"

So now, on top of everything else, I'm Mr Snoddy I thought as I took the back off the set. It was fitted with the G8Q chassis and, apart from the LED display lighting, was quite dead.

I checked the voltage at the HT reservoir capacitor C931. The HT was present, but didn't get much farther. One end of the HT smoothing coil L931 had never been soldered, so there was no voltage at the smoothing capacitor C936.

When I'd cleaned off the connection and resoldered it the set worked well enough.

### John Berryman

Our next caller was the happy and ruddy undertaker John Berryman. He looks more like a gamekeeper.

"Hi Don" he called as he breezed in. "How are you, eh? How are you keeping?"

"Never mind the trade enquiries, John" I replied. "Busy?"

"Champion" he said. "They're poppin' off a treat, so I can't complain. Anyhow, come and look in the van. I've a corpse that might interest you."

He beckoned me out to his big closed van, flung open the doors and pointed to a GEC C2200 colour set. "That's him" said John.

We carried the set to the bench and I plugged it in. When I switched it on it just squealed.



The road became a track. . . .

"That's all the rotten thing does" he said.

I checked the BU508A line output transistor, which read barely leaky. When a replacement had been fitted the set sprang to life.

"Bet you can't do that with your jobs" I said. "By the way, why are you so much happier in your work than I am in mine?"

"Well, my customers all come with the same fault, Don. No intermittents, and none of them give me any old buck."

"What you you get for each job?" I asked him.

"A thousand" he replied. "Yup, life is good! Wanna job as my assistant?"

"Don't tempt me" I said.

### Well Done!

The other day we had to order a service manual for the Grundig E1 satellite receiver-decoder. When it arrived we were struck by the exceptionally high quality of its production. It covers the Omni and E2 chassis as well as the E1, and also covers receivers in the Philips, JVC and Matsui ranges. Several of the fifty or so A4 pages – the ones with circuit and layout diagrams – fold out to A3 size. The quality of the text and drawings has to be seen to be believed. It was obtained from Grove Farm Publications, Long Lane, Barnby in the Willows, Newark, Notts NG24 2SG (01636 626 327).

Highly recommended!

# What a Life!

**Mostly faulty TV sets this time. A string of successes was followed by a nasty that brought Donald Bullock back to earth**

Over the years the items we have been concerned with in our trade have become ever more complex. What's more, they are sold at prices which twenty years ago would have been unbelievable – unthinkable even ten years ago.

People no longer bring us faulty radios to repair, unless the equipment is fairly modern and incorporates a twin cassette recorder. Even then they make it clear that they are unwilling to pay more than peanuts. New ones are just so cheap! We no longer have to turn stacking units and hi-fi systems away. Their owners buy new. Portable colour TV receivers are going the same way. So are basic VCRs.

A week or two ago a couple of teletext sets were brought in for repair estimates. Neither had serious faults, and we kept our estimates low. Yet the customers turned into Scotch mist on hearing them. People don't even pick the sets up. These days more and more are left on our hands.

## Steven's Expertise

"E shuts down every now and again Mr er.. er.. hnnn hnnn" said the lean little man with the Panasonic video recorder. "But if I taps 'im here he tries to come on, hnnn hnnn."

It was an NVL20B, and the dusky patch on its top smelt of Guinness. But he was quite right. When I opened it up the capstan soon stopped, followed by the rest of the mechanism.

Steven had been watching. "I've had a lot of experience of this one" he said. I stepped back and he tapped around plug 1 on the main panel. The capstan immediately sprang to life. In no time he'd resoldered pin 15. "Plug 1 feeds the capstan motor" he said.

## Mr Mincing

Then I saw Mr Mincing carrying a 14in. Ferguson TX90 from his car. I don't like Mr Mincing. Too loud and familiar. "Don't go away" I said to Steven. "Handle old Mincing as best you can and think up a few ideas on the Fergie while I make the tea." Then I hurriedly departed.

"Wherr's 'e gone?" bawled Mincing. "Miserable old bugger. 'Fraid I'll bite 'im he is."

Steven took the set and found that the problem was field collapse. It was the usual dry-joint trouble. When he'd done the necessary resoldering he had a picture. But it was distorted, with vertical strips of shading that varied with the setting of the brightness and contrast controls.

"I 'en't watching that" bawled Mincing. "I wants 'im right."

Steven busied himself in the power supply, and soon found that the 22 $\mu$ F, 50V boost reservoir capacitor C189 had fallen in value to only 0.01 $\mu$ F. A replacement cured the fault.

"That 'ent gonna cost much, I know" Mincing commented. "Them resistor things cost almost nothin'."

"Twelve pounds twenty five" said Steven, boxing up the set. As Mincing gulped at the air, Steve added "five bob for the capacitor, the rest for our time and suffering."

## Monitors and TVs

Mrs Twog lumbered in as we were drinking our tea.

"Car" she said. "Hoolp... hoolp... ah."

Steven went to her car and returned with a Supertron colour monitor.

"Dead" said Mrs Twog. "See you tomorrow. Hoolp... hoolp... ah."

When we put it on the bench it was dead all right. So we opened it up and Steve went around it with his DC meter. When he touched the base of the chopper transistor the set chirped and sprang to life. The 330k $\Omega$  bias resistor R902 was open-circuit – a replacement restored normal operation.

"Hoolp... hoolp... ah" said Steven, "next please!"

He didn't have long to wait. Old Miss Porcelain called in with her Alba portable colour set.

"Hwuh... hwuh... oh, Mr Burper, it made such an unpleasant smell then went 'phff'. Now there's no picture. Hwuh... hwuh... hwuh" she said.

We pursed our lips and smiled sweetly. When she went we pulled her set on to the bench. I switched it on and the standby light glowed, but the set was otherwise dead. After opening it up I found that one of the pins of L401 was sitting in a large scorched hole in the PCB. The cure was to remove all traces of carbon and resolder the coil with a jumper. After that the set produced a particularly good picture.

## A Satellite Receiver

C.C. Kilby, our next caller, is an expressionless accountant from a nearby town. The C.C. stands for Complete Control. Kilby won't break down and smile, or even be himself. Dealing with him is heavy going.

He opened his briefcase and took out a Pace SS9200 receiver-decoder which was actually dressed up as the Nokia SAT1500. "This instrument failed in use. Hweh.. hweh.. hweh" he said drily. "I'd be obliged if you would repair it. Settlement in cash, of course. Hweh.. hweh.. hweh." Then he

walked off as though freshly starched.

His receiver was dead and the 1A mains fuse had gone to its Maker. We soon discovered that the chopper transformer T2 was faulty, with all four pins on the primary side shorted together. We ordered and fitted a replacement, and also replaced the BUT11A chopper transistor Q1 and its  $1\mu\text{F}$ , 16V base drive coupling capacitor C9. That completed the job.

When C.C. Kilby came to collect his receiver he was clearly pleased, and I fancied that the germ of a smile touched his face. But Steven insisted that he was suppressing a cruel attack of wind.

## The Muck Bros

The Muck brothers, Hawley and Malc, are a pair of jolly farmers. They staggered in with a huge 59cm Goodmans set, Model 2575.

"Have a look at thisun, boys. Kuh!" said Malc. "We don't want to spend too much, mind. If it's more than ninety quid, say, ring us first on this joker."

He waved a mobile phone at us and we took the number he gave.

"We'em off to the market for a few hours. Kuh."

We got them to bounce the set on to the bench, and as they left we removed its back and switched on. A few thin wisps of smoke rose from the main panel. Steven studied them. He homed in on the spot and found that link 13, which carries some spikey chopper transformer voltages, was dry-jointed and getting burnt up about it.

It was another case of clearing the carbon and resoldering the joint. When this had been done we switched on and were rewarded with a good picture.

We rang the Muck Bros on their mobile phone and were answered by a bellowing bull. "Tell Hawley and Malc that their set's done" I said, "at something less than ninety."

## Mr Thick's Solavox

Mr Thick comes from the Severnside village of Elmlode. He came in carrying a Solavox TV set. Steven looked at it and started to gibber, but I stood there resolutely and faced Mr Thick with great dignity.

"It works when you plug it in Mr Pullet, but it's dead" he announced. "Huh!"

"You don't say" I replied, drawing up a job card and filling in his name. "Phone number?" I

asked.

"Elmlode 456. Huh" he said.

I racked my brains for the local code, then looked at him.

"What's Elmlode, Mr Thick?"

"What do you mean, 'what's Elmlode' huh, Mr Pullet."

"Never mind" I said.

"Any more questions, Mr Pullet?"

I waived him out and put his set on the bench. It was a Solavox 22R19. When I opened it up I found that it contained an ITT Compact 80 chassis. I shouted the news to Steven, who cheered up and came over.

The set was dead but the standby light was on. There was no HT supply. On further investigation we saw that there was a dry-joint at one end of an  $0.01\mu\text{F}$ , 1.6kV capacitor in the line output stage and that one of its leadout wires had burnt away. We replaced it and switched on, but there were still no results. So we dived for the line output transistor, which sure enough had shrugged off its mortal coil. After fitting a replacement we switched on and a good picture came up.

"You know, Steven, I reckon this is not such a bad trade after all" I said. "We've fixed several sets with no effort at all. We're so clever we can now take all these faults in our stride. Yep, that'll be it." I reckoned without Mr Sly.

## The Bush 2114

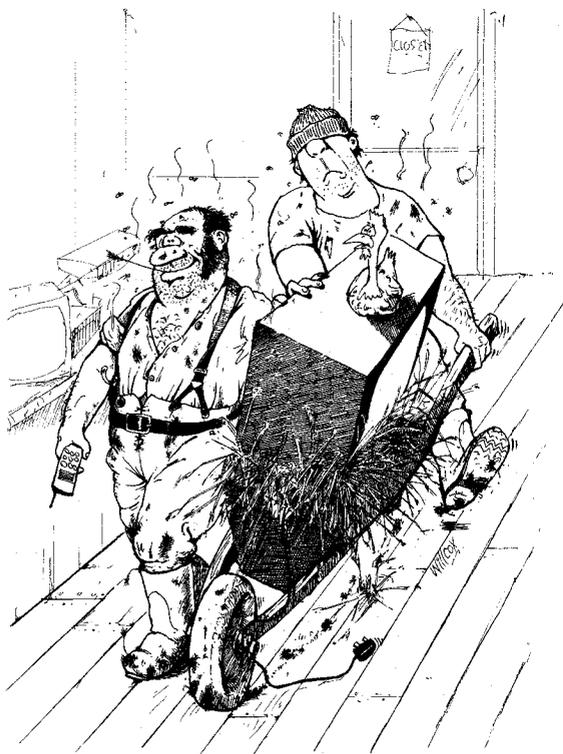
Mr Sly appeared out of thin air. He's an enquiry agent-cum-bailiff, and is the only man I've come across who can swivel his eyes in opposite directions. He was carrying a Bush Model 2114.

"If I as much as look at it it whines" he said. "Nyahh."

We nodded understandingly and promised to look into it.

When we switched the set on we found that in addition to the whining there was no vision and the raster covered only the lower two-thirds of the screen. We noticed that two electrolytics, C806 ( $1,000\mu\text{F}$ , 16V) and C830 ( $220\mu\text{F}$ , 25V), had blown their tops. We replaced them, checked the associated rectifiers and switched on. They blew their tops once more.

After fitting replacements we studied the board. C808 ( $1,000\mu\text{F}$ , 16V) and the HT reservoir capacitor C810 ( $220\mu\text{F}$ , 160V) both had bulging tops. All these electrolytics are reservoir/smoothing capacitors on



The Muck brothers staggered in with a huge 59cm Goodmans set . . .

the secondary side of the power supply.

It seemed clear that the outputs were high because something was amiss on the primary side of the circuit. We eventually found that C818 ( $1\mu\text{F}$ , 50V) had fallen in value to  $0.5\mu\text{F}$ .

We replaced C808, C810 and C818 and switched on. This time the set no longer whined and we were able to tune in a picture. But there was no sound.

C606 ( $1,000\mu\text{F}$ , 25V) and C607 ( $470\mu\text{F}$ , 25V) in the audio output stage had both gone very low in value. Replacements failed to restore the sound, and further checks revealed that the  $1\Omega$  safety resistor R811 in the power supply had blown. A replacement went open-circuit immediately, so we replaced the TDA2006 audio output chip IC601.

It took us some hours of bench time to get the set working properly.

About half an hour later, as we were about to pass the set OK, it banded and showered the bench with electrolytic innards. Steven looked at the set, then at me.

"What was that you said about us being so clever and taking the sets in our stride?" he asked.

"I don't recall saying anything of the kind" I retorted. "It was you who said that."

# What a Life!

**A day's collection of TV (mainly) repairs and the characters who brought them along. Donald Bullock recounts his experiences**

When I saw the car draw up outside and its driver start to pester a passer-by I should have nipped across to the door and locked it. I know that now, but I didn't then. I was curious, and as we know curiosity killed the cat.

The driver was a burly, ambling fellow who looked as though he lived on roast beef and cheap port wine. His wife hung about behind him. After a bit of a flurry, the passer-by hauled his TV set from the back seat and struggled towards our counter with it. He put it down and held the counter for support. He was quite an old man.

"Thanks mate" said the driver. "Oney I've got this bad back, see. On the sick I am. Pensioner akchewly."

As the passer-by staggered out I drew up a job card. "Name?" I asked.

"Swigger, mate" he boomed. "Me set's dead an' I can't do without 'im. What was on when he failed, Nell?"



**"Thanks mate. Oney I've got this bad back, see."**

Yes it was that prat who kept prancin' about, Julian something. Well blow 'im. Oney the telly's our oney pleasure. Well I mean you gotta 'ave a telly, aint you? An you enna goin' t' charge us anythin' much, I 'ope. Oney we're pensioners, see."

## The Bush 2002

When he'd departed we put his set, a Bush 2002, on the bench. We switched it on and found that there was a blank screen, with no brightness or sound. Steven stared at me and, declining to mark the position of the first anode preset, upped the voltage. This showed that the cause of the problem was field collapse.

"We'll need a 12V, 1W zener diode" he said, "because ZD401 will be gone. Also it's 5-6 $\Omega$ , 3W feed resistor R419."

"You'd better check the HT voltage first" I commented.

"Know that too" he replied, spinning his meter knobs. "Up at 135V. Should be 115V. That means C909 and C911, both 47 $\mu$ F, 50V, in the chopper circuit. You'll find they test all right on the bridge, but replacements will produce the correct HT voltage."

He took them out and tested them. They read right. He slung them in the bin and fitted replacements. When we switched the set on and checked the HT voltage it was spot-on at 115V. Then he replaced the zener diode and resistor. Up came the field scanning.

"Gosh, such cleverness" I said.

"S'nuthin'" he replied, wobbling his head from side to side.

## Another OAP

Just then Mr Whiner came in with a Solavox 142TT. "Where's Mr Bullock?" he asked.

"I often wonder myself" I said. Steven appeared, grinning.

"Can't be much" Whiner said.

"Right as rain a second before 'e went. Must be a loose wire or sum-

mat. Only I'm a pensioner, see."

The set was dead apart from the channel indicator. The mains bridge rectifier was doing its stuff, and there was HT at both sides of the chopper transformer's primary winding. But nothing much else seemed to be happening. As I didn't have a circuit diagram I was rather at a loss. Maybe the line output transistor was duff? When tested it was OK, but I decided to fit another one anyway. This didn't help.

Time to look at the power supply more carefully. It's based on an STR5412 chip, which incorporates the chopper chip and its associated circuitry. Pin 2, which is connected to the chopper transistor's base, receives bias via R807 and R808, feedback from a secondary winding on the chopper transformer, and pulses from the line output stage. I decided to check the resistors connected to this pin, and found that the feedback resistor R809 (180 $\Omega$ , 0.5W) had gone high in value. A replacement restored normal operation, with a nice picture and sound.

## Mrs Sad's Video

Mrs Sad slid in with a tiny, slim VCR. As I was filling in a job card a huge teardrop plopped on to it. Then another huge tear came rolling down her face.

"Died" she croaked. "Just like that. All right at breakfast, singing and everything, then" - another huge tear - "he just dropped dead."

I find this situation difficult. I bit my lip and stood still. Time passed by.

"Oh Mr Bullock, I'm going to miss him awfully. He was such a lovely canary" she said.

"I understand" I said. "Can you tell me what's wrong with your VCR?"

"It whirrs a bit. Otherwise it's dead" she said.

It was a Sony SBF30UB Betamax machine. There was no clock display, but the drum motor was rotating. A

fault in the 12V or the 5V supply seemed likely. We checked them both, at pin 3 of CN103 and pin 4 of CN101 respectively. Both were missing. We soon found that the cause of the trouble was a 47 $\mu$ F, 25V electrolytic, C115.

"D'you think we ought to offer to take a look at her canary?" I asked Steven.

### Another Bush 2002

Mr Epongo's head is a bit bigger than normal. He was extra polite. The Bush 2002 TV receiver he brought in was identical to the one we'd done earlier, and the symptoms were the same. As we booked it in he leaned forward.

"I've got a musical jug" he said.

"Er. . . oh, right" I said and returned to my writing.

He touched my shoulder. "It plays Widdicombe Fair" he said.

"Good" I replied, giving him his half of the ticket.

Then off he went, gently tingling his musical jug's tune.

Steven took the back off the set, plugged it in, looked at me brazenly and upped the setting of the first anode control without marking it. Field collapse. "Ah" he said, "one more 12V zener diode and one more 5.6 $\Omega$  safety resistor."

"Okay, okay" I said, going over to the cupboard, "and here's your meter and two 47 $\mu$ F electrolytics. I reckon you're using customers with doctored sets to prove how smart you are."

He fitted the diode, the safety resistor and the two capacitors, blew on his knuckles, and switched on. There was an almighty bang, and acid-laced capacitor flock peppered our faces. C909 had exploded.

After spending a long time searching for the reason, he noticed that the capacitors I'd given him were of a different make. It's common for the negative leadout wire of an electrolytic capacitor to be identified by a black line down the side of the case. These capacitors had the usual black line, but set into it there was a tiny plus sign, indicating that the leadout wire was the positive connection.

He looked at me as though I was responsible, cleaned off his face and the panel, then fitted replacement capacitors the right way round. When the set was switched on again a perfect picture appeared.

### A Brace of Fidelities

The phone rang. It was Mr Prism, wondering how his 20in. Fidelity CTM2000T was coming along. The truth was that it wasn't. It was in

danger of taking root. As neither Steven nor I was anxious to hump it on to the bench, it was busily collecting dust in the middle of the floor.

"We'll face up to it together" I said. "You put it on your side of the bench, and I'll help." He did. There was sound but no brightness. As he reached for the meter, I slipped off to make the tea.

As I returned Lucy Lovebody came in. I like Lucy.

"My naughty TV's gone grouchy on me, Donnie" she breathed.

"Bring it in and we'll look at it, we sure will" I replied.

She wiggled off and fetched it from her car, wrote her telephone number on the screen with lipstick, winked and wiggled off.

The set was a Fidelity Super 14 portable, which uses the ZX2000 chassis. Its picture was all right, but the sound was distorted. There were no circuit reference numbers printed on the panel. I considered developing a protective migraine attack, but decided to plug in another speaker first. It made no difference. As I reconnected the original speaker however I accidentally brushed my hand against a tall coil next to the socket. The sound came right. I cleaned and reset the coil, then tried again. The fault had been cured.

Meanwhile Steven was battling with the other Fidelity set. The tube's heaters were aglow, and there was EHT. This time upping the first anode control's setting had no effect. A check at the tube's base to see whether the 370V first anode supply was present showed that it was missing. Steven looked into the cause and found that the metal tag to which the lead is soldered had corroded from the print. When it was cleaned off and resoldered there was a good picture.

### An Irate Customer

Mr. Wallop didn't look too pleased as he struggled in with a Ferguson TX10 TV set.

"If ever a chap asked for a backhand it's that tall, thin fellow at Snoddy's" he bellowed. "This set lost its brightness. They kept it for two months, charged me fifty quid, and it went for just ten minutes. When I took it back he waved me out. Said I was mad expecting to get such an old set mended. Got an answer for everything, he has. But I could give him an ammering he wouldn't laugh off."

When he'd gone we put the set on the bench and switched it on. It was tripping. We looked at the power supply and noticed that D702 had recently been replaced. But a BY228

had been fitted in place of the original BYX55-600. It had failed of course. When the correct type had been fitted a good picture appeared. We decided to give the set a soak test and, if it passed this (it did), to charge Wallop £15.

### A Toshiba V209

Angela Mainwairing popped in with a Toshiba V209 video which was dead. We've had these machines in before with the same symptoms, and headed straight for the power supply. Sure enough the STK7753 chip IC811 and C811 (100pF) were faulty. Replacing these items brought the VCR back to life.

### Squashed up Picture

Rita Ruff brought in a Hitachi CPT2478 TV set (G6P chassis). "The picture's all squashed up" she said, "and very bright at the top. Has been for months. But my husband didn't bother to bring it in. So why should I I thought? But here it is. Better late than never they says, don't 'em?"

The cause of the field cramping was C682 (100 $\mu$ F, 50V) in the fly-back booster circuit. A replacement cured the fault, but the excessive brightness had etched into the phosphor. The tube was irreversibly damaged.

### Tuning Trouble

The day had worn on when Egbert came in. He's forty, doesn't work, draws his strength from his bible and his living from his parents. He brought in their Hitachi C2118T TV set because it no longer tuned in programmes.

We decided to look at it while he waited. Then it would be time to pack up. So we opened the set up, confirmed the fault, and found that there was no tuning voltage at the tuner as the bar traversed the screen. The tuning voltage supply is derived from the HT line via R044 (12k $\Omega$ , 0.5W) and R144 (10k $\Omega$ , 0.5W). R044 was open-circuit.

"I had an identical set with tuning trouble the other day" Steven commented, "but in that one only channels 1-4 would tune - and they were right up at the wrong end of the scale and overlapped. There was also sound and vision interference. It was the same resistor, but it had risen to about 35k $\Omega$  instead of going open-circuit."

We boxed up Egbert's set and put it on the counter for him.

"Egbert" I said, the day endeth, and we're nackered. Give us this day fifteen pounds, and take the set back to your parents."

# What a Life!

## Stranger than ever customers, this time mainly with VCRs. Donald Bullock on his experiences at the counter and the workbench

"Tellywise, Mr. Bull, I've got problems" gasped scruffy Burt Crust as he staggered in with a monster TV set. "Hope it ain't going to cost too much, 'cos I've also got problems moneywise."

"Quiet, Crust" I said, brewing up the sweetest smile I could muster, "or I might develop problems temperwise." The set was a Grundig Supercolour B7500 (CUC220 chassis). "What's up with it?" I asked.

"Trouble picturewise" he said. "Well, worsen really. There's just a line, like." He cast his eyes around. "Where's that nice young chap with all the savvy? He'll have it done in no time."

I waved him out and he disappeared as though riding a bike against the wind.

Steven came in and I jerked my thumb at Crust's set. "Field collapse" I said, "and the customer wants you to do it."

He went over the usual joints, then had a good tap around, but the raster wouldn't open out. I noticed a mint but dusty circuit sheet tucked into the floor of the set and pointed to it.

Steven dusted it off, opened it out and started to check voltages. Eventually he traced his way to the deflection module, which contains the line generator and field timebase circuits. "There's a voltage here that's hard to check" he said. "They call it voltage D, but it comes straight from a winding on the line output transformer, as pulses."

"Can't power the field timebase with pulses" I said.

But by now Steven had discovered an SKE4G1/04 rectifier diode (D2761) on the module. One of those little oblong things, as big as half an Oxo cube. "Don't like those" I said, "it's bound to be open-circuit."

It was. When a replacement had

been fitted the 24V supply and the field scanning were restored. I went off to make the tea.

**Mrs Bagstone and Sammy**  
As I went out Mrs Bagstone barged in with her awful child Sammy.

"Ah, the old 'un's out" she said to Steven. "Good. E's got so soddin' slow, ain't 'e? An' too much mouth lately." As she swung a Samsung SI1260 VCR on the counter Sammy playfully set about swapping the job cards on the sets on the floor, then started to dismantle the remote controls by using them as hammers.

"Don't be brazen, Sammy" Mrs Bagstone bawled. Then, to Steven, "he's ever so brazen. Just like 'is dad. Oh, his 'ead don't go round."

Steven looked first at Sammy, then cottoned on and looked at the machine.

By the time I'd made the tea she'd gone and Steven had the top off her VCR. The display was all right, also E-E operation. But neither the drum nor the capstan revolved. Time to check the outputs from the power supply. There was no always 15V output, and it didn't take long to establish that the 1N4001 diode D212 was open-circuit. When this had been replaced the always 15V supply came up but the problems remained. The 5V supply was missing because D109, another 1N4001 diode, was leaky. This time the new 1N4001 diode got everything going.

Steven had barely finished when Mrs Bagstone returned.

"It's done, Mrs Bagstone" he smiled. "I had to replace a couple of diodes."

"Already?" she bawled. "Only took you ten minutes. Diodes are cheap, ain't they? So you won't be charging me will you?" Then she turned to Sammy, who was stabbing the set tops with our ball pen.

"Sammy, don't be brazen. You'll

annoy this nice young man if you carries on like that."

"Right" said Steven, having totted up the bill. "Fifteen pounds altogether, Mrs Bagstone."

The lady froze, shut one eye and glowered at him. "Next time I'll see the old man" she hissed, "you're just a rotten little upstart. Plain ignorant."

### Different Job, Different Customer

What a contrast! Our next customer was Juliette Applebright. Poetry in motion. Quite properly, she ignored Steven and smiled at me.

"Could you do something for me?" she breathed.

I felt the need to say something up-to-date and snappy "Affirmative" I said, huskily.

She smiled and waved toward her car. Out crawled Pimple, her somewhat lacking boyfriend. He wafted in, barely able to deal with the weight of her Panasonic NVG21 VCR.

"All crooked" he croaked, leaning forwards and waving his face about in front of mine. "All crooked - the picture like."

As they departed, Steven took the VCR and plugged it in. The picture was all right at first. Then it began to wave and dance about. It then became steadier. And so on.

Steven gave the machine the usual initial head and tape transport service and tried again more in hope than expectation. He then studied its operation.

"The capstan and drum speeds are varying" he announced as he settled down to the task of getting it right. A new BA6430S chip (IC2001) made no difference, but when he moved the machine towards the light the picture became normal. He eventually found that the fault could be controlled by flexing the main panel, and after a lengthy time with the

magifier and iron he discovered a dry-joint in the servo section. Once this had been resoldered the machine worked normally.

## The Major

Our next caller was Major Hagget, who strode in with a Philips colour set.

"Morning Bullock" he bristled. "Now, I hope this set doesn't drive you as mad as it has me. OK for days, then it cuts out. Sound and all. Wants a spell on the jankers if you ask me. Anyhow, over to you. I want it right, so do your best." Then he strode out.

Obviously one for Steven. He put it on his bench and tried it. The set was one of those fitted with the KT3 chassis – the model number was about two feet long. It worked all right, and continued to do so for several days. Then it suddenly hiccuped a few times, with the sound cutting out and the picture momentarily collapsing to a large, bright pool in the centre of the screen. After that it recovered and worked normally again for ages.

Our problem was the fault's brief duration. The set returned to normal operation before we could do anything. We tried removing the back and covering it with several layers of thick blanket, but even then we didn't have time to take any diagnostic action. So we decided to try a cold repair.

We took out the power supply module and set about cleaning off and remaking every soldered joint. Then we did the same with the time-base generator panel and the line output stage. This took us hours and got us nowhere. The fault remained.

We eventually found that slight pressure around the line output transformer would sometimes produce the fault. Further probing brought us to the cause of the trouble, which was where the EHT lead is connected to the transformer. The insulation at the end of the lead is stripped back half an inch and pressed home into a socket within the overwind moulding. The bare part of the lead had a spark-tar nished end. We cleaned it off, retinned it, pressed it firmly back and tried again. The fault had been cured.

"Good work" the major cried when he collected his set. "If there's another war I'll do my best to get you called up first. We'd need men of your calibre."

## Mrs Barger and Oscar

Mrs Barger appeared at our door

with her son Oscar. She was carrying an Akai VS427EKV VCR while he was nursing a large pile of coloured handbills.

"Give 'em a few, son" said Mrs Barger. "The sooner you gets rid of 'em the better."

"Don't like to, mam" said the boy.

She bundled him into the shop, and as she put the recorder on the counter he dropped all his handbills.

"It's jammed up" she said, tapping the machine. "We took it to Snoddy's first 'cos they gives free photos of the Spices Girls, but after looking at it they recommended you."

Meanwhile Steven was reading one of the handbills.

"Snoddy's for all your repairs" he read out. "Speed and efficiency combined."

"What are you handing these things out for?" I asked.

"Five quid" she said as she scooped them off the floor. "Wanna few on the counter for your customers?"

We waved her out and put her machine on the bench. It refused to rewind because the right-hand spool's brakes stayed on. In the fast-forward mode the idler wasn't making contact with the spool. We cleaned everything and carried out lubrication as necessary, but this made no difference. So we looked at the mode switch. It was very tarnished, but cleaned up like new. When we'd refitted it the machine worked well.

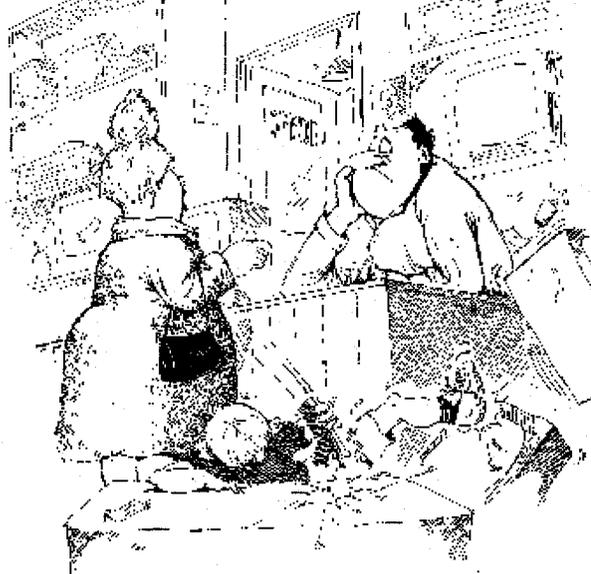
We then sat down and assessed our stress levels as a result of her unreasonable behaviour, including the handbills. We decided we'd need two pints of beer each to set us right. Taking this into account, we worked out her bill.

## A Hairdryer

Our next customer brought in a modern hairdryer that appeared to be part hedgehog. It's mains lead was open where it met the plug. After repairing that I tried it. As there was a terrible clattering noise, I swiftly withdrew the plug from the mains supply.

"The noise is normal" Steven said. "Lots of 'em make that noise nowadays."

I looked at him in disbelief. "Well, there's no need for it" I said. "Forty years ago they were silent. Favourite was the Morphy Richards. I liked them because each one had a paper capacitor in the handle. It would go short-circuit and stop the thing working. I fixed them for a couple of quid a time. Not bad



"He's ever so brazen, just like 'is dad."

money. A pint of beer was a shilling then."

## Ecclesiastical Matters

A large scruffy car with a running board swung into view outside. Out bundled the portly Reverend Goode. His timid curate, the Reverend Blande, followed. He was carrying a Samsung video.

"Bless you, gentlemen" beamed the reverend. "My curate has problems."

"Problems" said the curate.

We nodded understandingly.

"It's the flecking picture" said the reverend.

We spun round.

"Little flecks all over the place" he continued.

"Little flecks" said the curate.

They left the machine and tramped out. It was an SI1260, and the picture it produced was covered with interference blips. When the sharpness control was adjusted, the blips almost disappeared at one point. We gave the machine a basic service to see whether this would help. It didn't.

After further checks we decided that the probable cause of the problem was hash on a DC supply. We checked the feeds to the signal circuits, then those to the power stages, all to no avail. Before long the only item we'd not looked at was the front control panel. There are two PCBs here, connected by a ribbon-cable plug-and-socket (CN704 and CN701) assembly. Careful examination revealed that the stranded conductor to connector ten was splayed, and that a single strand was split and was touching connector nine. Tidying this up cured the fault.

# What a Life!

## Don Bullock on the trade and his experiences with customers and their equipment

**W**hen I first fell into the clutches of this trade I thought that the servicing side was full of problems. Little did I know what lay ahead. Then, the number of different products you might have to deal with could be counted on one hand. There were radio receivers, record players and television sets. And as far as I can recall they were all British, which meant that spares and circuits were pretty close to hand.

There was the agency bugbear of course – for those of us who weren't agents. Manufacturers like Ekco and Murphy would supply spares and servicing information only to their officially appointed dealers. If we needed anything we would be told to approach one of these. They could usually be counted upon to be less than helpful, often condescending as well. But the number of sets involved was not great, and there were usually ways round the problem.

The majority of manufacturers didn't have strict agency arrangements and would sell to us all. They were also glad to give technical advice, and provided free service manuals. A phone call requesting one would often bring it by return, sometimes with a wad of other manuals as well.

Today it's all a jungle. There are thousands of different makes of scores of different products. Finding a source of spares can be impossible. And even when manuals are available, they can be prohibitively expensive.

Time and time again we find ourselves in need of technical data to diagnose the cause of a fault with a piece of equipment we've not seen the like of before. If it's a VCR, the manual might cost £15-£25. Do we fork out in the hope that the repair, and our payment, will be quick and easy? If we do, what happens should the customer decide "not to go on

having it done"?

We've tried everything over the years, including asking the customer to pay for a manual. But after doing a few sums on their fingers they usually start asking questions.

"If I spend £20 on a manual, what if you find that expensive parts are required?" The upshot is that they decide against forking out on spec.

So we generally accept equipment for repair in the hope that we can carry out the work without embarking on a ruinous bout of spending.

Lately, while I was in Spain, two such jobs were brought to us. One was a Ferguson 3V44 VCR (similar to the JVC HRD140). The other was a Cambridge ARD200 receiver-decoder. Both had obscure faults, and we had no information on either of them. The VCR belonged to a friend, and we were anxious to help. Our usual suppliers couldn't supply manuals – because the VCR was "too old" and the ARD200 "too obscure".

After scanning the classified advertisement pages of *Television* I telephoned a small firm called Fryerns and left a message on the answering machine. Within an hour a bright and personable chap called Colin telephoned us – in Spain – to confirm that he could help with both items. The manuals arrived here shortly afterwards – at a total cost of £10. That's what I call service!

### A Bush 2002

"Can you manage on your own this morning?" Steven asked, "I'm slipping out to buy a house." I was back in the UK.

"Right" I said. There was a dismantled Bush 2002 TV set on his side of the bench – which is nearest to the shop counter.

"Perhaps you'd go on with this one" he said. "According to the ticket it's dead, but it isn't. When I upped the setting of the first anode preset,

paying no attention to its initial position, there was brightness with field collapse. If it's any help, the set is similar to the Matsui 2086T." Then he was off.

I soon found that there was no 12V supply because the 1W zener diode ZD401 was short-circuit. Its feed resistor was open-circuit. The input to this network is obtained from a line output transformer fed rectifier. A check here produced a reading of 45V off load, so all seemed to be well. Another easy job I thought, as I replaced the resistor and diode then switched on. The field opened out, and there was a good picture. I decided that life was fine – passable at any rate.

But after two minutes the field began to shrink and a smell of hot plastic filled the air. I disconnected the bits I'd fitted and checked for shorts. As there weren't any, I left them disconnected and checked the HT voltage. The reading was high, 127V instead of 114V. Then I saw that C909, a 47µF, 25V electrolytic that's the reservoir capacitor for the LT supply on the primary side of the chopper circuit, had swollen and stretched its jacket. It had also gone high in value – when checked it produced a reading of 82µF.

I fitted a replacement, rated at 50V, replaced ZD401 and its feed resistor once again, and switched on. Up came a picture. When I checked the HT voltage the reading was 118V. Slight adjustment of the +B preset VR901 reduced it to 114V. The set behaved well during a soak test.

### Miss Drudge

The phone rang. "Will you come and help, Mr Bullock?" asked a strained, dry old voice. "This is Miss Drudge, number 86. Mother's set has gone again." At that she put the phone down.

Miss Drudge has no interest in watching television – or in anything else. She's a colourless soul who has ended up as her domineering mother's lackey. Her mother, now eighty, sits with a rug over her knees, issuing quiet demands to her daughter.

I asked Greeneyes to watch the shop as I popped along to number 86. The set is a Ferguson 22D1 (TX100 chassis). Its picture seemed to be all right to me, so I looked at Miss Drudge, then at the old woman. She was staring straight ahead.

"Tell him," she said.

"Tell him what?" asked her daughter.

"Tell him the picture flies around then turns into a line when the set's been on for an hour."

Miss Drudge turned to me. "After an hour the picture goes round and turns into a line Mr Bullco" she said. "Please mend it for us."

I took the set back to the workshop and gave it a soak test under a blanket. It failed, just as they had said. So I replaced the TDA3652 field output chip IC6, then gave the set another soak test. It failed again, just as before.

I let it cool down then tried again, only this time I left a digital meter connected to pin 5 of the line output transformer to measure the HT voltage. After half an hour the meter display started to flicker and the voltage reading began to rise from its normal 119V. When the voltage reached 155V the field began to roll. As the voltage rose further there was field collapse.

This time I replaced the TDA4600-2 chopper control chip IC7. Also R114 in the chopper transistor's base drive circuit. This resistor had risen to over twice its correct value of 0.39Ω. When the set was given another soak test it behaved itself.

As I walked in with the set Miss Drudge opened her purse and started to take out some notes. Her face had lost some of its doleful expression. I reconnected the set and told her that it was now all right. She lent over her mother.

"Mr Bullock has mended your set. It's all right now. That's good, isn't it?"

"Leave it on" her mother commanded, as Miss Drudge frantically pushed some money into my hand. I smiled at her and took my leave. Some people have a trying time.

### The Commercial Traveller

Steven came in as I got back. "Did you buy a house?" I asked. "Yep" he said.

Just then a bright young fellow with a thick briefcase came in. He was obviously a commercial traveller. I got the impression that he'd come straight from a confidence course.

He switched on a winning smile and winked at me. "I've got something here that'll revolutionise your business" he said triumphantly as he dropped a 13A mains socket on to the counter.

"How come?" I asked.

"This socket ends all the drudgery of housewiring" he said. "Every ounce of the drudgery. Now, ask me why?"

"But we don't do housewiring" I said.

His grin waned and he looked at our floorful of TV sets. "Oh, right" he said, and was gone.

A minute later he was back. "Hey, I've got a set for repair in the boot. I was taking it to Snoddies, but since I'm here..." He brought it in and left it with us.

I hoisted it on to the bench. It was a Nokia Model FX6332 – the one with the Euro Mono chassis. When I switched it on there was an EHT rattle then the set tripped and shut down.

"That's the line output transistor" said Steven. So I dismantled the set and checked the transistor (5T10, type S2000A). It was leaky. A replacement restored normal operation.

"Are you suddenly psychic?" I asked Steven

"Nah" he replied, "just done one like it."

### Old Abe

Just then I saw Old Abe standing by the door. He lives alone in a riverside hut with a couple of 14in. portable TV sets, a car battery and a screwdriver. While watching one set he messes about with the other one then brings it to us to repair. We mend it and charge him accordingly. Then he uses that one and messes about with the other one. When he brings us a set he walks the ten miles and carries it in a horrible old blanket. It was a warm day, and Abe was as high as his blanket.

"Morning Mr Bullock, Sir" he said. "I've had a bit of good luck, Mr Bullock. Someone's given me a colour telly. Only 'e don't go for long."

"Right Abe" I said, slipping windwards. "Take your blanket back and call in next week."

"Thank 'ee kind, Mr Bullock. Bye, bye for now, Sir."

I gave the set some foam cleaning



**A smell of hot plastic filled the air.**

treatment and pulled it on to the bench. It was a Network NWC1410. When it was switched on it worked all right, but after an hour the picture slowly faded away, leaving the sound. I took the back off and the picture slowly returned. This kept on happening. The job turned out to be a slow one.

I eventually saw what I suspected. The tube's heaters were going out. In the fault condition there was no voltage across the tube base panel pins for the heaters. But there was plenty of voltage at P451, which makes the connection to the main chassis. In this model the heater voltage is stabilised by a pair of wire-wound resistors (1Ω and 2Ω) which are connected in series. Both are on the tube base panel. They are designated R920.

When tested they read all right. Then, suspecting that they were dry-jointed, I took them out, cleaned off their leads and resoldered them to the board. This didn't make any difference. On closer examination I discovered that there was a hairline crack in the tiny bit of print that provides a link between these two resistors. A tiny jumper lead to bridge the break cured the trouble.

# What a Life!

**Don sees a man cry for the first time and recalls some lighter moments since his last column**

I was talking to John Stacey, who is about my vintage, the other day. He has been self-employed down Devon way for more years than he cares to recall. Like me, he came into the trade when the only TV was BBC in monochrome. He had some interesting tales to tell.

John recalled going out to demonstrate an electric shaver to a farmer. The farmer took his time trying it, then said "I've a good mind to buy it but, tell me, will it do my toenails without any trouble?"

On another occasion he showed

up at a caravan to repair a set, with a mate. They had to wait outside the door while its owner, a young lady, got dressed. When she finally let them in she apologised and added that she often watched TV while undressed.

"I hope they can't see me at the BBC" she said, "they *can't*, can they?"

"Well, it's not something we put about" his mate replied, "because it's a trade secret. But, yes, they can."

Things can go wrong for all of us of course. I recall an occasion when, towards the end of an evening spent making deliveries, my mate Algey and I decided to pop into the Magpie for a drink. There was just one set left to deliver, a 14in. ITT portable. Its plastic cabinet had a moulded handle.

The house we took it to was fronted by a lawn. This had a path with a row of fenceposts and an ornamental chain leading to the front door. Algey, refreshed by his pint, found a burst of energy. He jumped out of the van with the set, ran up the path, and jabbed his thumb on the bellpush. As he did so, he brought the set up ready to hand it over. It hit the nearest post of course, and when the customer opened the door he found Algey holding a neatly severed plastic handle. The rest of the set was on his front step.

The man's face produced a show I shall never forget. It displayed a sequence of just about every conceivable expression from a smile of greeting to one of sheer disbelief. Algey's plight was also something to behold.

## Cash and Carry

In later years I discouraged house calls in favour of providing a cash and carry service. This led to the discovery that about two thirds of

my customers had bad backs. Those who didn't had no idea how to carry a set - with the tube's face towards your chest - and because I grew tired of their antics I usually took the set from our rack and carried it to the waiting car.

One day a young pap called in, paid for his repaired set then started to prance around it, wondering where to start.

"Don't worry" I said, "I'll carry it out for you - I've done it often enough." I hoisted the set, lifted it up against my chest and sped off towards the door. As I reached it, the set's mains lead caught on the door handle, yanking the set from my hold. It landed with quite a crunch.

I've never seen a man cry before, and felt about an inch high.

There was a fortunate end to this story. The damage was confined to the cabinet, and another of my customers was a professional french-polisher. He made it look like new, for just £3, all in a day. But it cost me a lot in extra work. I had to strip everything out of the cabinet, including the tube, then fit it all back again.

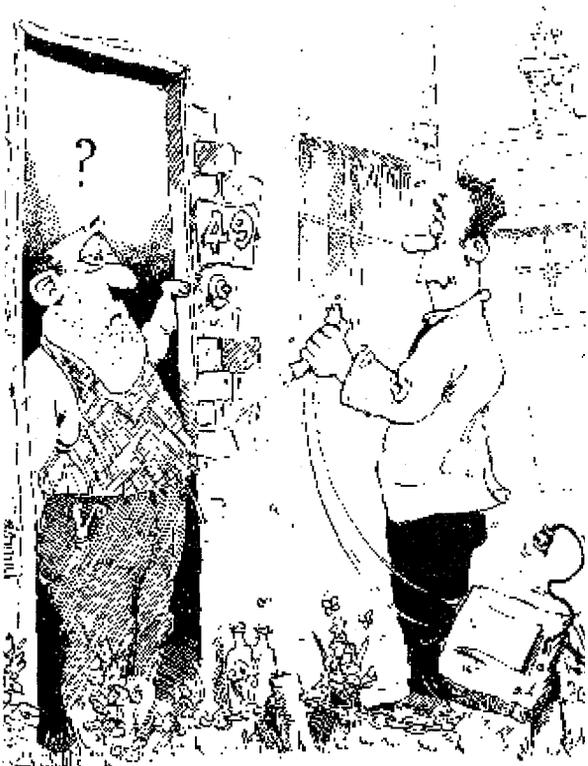
The customer, who scrutinised the set in vain for signs of damage, made a complete recovery!

## Miss Drudge - 2

One of our customers is a formidable old woman who lives in a chair in front of her TV set. This is permanently on, so that she can resume her viewing whenever she wakes from her doze. The other day we had another call from her ageing daughter Miss Drudge.

"Mother's set is playing up again, Mr Bullock" she said flatly. "Can you come as quickly as possible?"

Because I felt sorry for her, I called round right away. The old woman, now well into her eighties, was sitting as usual with her shawl



Algey delivers an ITT portable's handle . . .

over her legs, looking at the screen.

The set, a Ferguson 22D1 (TX100 chassis), had a picture. But its geometry was awful. There was too much width, EW distortion and a band of line frilling. When either the width control RV72 or the pin-cushion control RV71 was moved the band of frilling would shift up and down the screen – in addition to affecting the width and EW correction slightly.

“Tell him I can’t watch that” the old woman said.

“Mr Bullock knows you can’t watch it, Mother” the daughter replied. “That’s why he’s here.” She looked utterly worn out.

I had to take the set back to the workshop where son Paul, who now works with Steven, tackled it. He found that he could remove the frilling completely. But the set’s line linearity then became terrible. After a good deal of checking he found the cause of the trouble. R143, the 6.8Ω safety resistor in the feed to the line driver stage, had risen in value to some 330Ω. A new resistor plus setting up produced a good picture.

When I took the set back and connected it up the scowl left the old woman’s face.

“Tell Mr Bullock I’m very pleased” she told her daughter.

“Mother is very pleased, Mr Bullock” Miss Drudge said flatly. “Now I must pay you.”

As I left I reflected on the hopeless life Miss Drudge led.

## Mitsubishi

Esse Phipps drew up outside in a huge Mitsubishi car. She got us to collect her TV set from it. This wasn’t easy – it was a 25in. Mitsubishi colour set, Model CT2534 (Euro 4 chassis).

“Datted thing won’t go” she said in her cut-glass voice. “Too bad, what?”

The set was stuck in standby. After some routine checks we found that the cause of the trouble was in the line output stage. The 2SD1877 line output transistor Q552 tested perfectly, which led us to the transformer (T553). When we took it out we found that pins 1, 2, 6 and 7 were all shorted together, linking the HT supply to chassis.

We ordered a new transformer from SEME, at a very reasonable price. It arrived by return. But when we fitted it the fault was still present.

We spent a good deal of time searching for a further short. Even-

tually, as there was nothing else left to check, we tested the line output transistor again. It was dead short! A replacement restored normal operation.

When Esse returned to collect it she said that she would be bringing her Mitsubishi VCR in for service. “I’d have everything Mitsubishi if I could” she trilled. “I’m going to buy a speedboat soon. Is there a Mitsubishi one?”

“Sure to be” I said.

“I’ve been thinking” Steven said afterwards. “I’ve had that fault sequence before with this chassis. The transistor tests OK then, after replacing a faulty transformer, the transistor is found to be dead short. We’d better replace both items together next time.”

## Fidelity ZX3000 Chassis

“Time we saw the back of this one” said Steven, hauling a Fidelity CTM2000T (ZX3000 chassis) on to the bench. No vision, sound or channel display was the complaint.

Some quick checks showed that the 12V supply was missing. We discovered a bad dry-joint at the MC7812 regulator, which is mounted on a heatsink close to the line output transformer. This wasn’t clear initially, because the regulator is hidden by the infuriating plastic cradle in which the panel sits.

## A NordMende Portable

Hazel Nutt is one of those modern girls – big, tall, fit looking and outgoing.

“It’s this telly” she announced. “It’s got a permanent wave. Ha ha ha!” She shuffled and leant over on her long legs, like a demented wicket-keeper.

The set was horrible too. An old NordMende colour portable, Model 1534 (F10 chassis). We gave the HT circuitry the once-over and found a dry-joint at the negative side of the HT bridge rectifier’s 470μF, 160V reservoir capacitor CP11. Resoldering this joint clear-ed the fault.

When Hazel returned to collect the set she was dressed for hockey and was carrying a stick thing.

“Do you play hocky much, Mr Bullock?” she asked.

“Never seem to get the time, unfortunately” I replied, stepping back a bit. “But I think Steven and Paul do, er, don’t you lads?”

But they had disappeared.

## The Pop Hopeful

Our final visitor that day was Seth

Mutt, who aims to be a pop singer as soon as his IQ rockets to 25. He carries a guitar everywhere, but has yet to discover how to play it. He humped in a huge, 26in. Loewe Contour S124 colour receiver (C8500 chassis).

“When I swishes ‘im on, like, the lickol light ‘d come on, then ‘e’d go out” he said. “Har, har, har. Auhhh.”

Steven backed off. Being of sterner stuff, I booked the set in and waved him out.

“We’d better look at this set together” I said to Steven when he finally poked his face around the workshop door. “Help me on to the bench with it, will you. We’ll put it on your side, shall we?”

I handed him a screwdriver to get the back off. “I could do with a cup of tea” I said, “couldn’t you?” When he nodded I skipped off to make it.

When I returned with the tea Steven was working around the TDA4600 chopper control chip. “Its supply at pin 9 is varying” he said.

“Find out why” I suggested, ever helpful. Before long he took out the relevant reservoir capacitor, C626 (100μF, 25), and gave it to me to test.

“Varies as you watch the meter” I said. Between 15-30μF. Guess it’s faulty.

He shot me a sideways look and fitted the replacement I handed him. When he switched the set on there was EHT but no brightness or sound. “I’ll up the first anode voltage” he said, “without bothering to mark the preset’s position.” I saw the look of perversity in his face. Bit like Green-eyes, I thought. As expected, there was field collapse.

“No sound, no field scanning” I said, mainly to display my powers of observation. “Must be a common cause.”

He carried out some checks around the TDA1872A field time-base chip I561 and soon found that the 12V supply was missing. When he traced the source of this he came to the LM7812 regulator chip I553. There was an input here but no output.

I handed him a replacement. When he’d fitted this there was sound and field scanning. After adjusting the first anode supply preset, which I’d hoped would give him trouble, there was a good picture.

“That was an intensive bit of work, wasn’t it?” I commented. “I’d like another cup of tea. How about you?”

He looked at my empty mug, then at his own. “Haven’t touched mine yet. Don’t seem to have had time.”

# What a Life!

**Don gets them all, from the rough (very) to the well-dressed lady magistrate, not to mention the supercilious school teacher . . . All in a day's work**

**S**ome of the flying insects here in Spain are quite bizarre. One is a huge, stocky-looking dragonfly thing. It has a black-bronze, bullet-shaped body. The problem is that it swoops and cruises around noisily at head height.

Whilst here lately I ran into Mike and Karen, a popular couple who run a friendly and efficient television and video business. As we were swapping yarns, one of these bugs droned by. It reminded Mike of a technical tale.

A rather bolshie man had called him out to look at his set. For most of the time it produced a perfect picture. But from time to time the picture and sound would fade out and remain absent for ages. Then a perfect picture would suddenly return, only to go again. After listening carefully to the complaint, Mike popped outside to examine the aerial system, starting with the dish. The customer followed him out. After completing his examination, Mike voiced his suspicions.

"I think something lives in there" he grinned, pointing at the LNB.

"Never mind the jokes" said the customer, "I want this bloody lot working."

At that point a huge insect flew out of the LNB horn and swooped on the customer.

"See what I mean" said Mike, when the customer had recovered.

Mike's remedy was simple. He crumpled up a piece of plastic mosquito netting and shoved it into the horn.

It took the customer longer to regain his equanimity enough to find his wallet . . .

## **Back in Blighty**

"I wish you'd call on Mrs Salcombe" said Steven. "She's a rough handful, I can tell you. I can't handle her type. But you, with your experience and tact. . . Then there's Mrs Stannard, the local magistrate. She likes you."

I blew on my nails. Delightfully humble of Steven I thought – though it's true that I *am* very clever, a cut above average. So I breezed along in the van to No. 17,

with my service case. I was greeted at the door by a huge, seventeen-stone lady.

"Go on up, Doctor" she bawled in a voice like a saw on a sheet of tin. "Don't take no notice of 'is nasty mouth. Just give him a shot of summat quieting, I would. Proper pain in the neck the old boy is. Time he was put away with some of that Yoothnasia, if you asks me."

I stopped and coughed. She shielded her eyes and glowered at me. "Good God" she brayed, "what's the National 'Ealth comin' to?!"

"I'm not the doctor" I faltered. "I've called to see your television."

"Oh, 'av you indeed. An't you got one of your own then?" She turned to her scruffy, fat daughter. "Ear that Beryl? Man wants to watch our telly! Whatever next?!"

"You called me here" I said, waving my job card. "Bullock's it is."

She drew herself up to her full four feet two. "Get out, you filthy-mouthed beast. How dare you! In front of my daughter, too. You could do with a good spell in the army. And the birch!"

I know when I'm beaten. So I ducked back to the van and headed for the Stannards.

## **At the Magistrate's**

They live amongst the toffs on Paradise Hill. As I went through their gate a dog as large as a horse came licking and nudging and sniffing at me. I must say that I'm not particularly partial to dogs, big or small.

The well-dressed Mrs Stannard



**"Do give him a pat and tell him how good he is!"**

glided out. "Oh, Collingbourne wants to be friends!" she said as the dog pushed me over. "He likes you, Mr Bullock! Do give him a pat and tell him how good he is."

I got to my feet and tried to smile. Then I wove towards the set in her lounge. It was a 24in. Panasonic, Model TX24T1 (Alpha 2W chassis), with a very fuzzy picture. So much so that all you could make out were vague shadows. It looked as if heavy frost covered the screen.

I flicked over the service switch. Instead of field collapse, the image looked like a horizontal lemon. After checking the EHT and the supply to the RGB output stages I moved to the tube base panel. The red and green cathodes were both about right at 150V, but the blue cathode reading was zero. Further checks revealed that the blue drive peaking coil L352 was open-circuit. A replacement restored perfect results.

Mrs Stannard was pleased. "We've just returned from holiday, Mr Bullock" she laughed. "A friend of ours stayed here. When the set failed they called that awful Snoddies place. Apparently the tall, thin man called. Quoted £250 plus VAT to repair the set!"

### Sleepy Ossie

I arrived back at the workshop just as Sleepy Ossie Ointment rolled in with a Bush 1408 portable. His face curled into a smoky grin. Then he locked his eyes on mine and talked as though he'd had a couple.

"There ain't no picture on 'im, Mr Bullock. Just a snowy screen. Do 'im if 'e's cheap. Not if 'e's dear."

"What's cheap and what's dear, Ossie?" I asked. But he'd slunk off.

The cause of the trouble turned out to be simply a dry-joint in the tuner. So I charged Ossie £9.99 for doing the job and a penny for the solder.

### Another Portable

As I was about to shuffle off to make the tea Mr Strange loped in carrying a 14in. Toshiba Model 145R7B. He looked at me, smacked the set on the bench and simply said "dead".

Son Paul tackled the set. He found that the 6-2Ω surge limiting resistor R801 was open-circuit and the SR2M overvoltage protection

diode D808 was short-circuit.

There had obviously been an HT surge. The STR50020 chopper chip IC801 is suspect in this event. Another suspect in these sets is C813, a 47μF, 50V electrolytic in the regulation feedback circuit.

After replacing these items Paul switched the set on. There was now HT at the mains bridge rectifier's reservoir capacitor C810, but the set remained dead with no standby light. A check on the 5V supply at pin 42 of the microcontroller chip ICA06 produced a reading of only 0.22V.

The 5V supply is derived from the front of the power circuit, where a feed from the bridge rectifier is taken via RA25 (6.2kΩ) to the BC337 standby switching transistor QA08. This transistor was short-circuit, but a replacement didn't restore results. Further checks showed that the 5.1V zener diode DA03 and the BC557 transistor QA05 were both short-circuit. Hence the low voltage at pin 42 of the microcontroller chip. Replacing these last two items finally restored normal operation. Paul, looking relieved, sunk into a chair with his tea.

### Walter Bean

Walter Bean is another of those teachers who talk to us as though we are schoolkids. He had with him a Samsung VIK346 VCR. Before addressing us he undid his jacket button, slipped a hand into his trouser pocket and presented us with a good view of the underside of his chin.

"This machine ah hisses in ah standby and ah blinks off when ah switched on" he said.

"We'll have ah look at ah it" I said.

The cause of the trouble was in the power supply of course. Yet another case of electrolytic capacitor trouble. When we had replaced C38 (1,000μF, 10V) all was well.

But there was nothing we could do for Bean. He's spent too long wielding power over those unfortunate children.

### Miss Drudge - 3

Just then poor Miss Drudge crept in. Her severe and ancient mother treats her like a lackey. I feel sorry for Miss Drudge, but daren't tell her so.

"It's mother's set again, Mr Bullock. I'm ever so sorry, but it

keeps going wrong. It's the Ferguson, the one you call a TX100. There's no picture. Could you repair it, Mr Bullock, er . . . without too much delay, if it's possible? Only mother doesn't like being without her television, Mr Bullock . . . She doesn't like . . ."

The truth, and we knew it, is that for poor Miss Drudge living with her mother was hell. Living with her when the set failed was purgatory extended. So Paul and I bowled round to look at it.

There was just a raster. But where was the aerial flylead and its coaxial plug? The old woman's fat cat was asleep in the shaft of sunlight behind the set. I rolled it over – ever so gently! – to reveal the plug. As the cat raced away frantically I restored the picture.

"Thank you Mr Bullock" cackled the old woman as Miss Drudge arrived, all hot and bothered. Then she barked at Miss Drudge. "Where have you been? Pay Mr Bullock at once."

"No need" I said as we made our exit, "have this one on us." I gave Miss Drudge a secret wink as we departed.

### Bodmin Business

I had a note from Vic Rummery a while back. He and his wife Marjorie run a TV servicing business in Bodmin, Cornwall. He'd enjoyed what he called Rebecca's "libellous" article (September '96) and told us about a couple of recent customer experiences.

One chap had called and asked for a suitable aerial system for the locality. Vic advised him on what was required and supplied the correct type. A few days later the chap's wife rang. She said they'd erected the aerial but it hadn't cured the trouble, which must be due to something else. Could they return the aerial and have their money back?

Another card phoned late one Saturday night to say that the set he'd just bought from a shop in Plymouth had failed. Could Vic call and fix it?

Vic was about to go to bed. He was asked whether he could call next day, a Sunday, but declined and offered to call first thing on Monday. The offer was turned down. "The people from the shop can do that."

Keep your chin up, Vic! I've had to, for years and years.

# What a Life!

## A Gloucestershire idyll – Don Bullock does a stint on the Home Front. And a happy ending to the saga of Miss Drudge

The days were shortening, the sun was getting watery and the mists would come rolling up. I wanted to get back to Spain, but Greeneyes had arranged that we should spend a fortnight at our UK base in Gloucester. So I had to face up to a stay of duty here, and the thought of it made me nasty. I stood in the shop and watched the innocents passing by.

"Look" I said to Greeneyes, "every one of them is scurrying home to get a fix of the national drug. Off to watch their silly, flickering TV screens. They ought to ban it."

"The day they do that, we stop eating" Greeneyes said sweetly. "And by the look of you that would be no bad thing."

"You'll change your tune when they start to troop in, with their silly mouths going" I said, feeling my head and wishing I'd gone easier on the whiskey the night before. "Free won't be cheap enough, immediately won't be soon enough, and perfection won't be good enough. We ought to have chosen better lives. We should have been traffic wardens." I paused and looked her up and down. "Specially you" I said, relishing my clever and cruel wit.

### Tom's Decca

Before long our first pest, er customer, struggled in with his set. It was harmless old Tom Mugg. He put the set down on the front edge of the counter and wiped his brow.

"Hot today, innit, Mr Bullock!" he gasped.

"No, it's cold" I said, drawing the pad towards me. "Name?"

He stopped wiping his brow and looked at me askance. "You know me, Mr Bullock" he wheezed. As he turned to me his kneecap caught the

sharp edge of his set. "Oh, bugger" he gasped.

So I wrote "O. Bugger" on the card and waved him out.

His set was a 20in. Decca Model DT9476, which is fitted with the 145A series chassis. It had a noisy raster, with no programmes, although the digital channel display was working. We didn't have the manual but, as always, the people at Tatung were very helpful – both with advice and faxing us a circuit diagram of the tuning system. I soon discovered that there was no tuning voltage supply at the tuner. Checks in the tuning voltage DA converter stage showed that QR10 had no base bias because RR68 (33kΩ) was open-circuit. It's rated at 0.5W, so I fitted a 1W replacement. The results were excellent.

### Elvis Pelvis

Our next customer minced in with a Sanyo CBP2145 (E2-B21 chassis). He looked like a well-greased wop. "You won't mend this set" he warbled, "nobody can. It's been everywhere. Wagging the aerial plug helps."

I decided I didn't like him. So I ignored his comments. "Name and trouble?" I asked.

"Elvis Pelvis" he said, smoothing his well-permed hair.

"And you name?" I said cleverly.

As he left, looking over his shoulder, I yanked his set on to the bench. I soon wished I'd asked him what the fault was, because it seemed to be all right. But after a while the sound cut out and the picture quality became degraded, taking away the colour.

I opened up the set and found pounds of fresh solder everywhere. When I withdrew the chassis, I noticed that the symptoms became

worse as the tuner drew level with the back of the runners. Starting at the tuner, I began disturbing – gently – every component in that plane. Before long I came to a 1in. loop of black-covered jumper wire. One end was connected to a point marked J6. As I moved the wire over it fell out of its solder blob and the fault became permanent. Retinning and resoldering the link cured the fault.

After putting the set back together I sneaked off to lunch while Greeneyes guarded the fort.

I returned to find Greeneyes chatting and falling about with Mr Pelvis, who was happily forking out and gibbering in his silly way.

"They don't have assistants like you at Snoddies" he was saying, "or Crubbs Foodstore – or that new place on the ring road that does them while you wait."

"Don't they then?" she simpered, "are they really that bad?"

"How come you can waste time flirting with a prat like that?" I asked when he had wiggled out.

"He's nice" she said, "and different."

### Filth

I spun round to see an unkept, ruddy specimen, unwashed, unshaved and unclean.

"Snoddies wants thirty five poun's just t' come" he said, "an' I en't paying it. You'll 'av t' come 'n' do 'im. Name's Bottler."

I stepped aside, exposing son Paul who had just started his mug of tea. Looking a little ill at ease, he took the address and agreed to call in half an hour.

He returned from what he reckoned was the dirtiest house he'd ever seen – which is something, in this trade – with a Baird television

set that was covered with sticky goo and smelt like a tip. He assigned the repair to me, and made for the soap and water while I washed the cabinet down with spray cleaner.

The set was fitted with the Ferguson TX9 chassis – the original version. Its symptoms were a loud spluttering on the sound and a weak, flickering and grainy picture. I soon found a sooty crater at one end of C136 (10nF, 1-5kV) in the ramp reset circuit in the power supply. Resoldering this removed the spluttering. I then turned to the picture trouble.

"I suspect the tuner" I said to Paul.

"It's usually the IF module in this chassis" he said. I looked at him and thought of the impertinence of the young.

I fitted a tuner, but it didn't help. Then Paul found an IF module in a scrap set. We fitted this and it did the trick.

When Paul delivered the set Mr Bottler emerged with dignity, paid our bill, thanked Paul for our swift and efficient attention and ran down Snoddies, which made him feel good. He gave Paul a big, fat tip.

### Brisk Customer

As I stood gazing out of the shop window a smart little car drew up across the road. A thin fellow got out, grabbed a satellite receiver-decoder from the passenger seat and stood looking about him. Then he saw the shop, and me. He raised his right arm like a rifle and, looking along it with his left eye closed, strode towards me and entered the shop.

"You're the one" he said.

I looked behind me. Then he put the receiver down.

"Name's on it" he said, "ring me." And off he went.

A sticky label on the set said "Dead" and "Smith". But no telephone number. It was an Amstrad SRD510. When I opened it up I found the remains of C86 (100µF, 16V) all over the place. It's part of the 9V regulator circuit on the main board.

When I'd cleaned up the chassis and fitted a replacement capacitor the receiver worked well.

### Straight from The Horsefly

Our next customer came to us, chauffeur-driven, straight from The Horsefly. He had trouble opening the boot. So Paul went out to help him unload his Toshiba 14in. portable – Model 1400TBW. The

customer, who was huge, followed him in then plopped on to a chair and laughed to himself. I eyed him sharply.

Then he looked at the set and said, thickly, "Wha'sh my Line? That'sh a good 'un, en't it? Wha'sh my Line?"

"Professional soaker?" I suggested. His smile faded, so I shut up and pulled the pad towards me. "Name?" I asked.

"Popeye" he said.

I looked at him then filled in the job card. "Give us a ring tomorrow, Mr Eye" I said.

Field collapse was the problem, and I saw that the 7.5Ω fusible resistor R317 was open-circuit. One end is connected to pin 6 of the line output transformer, the other to the rectifier which produces the 24V supply for the AN5515 field output chip IC303. The chip was the cause of the trouble. It was dead short between pins 1 and 2. A replacement and a new resistor restored the picture.

When Mr Eye returned he was sober and correct. "Sorry about yesterday" he said, "I was celebrating – the missus had just left me."

I smiled at him.

"Never mind the grinning" he said, "she's back."

### End of Day

As the day slipped by, Greeneyes decided to run Paul into town. I sat alone in the shop with a cup of tea, willing the clock to creep round to closing time.

Then a car drew up outside and out jumped Fred and John, two fishing mates of mine.

"The bream are biting at Haw Bridge" they said, "how about a couple of hours with us in the morning?"

"Done!" I said. Just then an emaciated fellow in a long, old-fashioned and unbuttoned raincoat came in with a GoldStar CIT4902 14in. portable.

"Dead" he announced. "It's me sister's. Name of Taylor."

I filled in the job card and waved him out, but he stood there.

"What's the matter?" I asked

"I shouldn't have done it" he said, looking at the floor and shuffling.

"Shouldn't have done what?" John asked.

At this point the cove sprang to life and danced around the shop. "Stop this nonsense" he cried, "I'm off!" Then, flinging his hands behind him under his mac, he strode off in long springy steps, like a



"Hot today, innit, Mr Bullock."

newly cleansed sinner.

As John and Fred looked at each other in amazement I settled to the set, which is fitted with the PC-04A chassis. It was dead, with no standby light. The chopper power supply is based on a TDA4601 chip (IC801), which needs an 8.5V start-up supply at pin 9. I thought this would be missing, but it was present. There was no voltage at pin 5 however, which is connected to pin 9 via a 100kΩ resistor (R814P). This resistor proved to be open-circuit, a replacement curing the trouble.

As we were about to lock up, I saw that the skies were leaden though the sun was trying to break through. Then I noticed an attractive, long-haired lady walking serenely towards the shop. She was wearing a gay summer dress and a straw hat.

I felt sure I recognised her face. A young man was by her side. As they reached the shop, she smiled and came towards us.

"Miss Drudge!" I exclaimed.

She laughed and shook her head. "Not any more, Mr Bullock. Meet my husband Arthur. Dr Arthur Saviour!"

"But, your mother . . ." I said weakly.

The lady's face clouded. "Sadly, she passed away – suddenly. Her doctor, Arthur, saw to everything. And, well, we've our own lives now."

Things aren't always as bad as they seem.

# What a Life!

## A fuse-blowing video recorder and mysterious phone calls are amongst the things that plagued Donald Bullock this month

This autumn Steven and Paul spent about ten days enlarging the workshop. Steven's girlfriend Jeanne felt sufficiently encouraged to tidy up some of their long-standing mud-dles. I returned from Spain to witness the result, which was so heart-warming that I offered to open up next day while they went tench fishing in the lovely Walham water.

On the following day I awoke to a soft and sunny morning and later found myself humming happily as I unlocked the shop door and breathed the scent of newly-worked wood and Mansion polish. Then the phone rang.

I picked it up. No one there. So I pulled the first job on to the bench.

### Videos

It was an Hinari VXL8 video recorder which was dead. I opened it up and soon found that the 1:25A fuse Z601 had blown. A replacement brought the machine back to life, and I put it on soak test to see whether the fuse would blow again.

Then the phone rang. I picked it up but there was nobody there.

The next job was a JVC camcorder, Model GRA2E. On the job card it said "mine" and "dead" in Steven's scrawly writing. When it was switched on the 'on' light lit for half a second then died. So I opened it up and made for the crop of half a dozen so-called circuit protectors that are to be found close to the DC input socket. CP6 was open-circuit, for no apparent reason, and a new one seemed to cure the trouble. The circuit boards in this model are very thin, so I took care when removing the PCB plugs and sockets.

As I was reassembling the unit I managed to flick a screw along the bench. It rolled past the telephone and on to the floor. When I bent down to retrieve it the phone suddenly rang in my ear, which was about an inch above it. I snatched the handset and put it to my other ear, which wasn't throbbing – yet. Nobody there.

### Vivian

Next thing Vivian Dunby mooched in, looking as though she'd just been poleaxed.

"What's up, Vi?" I asked.

"Well me 'usband's run off again and me daughter's gone off to Jamaica with a chap old enough to be me father. And me canary's died an' the cat's got the mumps. And now this sod's playin' up." She held up an Amstrad VCR6000 video

recorder. "He won't give me me tape back" she moaned.

Then the phone rang. I picked it up. Nobody there.

"Give me an hour" I said to Vi as I waved her out.

I tried to eject the tape, but the flap wouldn't open. When I dismantled the machine I found that the little lug at the flap's left side had broken off. As a result, the sweeping pin couldn't locate and raise it. I tried all ways to glue it back on, without success. So I got a bit of Perspex and succeeded in welding it in place.

This cured the flap problem but the picture was awful. All was well once the heads had been cleaned.

When Vi returned I handed her the recorder. "It's not all gloom" I said.

"Me 'usband's come back" she replied.

"Oh . . . er . . . never mind" I said.

Then the telephone rang. I picked it up. Nobody there.

### Ping

As I stood there, puzzled, I heard a ping from the soak-testing Hinari VCR. It was now dead. So I opened it up again. A lengthy examination failed to reveal anything obviously amiss, and none of the components seemed to be unduly warm. I pressed the plugs and sockets home and fancied that one was a little loose. Could that have been the cause of the trouble? I reassembled the machine and put it back on soak test.

### Spry Sydney

At this point Spry Sydney strutted in looking, as always, as if his jacket was still wearing its coathanger. A while ago he bought a hotel and installed an Huanya 14in. colour set in every room – twenty four of them in all. Those that didn't sim-



Steven and Paul enlarging the workshop.

ply walk gradually developed a loud 150Hz note to accompany the sound.

Our remedy has been to replace the STR4211 chopper chip IC901 and the 27V zener diode ZD907. This one was the same, and I gave it identical treatment.

"How many of these do you still have, Syd?" I asked.

"Only five" he replied. Then a thought struck him. "Eh, could you take the handles off them?"

"Sure can Syd" I said. "You should have asked at the outset and got a quantity discount."

The phone rang and I picked it up. Nobody there.

## The Shop Steward

Who should come in next but Len Grunt. He's a local shop steward and had with him an old Matsui 1455 portable. After thumping it on the bench he stood facing me with his right index finger poised over his left hand – as though he was about to write down a speech.

"Missus put 'im on. OK. Next day I puts 'im on. OK. Yesurday wife's brother calls in. Puts 'im on. Dead!"

He put his hands aside and addressed Steven. "Always was the trouble, wife's brother. Won't join no union. Never would!"

Steven opened the set and switched it on. The chopper circuit was dormant. We didn't have the circuit diagram, but he drew my attention to the 2SD820 chopper transistor Q604. The transistor and its heatsink were quite warm.

"Can you take over?" he asked. "I'm off to see the vicar about getting married."

"Struth!" I said.

When he'd gone I decided to look for shorts on the secondary side of the power supply. The HT rectifier D607 read short-circuit both ways, so I replaced it. This made no difference. When I checked the new diode I once more obtained a short-circuit reading. At this I retested the original diode, which was all right. Further checks revealed that one of the protection capacitors in parallel with D607 was the culprit. The offending item was C613 (4.7nF, 1kV). I should have checked D607 out of circuit if course. A thorough approach is essential when fault finding.

## A Reply at Last

As I was reassembling the Matsui set the phone rang again. I picked it up.

"Bullocks!" I screamed.

"Ooh. I owp yoo can 'elp me"

said a voice, "or are you just the old man?"

"Never you mind that" I said, "this is the boss."

"Oh well" croaked the voice, "you'll 'ave to do. Right now I'm needing a camcorder, so I'm asking you which is the best?"

"Well, if it's any recommendation Steven's got a JVC" I said.

"Does Argos sell JVCs?" asked the cracked voice. "Do you happen to have their latest catalogue there?"

"Of course I have" I replied, oozing kindness. "I keep it specially for enquiries like yours. If I could trouble you to hang on for a second I'll look into the camcorder section. If they've got what you want I'll shut the shop and nip along and buy it for you. I think I can afford it, and they are only three miles down the road. May I ring you back?"

As I put the phone down I noticed that the Hinari VCR had failed again. Fuse Z601 was once more open-circuit, and I spent an hour trying to find out why. Eventually I resorted to resoldering every joint in the power supply. Then I boxed it up again and put it back on soak test.

The phone rang. I picked it up. No one there. I slammed it down and picked up the next job.

## Hikona Portable

It was an Hikona RM2000, which is a 14in. colour portable made in Turkey. The set was dead and groaning, and it had my sympathy. I noticed a 10µF, 250V electrolytic – C320 – and hooked it out for testing. You know my suspicion and prejudice about electrolytics. I was right – it was open-circuit. When I'd fitted a replacement a picture of a harem scene came up. As the sheikh galloped in, the set died again.

After a further bout of diagnostic effort I discovered that one end of the 47Ω, 5W wirewound resistor R505 was dry-jointed. I cleaned it off and resoldered it. When I switched the set on again I was just in time to see the sheikh galloping off into the sunset.

## The Hinari's Secret

As I boxed up the Hikona set I heard a ping from the fuse in the soak testing Hinari VXL8. This time I plugged in the bench light magnifier then studied and carefully tapped every inch of the chassis and the panels in the machine. I eventually came to the capstan drive chip IC206. When I moved it the fuse blew.

Homing in on its pins I found that one of them, while looking as if it was perfectly soldered to the blob, was ringed by a very fine crack. I resoldered it and once again put the machine on an extended soak test. This time it was all right.

## Ribby Ellis

Then Ribby Ellis, the telephone engineer, came in – grinning as usual.

"Who's that looking over your shoulder, Don?" he enquired.

I turned round and there was nobody there of course.

"Oh it's all right. It's your ears" he bawled, shaking with mirth.

"What's your trouble?" I asked, "apart from the fact that you're a prat."

"This 'un" he said, holding up a 14in. Philips portable, Model 14CT2006 (CTX chassis). "Picture gradually goes dark – sound's OK though."

I opened it up and studied the panel area beneath the line output transformer. The transformer's pins were dry-jointed. So I resoldered them, boxed the set up and gave it back to him.

"Ribby" I said, you've not inflicted any of your silly practical jokes on me of late. So I'm going to show my appreciation. Have this one on me."

"Gosh Don, that's good of you" he said. "Makes me feel guilty about playing you up all day."

I looked at him and he pointed to the phone.

"You?" I exclaimed.

He nodded. "I'm working over the road" he said.

"Clear off" I hissed, "you ought to be birched!"

## Getting Around

Television certainly gets around. It's always a pleasure to hear from fellow sufferers in this trade. Recently I received a letter from Bill Challoner, a lad of 84, formerly of Southport but now living at 5 Erica Street, Geraldton, Western Australia.

Bill was originally a cinema projectionist. He studied TV servicing when Australian outdoor cinemas became extinct, and managed to make a living from it. Now ill, he's just undergone surgery. Bill reckons that reading in *Television* about the slings and arrows we suffer brightens his day. His letter certainly brightened mine. I know that he would be interested to hear directly from other readers who have tales to tell.

# What a Life!

## Donald Bullock gets some lessons on common camcorder problems from son Steven. So this month it's a load of camcorders

"We haven't been getting any camcorders in lately" Steven said the other day. "Perhaps they've all been put away for the winter."

"Good thing too" I replied. "I scarcely know anything about them, and can't generate much curiosity."

### A Handycam

As we spoke, Cyril Sidgeworth popped in with a Sony Handycam, Model CCDF330E.

"Liney picture" he squeaked. "Picture all liney. Sort of made of lines, like. Liney, you might say."

"OK, OK" I said, waving him out. As Steven plugged it in, I asked "what's the cause of that then?"

"Dud parents I suppose" he replied.

I looked at him. "The camera" I said.

"Oh. Loose guide poles on the tape arms I expect. Usually is."

He's got long, thin fingers, like Greeneyes. Not short stubby ones like me. So he had it open in no time. Sure enough the guide poles were loose. Each pole is secured by a tiny screw. But there was still a problem when he'd tightened them.

For the first two minutes after switching on the control pulses seemed to be weak and, with a standard play recording, the tape speed kept switching between long play and standard play. After the two minutes however the camcorder worked perfectly. It continued to do so whenever we tried it for the rest of the day. We decided to put it aside until next day.

### And another

This was as well, since Pete Porter bowled in at this point with a bagful of shopping.

"Can you mend this, Mr Buglock?" he asked, peering at his bag of shopping. I noticed an old screwdriver poking out of his top jacket pocket.

"No. Who would try? How is a chap supposed to mend a bag of shopping?"

He pulled out a pound of sausages, a box of eggs and a bag of pork chops and laid them out on our counter. Steven rucked his hair like Stan Laurel as I stood in indignant disbelief, like Ollie. Then out came a Sanyo VMPS120P camcorder.

"E's about a year old. Yest'dy he jammed up. All by hisself. I never touched 'im, 'onest. Cross me 'eart and wish to die."

He then departed, leaving his sausages. Steven displayed his expertise by rapidly opening up the camcorder. The tape carriage had been forced so brutally that it was quite unrepairable.

While I was wondering about it Steven was on the phone to Chas Hyde and Son.

"So the part number is 11923XO and the price £20.40 altogether. That's cheap. Will you post it today?"

It arrived next morning, as we knew it would from this excellent firm. Steven had the camcorder working perfectly almost as soon as the postman had left.

When Porter returned I told him about the mangled tape carriage.

"Must 'ave been the missus" he said.

### Sunshine's Viewcam

Our next caller was Sunshine Honeychild. She bounced in as though she'd just jumped from a carnival float and was carrying a Sharp Viewcam, Model VLC73H.

"What's up with it?" I asked.

"It's the laziest camera in town, man. Done do nuthin'. Nuthin' at all."

Steven tried it and found that it wouldn't eject the tape in it. There was no rewind or fast forward either. Once again his fingers flew into action and the camcorder was soon opened up. He examined it carefully.

"I reckoned it might have been the mode switch" he said, "but it isn't. The easiest approach with these is to remove all the casing parts first. Then it's a simple matter to separate the single PCB from the bottom of the deck."

When he'd done this he soon found the cause of the trouble. Several membrane leads connect the chassis and the panel. Three of the retaining clamps had never been clicked into place, so the conductors were only loosely connected. When they had been pushed home properly and the clamps had been secured the camcorder came to life, with excellent results.

### Dickie Downsize

Dickie Downsize is a preacher of sorts and a general walking disaster. Not only does he do silly things, he tries to cover up his fool-

ishness. At such times the truth is not in him – and he makes us sore displeased.

As Sunshine Honeychild collected her camcorder Dickie appeared with his – a Canon E230E.

“It was all right until I used my new head-cleaning tape” he declared, “now it messes up my other tapes.”

Steve inserted one of our test tapes and switched on. The motor whirred but the tape remained still. When he ejected the tape he frowned.

“What did you put on the cleaning tape?” he asked.

“Nothing whatsoever” said Dickie. “Why? Did you think I would put Vaseline on it?”

Steven opened the camcorder up and found the heads and tape path thick with yellow grease. Vaseline. An hour later he was still trying to remove the last of it from the camcorder’s inside. Eventually he succeeded. Then he looked at our test tape and sighed.

When Dickie returned, Steven had a word with him.

“Dickence” he said, “you know that Vaseline you didn’t put on your cleaning tape?”

“Yes” said Dickie.

“Well, don’t put it in again, eh? Because I’m going to have to charge you twenty five pounds for taking it out, then there’s the cost of our test tape.”

Dickie shuffled about a bit. “Don’t cleaning tapes need lubricating?” he asked . . .

“How about having another look at Cyril Sidgeworth’s Handycam?” I suggested to Steven.

“Dashed good wheeze” he replied, putting on his Greyfriars accent.

We put it on the bench and tried it from cold. The old trouble had returned. Some fault finding was attempted during the two minutes that the machine played up. Then, as it resumed correct operation, we had to put it aside again.

## Trouble, Bub

Our next caller was kinda bulbous. He wore a loud check jacket and, I reckoned, a pair of jodpurs under his trousers. He was carrying yet another camcorder, this time a Sony CCDTR610E.

“This c-a-a-amera shurr is a-a-aggravatin’ me, Bub” he announced.

“An American gentleman” I said to Steven, through the side of my mouth.

“Do I pay now?” he asked as he

handed it over.

When he’d gone we discovered that the trouble was with the carriage. It was notchy when it accepted a cassette and slow to eject the tape. The door of the housing is made of very thin and flimsy metal. It had warped. As the cassette drawer slid into place, its top caught on the casing. We managed to get the camcorder to work satisfactorily by re-flexing the housing door.

When we returned it to the bulbous gentleman we warned him that because of the camcorder’s design our repair might not last.

We charged him a tenner and he slapped down two.

“More than delighted, boys” he boomed, “next time I’ll buy a British one.”

“You’ll have a job” I said.

## Denzil’s Sanyo

Denzil Dewar was our next caller. He brought in an old Sanyo VMD6P camcorder. Now Denzil comes from the other side of the Severn bridge, so his speech is mostly song.

“Cassette jammed into the cam-er-ah boys” he trilled. “It’s happened before ack-tew-lee, don’t they?”

“Daresay it has, Den” said Steven. “They do. The loading gears become brittle as they get older and the teeth wear or occasionally break off, jamming the works.”

As he sallied off, Steven’s fingers started to fly about like Ichabod’s. He soon had the camcorder open, and quickly unlaced the tape and fitted new gears. We get them from Chas Hyde and Son.

When Denzil returned he was delighted.

“Why, you’ve got it working as good as new” he said to Steven as he dug out his wallet. “I’m ever so pleased, ’cos it’s a nice little camera, won’t it?”

## Back to Cyril’s Handycam

I turned to Steven when he’d gone. “Well” I said, “you were bemoaning the disappearance of all the camcorders. But we’ve had our share recently, and they’ve all gone back – except for Cyril Sidgeworth’s Handycam. Wonder if we can clear up that final problem? Let’s assume for the moment that the cause of the fault is mechanical.

We pulled it on to the bench and studied its mechanics carefully during the two minutes before the fault



“Can you mend this Mr Buglock”

condition cleared. This enabled us to find the cause of the trouble. The back-tension arm is secured by a fixed pin that rises from the deck plate. During manufacture it had been lubricated with graphite grease. When the camcorder was left for a time and allowed to cool down the grease would solidify. Thus for the first two minutes, until it warmed up, the back tension was slack. In this condition the tape skated loosely over the heads, to the detriment of the essential control pulses. All so logical, and easy to understand, once you know what’s going on.

We cleaned off the hardened grease, then applied new grease. When Steven had reassembled the Handycam and tried it I reached for the phone and dialled Cyril’s number.

“Your Handycam’s ready, Cyril” I said. “Get some cabbage and make for the shop.”

“Ha. Good” he squeaked. “Is all the lininess gone? Are there any lines on the picture? Is it liney? What I mean is, is the lininess all gone?”

“Gone for ever, Sidgeworth” I said.

As we tidied the workshop I reflected on young Steven’s servicing abilities. Not bad at all, I thought. He’s obviously well endowed with my genes. I reckon that in time he might just become as clever as his dad.

# What a Life!

**Reminiscences of earlier times, then back to today's dud TVs and other matters. Donald Bullock's commentary**

**A**s I sat nursing an after-dinner whiskey over Christmas I found myself reflecting on the changes that have occurred in our trade over the years.

There was a time when the family TV set took pride of place in the nation's sitting rooms. When it went on the blink there was consternation all round. The relief was obvious if we could get it going in the house. Dark expressions turned to smiles, and we were often given something, from the garden say, in addition to our payment.

When the set had to be taken off, as was often the case, it was a different story. We would get suspicious looks, there would be dark mutterings about honesty and expense, and urgent entreaties about how long it would take.

TV engineers had to learn how to cope with such situations. Many who had entered the trade because of technical interest found that dealing with personal problems was part of the job – also backbreaking weight lifting. All this for very limited reward.

## Silent Sydney

Many customers would resort to threats, bribes and various tricks to get their sets back quickly. When I was at a local GEC branch with a workshop at the back there was a character we called Silent Sydney. He would drive up to the front gates with a pocketful of silver half-crowns. The gateman would be tipped to let him through, after which he would tip everyone else he came across until he reached the workshop. My half-crown came when I had lifted the set from the car. The resident engineer, who usually cleared his bench at once, got the jackpot.

Sydney was a tense and expectant man, but once his set came to life a gentle smile of relief would appear

on his face. He communicated mainly with his eyes: I never heard him speak.

## Workshop Conditions

The workshop conditions usually reflected the poverty of the job. One of my earliest jobs was as a bench engineer at a city branch of J & M Stone, a well-known multiple of that era. Most of the floorspace was taken up by a cheerful, brightly-lit showroom. At the back there was a tiny and basic lavatory – and my workshop, which was scarcely larger. It had a short, wide shelf, and a stool whose top had long since disappeared. The floor consisted of a couple of uneven flagstones. It was here that I learnt the cruelty of a mains-to-earth shock. But I was told that they keep you free from rheumatism for life, and my experience seems to bear this out.

## Reuben and the Philips

An even earlier job was as an assistant to Reuben, an enthusiastic but small-minded electronic wizard. This was just after the war, when decent wireless sets were rare. One day a pre-war Philips radio was brought in for a complete overhaul. Now Reuben knew and respected Philips sets, as I came to do, and he tackled it as if it was some sort of vocation.

First he dismantled and thoroughly dusted it. Then he took out the dial glass and washed it. In went new valves, a new magic-eye indicator, a new tuning gang, a new dial-drive cord, pilot lights and many smaller items. Next came realignment, RF and IF, using a signal generator. Finally the cabinet was cleaned and polished. When he'd finished, the set shone and produced unbelievable sound quality. Reuben radiated contentment.

When the customer came to collect it, Reuben proudly demonstrated its quality on several programmes.

He then presented the bill. The customer complained that it was far too high. Reuben told him about the hours of dedicated work involved. There was an awful row, which ended when the customer ordered Reuben to unrepair the set. "I'll take it to Weatherby's" he shouted, "they'll do it cheaper."

Reuben unrepaid the set then some. He misaligned it, drilled tiny holes through the capacitors, pulled the speaker cone off-centre and, amongst other things, opened the huge IF transformers and painted their windings with battery acid. Next day the customer returned, full of apologies. "I've come to pay for your excellent work" he announced, "it was unforgivable of me. You'd worked wonders on the set."

Reuben sagged, then tottered out to the King's Head. The customer looked at me. "What's up with him?" he asked.

## A Goodmans 2875

I could fill a book with such reminiscences – if it wasn't for the likes of Fanny Trotter. She came in and collared Steven.

"My set ain't half funny Mr Snodd, er, Bullhead" she said. "Can you be a dear and get him from the car?"

Steven looked outside. It was raining, hard.

"Where's the car?" he asked.

"Just across the road" she replied.

He followed her out. There was a parked car twenty yards up the road. Gritting his teeth, he followed her towards it. But she walked past, to another car thirty yards farther on.

When he came back he was soaked and puffing. It was the biggest set I'd ever seen. A 28in. Goodmans 2875.

"It's a funny sort of fault" she chortled, but we waved her out.

I got the set on the bench. There was no green content to the on-

screen graphics but there was green in the picture, which was wishy-washy and flared. "One for you, Steven" I said, "er, I'll make the tea."

## A Vacuum Cleaner

As I put the kettle on Steven called me to see Mrs Noggs. She was clutching a modern, upright Electrolux vacuum cleaner.

"I just done me rubber plant when he went 'fuzz' and cut out" she said, "he ain't all that old."

I don't like vacuum cleaners, especially Electroluxes with their clamped up motor-cum-fan units. This one was no exception, though I did manage to get to the motor brushes. To my surprise one was almost worn away while the other one seemed as good as new. But I was wasting my time. Enquiries proved that there are no motor spares for this model, just the complete motor/fan unit.

## Mr Dewey

Just then an ancient but brisk man walked in. "Name's Dewey" he said, "of Dewey, Squeezam and Howe, solicitors." He flicked at his watery eye. "My set's old, same as me. But don't you tell me to change it. It's got push-buttons and knobs, and I can work it. And it looks like a television set, not a storage bin."

It was a Ferguson Model 3792, which uses the TX9 chassis, and was dead. I found that the plugtop fuse was open-circuit in addition to the 1.6AT mains fuse in the set, FS1. Then I saw that the BU508A chopper transistor TR62 had blown its front off. Steven was busy with the Goodmans set, so I went to look for the circuit diagram. Steven noticed.

"There are about forty TX9 circuits, all different" he said, "aren't you lucky?"

The set was actually fitted with the 1044 non-remote control version of the chassis, the later version that has a chopper power supply. I eventually found the right circuit.

As R164 (27 $\Omega$ ) and D104 (1N4001GP) in TR62's base circuit had both died violently I decided to check the windings of the chopper transformer T1. They were short-circuit. We've had trouble obtaining these transformers in the past, so I fitted one from a scrap chassis. In addition to the blown devices it seemed logical to replace the TDA4600 chopper control chip IC57. Then I started the set up, gingerly, using the variac.

There were no shorts, but there was no HT output from the chopper

circuit either. "Check R165 (300k $\Omega$ ) in the current-simulation network" rapped Steven authoritatively. It was virtually open-circuit. A replacement completed the repair, and the results were excellent.

Meanwhile Steven had been working on the CRT base panel in the Goodmans 2875 - where the TEA5101A RGB output chip lives. He found that R28 (68k $\Omega$ ) in the green channel was open-circuit. In addition its counterparts in the red and blue channels, R26 and R29, had risen in value to about 75k $\Omega$ . Replacing all three restored correct displays.

## Return of Mr Dewey

When Mr Dewey returned to collect his set he brought two more with him, a Sony KVM2121 (BE1 chassis) and an Hitachi fitted with the G7P Mk 2 chassis. "These belong to my two partners" he announced.

The Sony set was dead with the standby light pulsing. A check on the BU506DF line output transistor Q802 showed that it was leaky. After fitting a new one we discovered that circuit protector PS802 in the supply to the line driver and output stages was open-circuit. It's rated at 0.6A. A new one completed the repair.

Then Steven pulled up the Hitachi set. It was dead with the BUT11AF chopper transistor Q901 open-circuit. This is another TDA4600-type power supply (TDA4601 actually). The resistors in the current-simulation circuit are R932 (120k $\Omega$ ) and R931 (150k $\Omega$ ). They were both high in value at some 180k $\Omega$ . After replacing these items he started the set up via the variac. All was well.

Later, over a cup of tea, Steven pointed out that Mr Dewey, an intelligent man, refused to consider buying a new set because they are full of gimmicks and are unpleasant, if not impossible, for normal folk to operate. In addition they look so black and awful.

"I'm finding that more and more people, especially the mature ones, feel the same about modern sets. They don't like them and won't have them. When their existing sets need to be replaced they ask whether we can supply an older, reconditioned one. Since the population is rapidly ageing, there must be a fortune waiting for the first manufacturer sensible enough to produce a basic set that anyone can operate" he concluded.

## Rippling Picture

Just then a thin, sharp-faced character hustled in carrying a Matsui 1436



"It was here that I learnt the cruelty of a mains-to-earth shock."

portable. He put it on the counter, had a fight with his duffle coat, pulled out a red-spotted handkerchief and gave his nose a good blowing.

"Shall I ask him for an encore?" I asked Steven.

"This set, now" rang out the Modern Man. "It's never been *really* right since you last tried to do it, but I thought I'd give it time to settle down. I think it must be the valve or the transformer. Perhaps you fitted new ones last time. You'll have it in your records, I daresay. We were watching 'Are you being served' when it failed. My dog likes to watch that."

"When did we last do it?" Steven asked, reaching for our tray of cards.

"It was just before that last Cassius Clay fight" he said. "I wanted to watch it, the wife didn't and didn't we have a row. Well, wives are all the same, aren't they? Er, are you married Mr Duffer?"

"No" said Steven, "I've just got toothache."

Once he'd departed we pulled his set on to the bench. The entire right-hand side of the picture was rippling. This suggested an open-circuit or low-capacitance electrolytic in the power supply. But we found that the print at the positive side of the HT reservoir capacitor C666 (150 $\mu$ F, 160V) was cracked. Resoldering it cured the set's trouble, but there was still the customer . . .

# What a Life!

**Problems as diverse as wow with a Dansette record player to an hour-glass picture with a recent JVC TV set came Donald Bullock's way this month**

Just as I had sat down to write my *Television* article, Greeneyes came in and turned the TV on. I don't much like the TV being on at all, especially when I'm trying to write an extremely intellectual article. So I told Greeneyes that she was a cretin, and we had a row about my manners and her mother. Then the TV's brightness went – it's a Sanyo CTP6256 – and I laughed nastily.

Greeneyes said I'd have to mend it right away. So I put my writing aside, took the back off the set and looked at the chassis. The brightness returned.

"How did you manage that?" asked Greeneyes.

"Cleverness and influence" I said, refitting the back.

When I'd finished and sat down again, the brightness had gone. Greeneyes shot me a withering look. Time to start all over again. I took the back off, leant it against the wall, then turned to the set which was now OK. Greeneyes' big ginger cat strolled over, looked at the screen and laughed at me. So I touched it with my foot. Greeneyes saw it shoot off, and we had a row about my wickedness and her lavishing all her affection on cats and dogs and turtles instead of me.

When we'd finished our row and agreed that she was right and I was wrong, and that the red pair of shoes in Clarks would go well with the green frock she's going to get from River Island, the brightness went again. This time it stayed off, and I started to tap around with the pen I'd intended to use for my article. As I couldn't make it come back I decided to take the set to the workshop, and put the rear cover back on. The brightness returned and I made a bit of a scene.

"Have we got to call Snoddies?"

Greeneyes asked, "or shall I ask son John to mend the set. We can't go on like this."

Then the phone rang for me, and while I was talking Greeneyes got John to take a look at the set. He went out for a soldering iron and a few minutes later had the set working – even with the back on. It didn't fail again.

I pretended not to notice that the set was now working satisfactorily, or that it had been fixed so quickly, until Greeneyes went out to fix a banquet for her cats and dogs and turtles. Then I casually asked John what the trouble had been.

"R622" he said. "It's a two-inch tall ceramic resistor stood up on end. The solder joint at the top was dry."

"Thought it would be" I said.

## Harry's Dansette

There are two types of people I can't stand. Three if you count traffic wardens. One is the type of chap who concentrates so hard on making silly remarks that you can't hold a proper conversation with him. A customer of ours, Harry Quipper, is one of these. Otherwise he's a decent chap. He called in the other day with an old Dansette record player which, he said, he'd found.

"Gosh, Harry, I didn't think there was one of these left in the country" I said, "what's up with it?"

"Dead" he replied.

I noticed that the cheap mains plugtop didn't secure the outer cover of the mains lead, and that the conductors were straggly. So I tugged at them and they pulled out. I remade the lead and plugged it in, then tried out the Dansette with our 33 r.p.m. record of classical piano music – there's no finer type of record for detecting turntable variations.

This one sounded awful. I frowned. "Where's that wow coming from?" I said aloud.

Harry's silly face lit up. "From the Gwamophone, of course" he quipped.

I told him to come back in a couple of hours' time then gave the record player a service, right down to oiling the motor, but the wow remained. Then I noticed that the blip occurred once per revolution of the record. I finally lifted the turntable mat and found that a little inspection label, not much bigger than a stamp, had been carelessly stuck on. So there was a ruck in it. Removing the label cured the trouble.

## The Other Sort

Then Mr Magic came in with a Toshiba portable, Model 1400TBT. His real name is Cyril Pipe, and he spends his spare time dressing up and doing conjuring tricks at children's parties. I can't stand conjurers.

I looked at the set. "Nice one, Cyril" I said, "what's wrong with it?"

Cyril hunched his back and drew his head down into his shoulders. "Picture like this" he said. Then he pulled from his pocket a shabby pack of cards which he fanned out. "Pick a card, pick a card" he said.

I looked pained. "Bugger the cards" I replied, "let's think about the set."

I plugged it in and sure enough there was bad field cramping at the top of the picture. The set uses an AN5515 field output chip, and I recalled a similar fault with a similar model. I traced the IC's supply from pin 7 back to the rectifier circuit C311/D309/R317 which is fed from a winding on the line output transformer. When I checked the

value of the 7.5Ω surge limiter resistor R317 I got a reading of 48Ω. A replacement resistor of the correct value cured the fault. As I boxed up the set I thought that Cyril ought to be relieved of eleven pounds, a tenner for the repair and a pound for his bit of conjuring.

As I turned to him he said "Wait a minute" and drew a £1 coin from my ear.

"Put that on the counter close to me Cyril" I said, "and add another one plus a tenner. It'll get you out of debt and your conscience good."

## G11 Problems

Meanwhile Paul, who spends most of each day on VCRs because he's so good at them, pulled a Philips set fitted with the G11 chassis on to the bench. "We've made some money out of these" he commented, thinking of all the BU208As, the smoothing blocks, the field time-base chips and the odd tube or two we've replaced. This one was dead, and Paul soon found that the negative side of the mains lead was connected to the plugtop loosely.

"I've had this before with these sets" he said, "but why is it always the negative connection that becomes loose in the plugtop? The little retaining screw loosens, doesn't it."

"And how" I replied. "It's because of the thyristor power supply, which does violence to the nice smooth mains supply waveform. If you were the little screw at the top of the plug's negative lead you'd jiggle about with the sudden current pulses, I'll bet."

When he'd seen to the plugtop he found that there were intermittent outputs from the line output transformer because of dry-joints at the pins. Resoldering them restored the set to life, though the width still varied and tried to collapse now and again. "What makes the line output transformer's pins go dry at their joints to the board?" he asked.

"More hammer" I said. "That transformer is vibrating at a very good lick, and producing heat. The solder joints have to contend with the rapid pulse waveforms at the pins while the heat affects the chemical makeup of the fluxes in the joints. They eventually shake loose. It's much the same with the other wound components in the line output stage. In view of the picture width variations I reckon you'll find some more dry-joints in this area."

He did, and after some careful resoldering all round he had a good, steady picture.

"Remember" I said "any transformer that vibrates at a high frequency and has to handle spikey waveforms will tend to develop dry-joints at its connecting pins. And the next time you get intermittent brightness with a chassis that uses a tiny line driver transformer, like the old ITT Compact, check this item for dry-joints. Resolder the pins, even if you can't actually see any poor joints.

## Interlude

Just then a chap with some steps poked his head through the door.

"Window cleaner" he called.

"Who, me?" I reacted.

At this point a girl who looked like Keyhole Kate picked her way into the shop. "Yoo-hoo" she trilled, "anybody home?"

I moved towards the door.

"Oh. You're somebody else, aren't you?" she said.

"No I'm not" I replied, "I'm the same chap I've always been."

"What I mean is, you're not Steven or Paul, are you?"

Steven came to the rescue.

"That Ferguson of ours you mended back last summer" she said, "the picture's got thin bands of lighter picture all over it. What will it be and what will it cost?"

"Ah, your TX90" said Steven.

"The cause will be C189, a 22μF 50V electrolytic reservoir capacitor, and the cost will be ten pounds, if you bring the set in."

Keyhole Kate gulped. "Electro what . . ." she stammered.

"Ten pounds" Steven said.

Then the window cleaner came in. "Clean now?" he asked, jerking his thumb at the window.

I pushed some money into his hand.

"I suppose your sons are quite competent by now" he commented.

"They're coming on" I replied.

"Of course it will take them some time to pick up all I've learnt over the last fifty years. I feed them the answers, quietly."

## A JVC MXII

Then Mr and Mrs Murphy came in. Nice people, also the smallest couple we've ever seen. Steven gave them a smile.

"We've got our JVC telly in the car, Mr Blockhead" he said. "The picture's like an hourglass. Last time you did it while we waited. Can we wait for it again?"

Steven brought it in and put it in front of me. "Can you look at it quickly?" he said. "It's the modern Nicam stereo set - MXII chassis.



... So I touched it with my foot.

Tends to get this fault."

The Murphys smiled at me as I began to take the back off. Steven continued with his instructions.

"The chassis uses an electronic screwdriver chip, IC707, for picture geometry adjustment. The chip's cheap enough, and we've got one in stock - from Willow Vale, part number 87028M - but you'll need the manual to enter the screwdriver menu and program the new chip. The repair takes only a few minutes, as you know.

I knew nothing of the sort, and stood there trying to digest what he'd said. None of the chips looked like a screwdriver to me, and I grew increasingly puzzled. Five minutes later I was no further forward. Steven looked over and began to lick his lips.

"Gosh, I'd like a cup of tea" he said. "The sort you make. How do you do it? Is it three bags or five?"

"I'll do it" I said, and he was on my stool before I'd left it.

When I brought in the tea the set had been boxed up and displayed a perfect picture.

Harry Quipper came back for his gram just as Mr and Mrs Murphy were paying Steven a few browns. He had one of his irritating smiles as he watched. As they left, he turned to us.

"Nice handful of cabbage that" he said, "talk about being grateful for small Murphies!"

# What a Life!

**The man from the hills with his 12V VCR, a miscellany of Hitachi CTVs and other problems. Donald Bullock gets them all**

**O**ur Spanish pad is supposed to be a refuge, an escape from our busy life over the years. It doesn't always work out like that.

No sooner had we settled to our after-dinner drinks the other day than Hillbill Shagg payed us a visit. He's a thin, bright-eyed and craggy-faced builder who grafts like a horse to earn his simple living and wears a multicolour, knitted tea-cosy hat. He'd come to lay a path, and brought with him an ancient 12V portable VCR.

"E's blowed up, I think" he rasped.

I opened it up while he watched. All the fuses were blackened.

"How did you manage this?" I asked.

"Generator trouble" he replied.

I set about fixing it while Hillbill talked. He told us about the remote spot where he lives, in the mountains. Someone had given him a tiny wing of an old country farmhouse. As there's no mains electricity he uses a moody petrol generator that delivers 12V for his lighting, his VCR and TV set. He has no TV reception, so the VCR is important to him.

Much to my surprise I managed to repair his VCR. But he brought it back a few days later, this time with his regulator. A spot of luck that, as this time the 12V regulator had failed. It uses a pair of 39 $\Omega$ , 2W wirewound resistors which had been reduced to coke.

"What do you do out there when you can't watch your tapes?" I asked him.

"I smokes the 'Appy Stuff" he replied.

## Cuthbert's Gadgets

Son James, who is just seventeen and studying for higher things, does a few repairs here in Spain. One of his more regular customers is Cuthbert Lord, an old-fashioned man who has dozens of electronic gadgets. Playing with them is his life, so they have to be all right. He calls James often, and pays him well.

His latest trouble has been with a Pace PRD800 receiver-decoder. "Every few days it goes 'suh', then 'bzzzz'" he complained. "Now that can't be right, can it?"

James brought the receiver in and carried out the usual power supply service. After giving it a good soak test he took it back.

A week later Cuthbert called him again. "Last night it went 'cha' just once. At twenty past eight. Can you come and look at it again?"

James did as requested. While

listening for the noise he noticed Cuthbert's cat arch its back. Then it sneezed. 'Cha.'

"That's it!" cried Cuthbert, pointing to the Pace. "Take it in and get it absolutely right."

A few days later we saw Cuthbert at Tony's store. He was returning an electronic mosquito-killing machine he'd bought the day before.

"A mosquito flew into it at five past seven last evening. Then flew out and bit me."

Seeing whom it was, the shopkeeper bundled a replacement into his arms and led him to the door.

"Some mosquitoes around here are very tough" he said, "try this one."

## Some Hitachis

When I returned to the UK I found that Steven was having trouble with an Hitachi C2118T (G7PS Mk 2 chassis). It had been in before with the same complaint – intermittent field collapse. On the previous occasion the cause had been the LA7835 field timebase chip IC601. This time the problem was worse when the set was hot.

When replacement of likely components failed to cure the trouble Steven decided on some prolonged voltage checks. The field timebase chip has two supplies, 9V for the generator section and 25V for the output section. The 9V supply comes from an MC7809 regulator, IC703. A check at the output from this regulator revealed the answer. As its temperature rose, the output dropped to zero. A new one put matters right.

Steven reckons that this device always runs hot in these sets. He fitted an extra large heatsink.

Paul was working on another of these sets. It was dead, and a check on the 82k $\Omega$  start-up resistors

*I smokes the 'appy stuff.*



through on a pair of trotting legs. We then saw that they belonged to Norman Nutmeg, who stood there panting like a steamroller.

When they'd been replaced the set came on then died as the EHT rustled up. The cause was excessive HT. R909 (39k $\Omega$ ) in the voltage-sensing circuit had risen in value to 43k $\Omega$ . A replacement restored normal operation.

Then Mr Craddock brought in another Hitachi set, an older CPT2224 (NP81CQ chassis). I put it on the bench and powered it. There was a picture, but it was too bright on the left-hand side and a thin white line travelled up the screen. I had to start somewhere, and decided to check the field output stage in the hope of clearing the white-line fault. Just as well. The field output device (M601) sported a fine drop of dry-joints. Remaking them removed the line but left the uneven brightness. The cause of this fault was simply the reservoir capacitor for the HT supply to the RGB output stages - C715, 4.7 $\mu$ F, 250V.

When the set was given a soak test some spluttering was noted. Close examination revealed a dry-joint at one of the line output transformer's pins - the offset one that earths the body of the transformer.

Meanwhile Steven had yet another G7PS on the bench, this time a C2119T. Once again the fault was field collapse. In this case the 9V regulator's output pin had never taken to its solder blob. Resoldering put that right.

## A Satellite Receiver

Our next customer was Ethel Smallbone. She had with her a satellite receiver-decoder.

"Up he went. Then my old man said 'Right, I'm off to the pub.'" "Right" I said.

The front panel said Finlandia. Underneath a notice said Granada M/N92LR1/A. In fact it was a Pace PRD800 and the problem was the usual power supply blow up.

We replaced the TEA2018A chopper control chip, the BUT11A chopper transistor, the 4.7 $\Omega$  surge-limiter resistor R1 and the 1A fuse, then the three electrolytics C5 (22 $\mu$ F), C7 and C8 (both 10 $\mu$ F). Note that you have to use 105 $^{\circ}$ C, low-ESR capacitors in these positions.

This restored the receiver to life and Mrs Smallbone was happy to hand over a couple of blues.

## Flemings

The door opened and a Panasonic TX2 (Alpha 1 chassis) came

through on a pair of trotting legs. We then saw that they belonged to Norman Nutmeg, who stood there panting like a steamroller.

"If this 'un was full of Flemings I'd mend 'im myself" he told us. "Used to know my Flemings, I can tell you."

"Flemings?" asked Steven.

"Ah, you'd be one of the newer fellows" said Nutmeg. "Flemings - valves - after Sir Ambrose Fleming who invented the thermionic diode. Anyone could mend a set in those days, when you could pull out a Fleming and plug another one in. We mended our own sets then."

The Panasonic set was dead though alive - its display came on but the power supply didn't do anything. Paul dealt with this one. It didn't take him long to discover that the two 2SD965/R transistors Q801 and Q802 were both leaky. Q801 provides excess-current protection while Q802 provides standby switching.

## No Colour

Another customer slid in and started to stroke the counter. I looked at him. He smiled and clasped his long fingers together.

"Could you possibly repair my set?" he asked.

I looked about him. "We could try" I said, "if we could see it."

"Oh, silly me!" he gushed, "it's in the car."

Paul went out and brought it in. Another Hitachi, this time a CPT1474 (NP84CQ Mk 4 chassis).

I pulled over a job card.

"Name?" I asked.

He brought his face down to me. "Kenny" he said.

"Trouble?" I asked, "er, the set, I mean?"

"No colour" he replied, "but a perfect monochrome picture."

Steven tackled this one - said he'd had it before. He checked the supply to the colour control and found that it was correct and stable (12V). The voltage at the slider is smoothed and is then fed to pin 5 of the colour decoder chip IC501, where it should vary between 1.6-3.5V as the control is adjusted. In fact the voltage here was low at 0.6V.

When pin 5 of IC501 was disconnected the voltage rose. So Steven replaced the chip which made no difference. A check on the other voltages around the chip produced a low reading at the brightness control pin 11, which is decoupled by C511 (2.2 $\mu$ F, 50V). This capacitor tested all right, but a

replacement cured the fault and restored the voltages.

## A Dead VCR

Our final customer that day was an old, grey, stooping man though he sounded sprightly. He was carrying a Toshiba V204B VCR.

"Is Don Bullock still about?" he trilled.

"That's me" I said.

He stepped back, looked me over and drew his breath in sharply. "Good God" he muttered, then he straightened up.

"Remember Arthur Chickweed?" he asked, "that's me."

I looked at him in amazement. "Must be thirty years, how do I look?"

Arthur shuffled a bit, then pointed to the VCR. "Half dead and ticking" he said.

I looked at him sharply.

Paul tackled this one. He went straight to the power supply where he yanked out CP007. This 10 $\mu$ F, 50V electrolytic is part of the chopper transistor's base drive circuit. When a replacement had been fitted the VCR sprang to life.

"Here, you can't fit one of those things to me, can you?" Arthur asked as he paid up. Then he looked at me. "While you're at it, you might fit one to the old man."

I straightened up and took a keen interest in the cloud formation outside the shop.

## Requests

I've referred before to this magazine's many, many wonderful regular readers. When the editor kindly popped a Help Wanted request of mine into a recent issue, two came to my aid. Gerald May of Abertysswg, Rhymney, Gwent sent me a boxful of copies and asked for only the postage. James Lynch of Western Isles Electronic Services, Balivanich, Benbecula provided me with others.

James has the following issues available free to good homes: June, July, November and December 1987; January, February and April 1988; February 1989; July 1993; July, September and October 1994.

He needs the following issues: January, July, August and September 1989; March, April, July and August 1990. His telephone number is 01870 602 035.

And I need only the April 1985 issue to complete my collection. If you have one, please send it in care of the Television editorial office, Room L302, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS.

# What a Life!

## Recollections on how we were. Customers, their problems – and their videos and TVs. Donald Bullock's world

**I**t was a lovely Spanish day. We'd been up in the mountains for a great big meal with wine, and had lashed out over four quid each on it. Now I was lolling in the sun by the pool with a very large whiskey. Greeneyes was in the pool. It was nice to be away from TV sets and people who say silly things. I closed my eyes and slumbered.

### Recollections

What was it that that fat woman said to me the other day?

Ah, yes. "It can't be the tube 'cos our Vera was eight when Grandad died . . ."

And that chap who kept turning up his nose. "It's either the valve or the condenser . . ."

Silly old fools.

How nice life was when there was only the wireless, and they never let prats near the micro-phones . . . Those accumulators that used to light up the valves . . . The man would get a newly-charged one every week . . . Pity accumulators never lasted the week . . . Wonder why the newer fellows don't know about the Skin Effect and Litz wire?

"This is Henry Hall speaking . . ."

"The day war broke out . . ."

"Mah missus isn't a woman, she's a place . . ."

"I wouldn't say she drinks, but she came home sober last night and the dog bit her . . ."

"Hey, is that the time? They've been open two minutes . . . What will Charlie Evans think?"

Hmmm. Those service calls. "It's a heavy set, isn't it, Mr Bullock? Hold on now . . . Don't put it on the table in the corner. Perhaps over there . . ."

"Stop annoying Mr Bullock, Bonzo. Why are you jumping about like that, Bonzo?"

Nice whiskey this. I'll have another.

That chattering Mrs Blabber . . . I ran from her house one day late for my next call and jumped into the ancient Jag Mk 10. What, no steering wheel? Nothing on the dashboard? Oh God, I'm in the back seat . . . Did they see me? What'll they think? Better crouch about, pretend to be looking for something . . .

In the paper . . . Buckingham Palace ceiling falls in as Queen honours Weights and Measures big-wig. Should bloody well think so . . .

Oh, it's gone cold. Sun's gone in. Oh, my head.

### Mrs Swarf's Video

Mrs Swarf plodded in as I was drinking a cup of Paul's Bisto tea. "My old video's gone again, Mr Bolter" she sighed. "It's the one my husband gave me out of the goodness of his heart. He's a gentleman Mr Bolter. And he'll be back, you know."

"Er . . . Right" I said. "I'll get the recorder in for you Mrs Swarf."

She had not worn well, and didn't seem to bother about her appearance. Her husband had left her for someone else, but still paid the odd bill. All very unfortunate.

Steven pulled the machine over – it was a Toshiba V204B.

"If it ticks at plug-in it'll be the capstan motor" I said.

"Or the 10µF, 50V electrolytic CP007" he said.

He was right of course. It was CP007 in the chopper drive circuit:

its value had fallen to about 5µF.

As we boxed the machine up Mrs Swarf smiled wanly and searched about in her big coat for her purse.

"Can't give you any of my ten pence pieces" she said. "I keep them to phone my husband."

We waved her purse away, and Steven took the VCR out to her old car.

### John Berryman and the Sony TV

As she went John Berryman drove up in his van – the one with the painted windows. John's the local undertaker, though he looks like a big, ruddy farmer.

"How you keeping, Don?" he bawled. "OK? No aches or pains?"

"I'm perfectly OK" I said, "but thanks nevertheless for your professional interest. What have you got in the van?"

"A nice old fellow and my neighbour's Sony TV. Which shall I bring in?"

"Better make it the Sony" I said.

It was a KV2090UB. When we switched the set on it was all right for five minutes. After that the picture became grainy, then disappeared as the set began to squeal.

"That'll be the 2SD1398 line output transistor" Steven said. "When they get a bit long in the tooth they tend to become leaky under load."

"I can vouch for that" said Berryman.

"But why does the picture go grainy?" I asked.

"Dunno" Steven replied. But a new DU508D cured the trouble.

"Want us to fix the old fellow, John?" I asked.

## A Matsui TV

Then a Matsui 1436XA 14in. portable was brought in by an odd cove who laughed loudly.

"Dead" he declared. "Oddie's the name. It banged like the blazes. Made the missus jump out of her skin." He continued to laugh.

"Call us tomorrow" I said.

When we opened the set we found that the 4AT fuse was a fragile tube of soot. So we checked the STK7348 chopper chip which was full of shorts. R651 (27 $\Omega$ , 3W) and R653 (1.5 $\Omega$ , 3W) were both open-circuit, and C655 (0.47 $\mu$ F, 50V electrolytic) was short-circuit. After replacing these items we switched the set on with some confidence. It came on in standby and wouldn't do anything else. The 390k $\Omega$  start-up resistor R652 was open-circuit.

When Oddie came back he had his wife with him. She seemed to be back in her skin. His face was full of mirth, and when we gave him the bill he laughed still more. He took the set out to the car while his wife paid the bill.

"Seems to be a very happy man" I commented.

"He's miserable as hell, dear" she said. "It's a faulty nerve makes him laugh like that. For heaven's sake don't rile him!"

Oddie called from the car.

"Hurry up" he bawled, "I'm getting fed up!"

## Daewoo Portables

Greeneyes was in the shop when Mr Flighty bounced in. He fancies her, and she thinks he's quite a nice man. I can't stand him.

"Hello dear" he beamed, "you're looking very well!" Then he looked at me. "Pensioner now, I s'pose" he said.

He was carrying a modern Daewoo 14in. colour portable, Model T140 (CP330 chassis). I reached for a card and wrote down his name. "Trouble?" I asked.

"Oh no" he said, "none at all. I'm fine."

I pointed to the set.

"Oh, that. Dead."

Steven opened it up. This one also had a 4A mains fuse that had blown. The cause was obvious: the small disc posistor in the degaussing circuit, type 180A, had gone up in smoke. When he'd fitted a more substantial replacement and a new fuse all was well.

Then Mr and Mrs Trew parked their shiny new car outside and shuffled in with an identical

Daewoo colour portable.

"Sorry we've had to come here with this, Mr Buster" he said. "Costs money having sets mended, don't it?"

"Such is life" I smiled, wishing they'd gone to Snoddy's.

"We're only pensioners" added Mrs Trew, "do you do cheap repairs for pensioners?"

"We've not been too well lately either" said her husband.

"Sometimes my thumb aches cruel, and my wife had toothache twice in April." He looked at the set. "Dead" he said, "I wish it was on hire purchase - we wouldn't go on having it."

I waved them off and pulled the set on to the bench. It was dead all right - and ticking. I checked the voltage across the mains bridge rectifier's 120 $\mu$ F, 400V reservoir capacitor C807 and found that it was low at 180V. So I took it out, discharged it and checked its value with a capacitance meter: 0.05 $\mu$ F! The set worked when a replacement had been fitted.

But we noticed that both sets had thin, poor sound, with little bass. The speakers are very small.

When the Trews came back we handed them the set and the bill.

"Ten pounds?!" he exclaimed, looking at his wife.

She bit her lip. "Will you take eight?" she asked.

He eventually took out his wallet and paid us. It was thick with loot.

## Norman's Sony TV

Short, wide and casual Norman Glutton drew up with a Sony KV27VX1PH in his van. It took two of us to get it into the workshop. He pushed his finger out and drew a line across the air.

"Picture's like that" he said. Then he looked across at the food shop opposite. "Won't be long" he said.

As he waddled out we got his set on to the bench. It's fitted with a chassis we'd not seen before, but we soon found the field output chip and established that its supply, which is derived from pin 12 of the line output stage, was missing. We replaced the 0.47 $\Omega$  safety resistor here, R854, then examined the line output transformer for dry-joints. There were several, so we resoldered them all. When we switched on an excellent picture came up.

Meanwhile Norman had returned. He stood there carving at a huge pork pie with his pocket



**"Don't put it on the table in the corner . . ."**

knife, eating slice after slice.

"Good bit of pie" he said, "I likes pies."

## Victor's VCR

Victor Smallpiece is a thin-faced, timid chap who hailes from the land of the leeks. He brought in a newish GoldStar GSEQ121 VCR and piped at us in his very high voice.

"This 'un is dead, can't it? Not very old either, does it?"

"Is it under guarantee anywhere?" I asked.

"No, we won it at a fête a year ago" he piped.

The VCR has a separate power board and, unusually, the output voltages are printed on it. Checks revealed that the 6V supply was low at 3.5V. We found that the KIA7806P 6V regulator IC101 was the cause of the trouble. A replacement restored the machine to life.

As seems to be the case with most centre-deck machines, this one is not too well made. The power supply runs hot, and had scorched the board black within the year, drying out the electrolytic capacitors. To prevent the job bouncing we replaced the lot.

# What a Life!

**Donald Bullock makes a Very Cruel Device that produces shocks – and gets his comeuppance. Then there are sets and customers. And a puzzle about where the voices come from**

**P**oor Daddy B does his scribbling all by himself in his wooden shack in the garden, away from everybody's noises and distractions. Greeneyes' dogs recently discovered it, and have on occasion done their business there.

This annoyed Daddy B very much. He doesn't particularly like dogs, especially pampered ones that do unspeakable things in his shack. So he decided to adopt a Very Wicked Wheeze: he sorted out some odds and ends from his junkbox and built himself a Very Cruel Device – a pulsing shock machine. He connected this to a pair sprung wires which he strung across the shack's doorway, just above floor level.

Then he pretended to go out. But, instead, he sat behind a bush with a whiskey and watched. Presently Greeneyes' dogs trotted up to the door and touched their noses against the wires. Then they made lots of yelping noises and did double somersaults all over the garden. Daddy B laughed happily and rubbed his hands together. But Greeneyes said he was wicked, cruel, drunk and she didn't love him any more.

Daddy B didn't care. He connected an extra capacitor across the output of his Very Cruel Device to make it even Crueller, and made sure it was switched on all the time. Though he left his shack door wide open, the dogs never darkened its doorstep again.

The time came for Daddy B to write his column. He stepped over the Very Cruel Wires carefully and started to clear his desk. This dis-

turbed some nasty mosquitoes, which Daddy B sprayed with his Cruel Mosquito Spray. They coughed and fell down dead. Except one, which flew about laughing. This made Daddy B Very Vicious. He spun around, spraying it. When it flew out of the door, Daddy B went after it.

Unfortunately he forgot about his Very Cruel Wires, and tangled his legs in them. They gave him lots of Very Cruel Shocks that made him shout and jump about Very Much. He hoped that no one had seen him dancing or heard him shouting some Very Naughty Words.

Greeneyes had of course. She said it served him right for perpetrating Cruel Things on innocent little dogs, and that he was to tell everyone in his column how Cruel and Wicked he really was.

But Daddy B mocked and told her she was getting like her mother. He hobbled off to his shack to write about his Nastiness – and to mend and refit his Cruel Wires . . .

## Sins

Some days later I was back in the shop when this cove with bright eyes and a shiny red face came in. He was carrying a sign on a small pole. "Be sure your sins will find you out" it read.

"I don't suppose I can help you?" I asked.

"It's my Mitsubishi" he said. "It has faded and died – Matthew 16, verse 6 (or something)."

I eyed him up and down.

"It's in my old pram outside" he continued, "there's a picture but

there isn't a picture."

"Right, I'll get it" I said.

When he'd pushed off, with his sign, I put his set on the bench. It was a CT2553STX (Euro 4Z chassis). There was sound, and the screen displayed some dull chunks of colour. Nothing else. When I increased the brightness I saw a faint raster as well.

"Strange fault" said Paul.

"No luminance" I replied.

"You're looking at a raster plus the transmission's colour content but not its monochrome content, which provides the detail. They do it that way to save bandwidth."

When I opened the set up I saw that there were three upright panels at the rear of the chassis, secured by a plastic bracket. The one on the right is the chroma/luminance panel. I waggled it and the luminance flashed on and off.

When I examined the panel I found that during manufacture a dab of securing adhesive had been put between its print side and the bracket. This had dried and corroded the print beneath it. So I cleaned it off and bridged the gap. When I switched on again a good, complete colour picture appeared.

## Mrs Tubbs' VCR

Meanwhile Mrs Tubbs had brought in a Samsung VI710 VCR. It was virtually dead, with just bits of the display visible. "One for you" I said, "I'm off to make the tea."

When I returned Paul was replacing the STK5333 regulator chip IC101. "I checked the outputs from the power panel, at the 12-pin plug CN101" he said. "Instead of

15V at pin 1 there was only 1.3V. At pin 4 there was 0.2V instead of 5V. These two supplies are both decoupled by 47µF electrolytics, which are OK. So I think a new chip will cure the problem."

He finished fitting it and checked the voltages. This time they were right. The VCR had a full display and worked well.

## The End

Later the shiny-faced cove returned with his sign.

"Your Mitsubishi's ready?" I said. "Twenty quid to you."

He pulled out his wallet and smiled. "Ah, safely delivered from its woes" he said, "Mark 22, verse 4 (or something)."

I carried the set out to his pram for him. As he pushed it away I noticed that the sign was double-sided. "The End of the World is Nigh" it announced on the other side.

## Egbert Craddock

Our next customer was Egbert Craddock, who always looks as though he's riding a bike against the wind. He struggled in with a B&O 7180.

"I switches him on, right?" he bawled.

"If you say so" I replied.

"He clicks four times then goes off, right? That's no good to anyone, right?"

"You've cracked it man" I said, "give it here."

He left the set and made off. Steven took the back off and found the cause of the trouble immediately. This sort of thing narks me.

"It's just the blue focus unit" he said, "hand me a new one will you?"

I did and it did the job. "Too clever by half" I muttered.

## Flighty's Visit

Mr Flighty came in, frowned at me, bought a flylead and winked at Greeneyes.

"What's worse than a giraffe with a sore throat dear?" he asked.

"Dunno" said Greeneyes, brightening up.

"A centipede with corns of course" he blurted out. "Har, har, har!!" Then off he minced, leaving Greeneyes laughing happily.

She caught my eye. "Coppades, arnohyeh, da?" she said as she laughed.

"Just a minute" I said, "you're not gibbering with Flighty now. Let's have it in English."

She looked at me coldly.

"Merely asked whether you'd like a cup of tea, or not yet. You really will have to do something about your increasing deafness."

Later she came in with the tea. "Careful, it's hot" she said.

"Careful of what?" I asked, frowning and looking about as though puzzled.

"Don't be funny" she replied.

"Toast and honey?" I asked.

## A Philips K40

Major Haggerty, the bristling military no-nonsense blimp, brought in a Philips Model 22CS5751 – the old K40 chassis.

"It needs a spell in the guard-house" he barked. "Only works in the sunshine. Otherwise whines instead. Had a coolie like that once, in the Himalayas. Yanked his head off in the finish and kicked him to the tigers . . ."

He was right. About the set I mean. At switch on it whined loudly and refused to start up until we heated the power supply with our hairdryer. Then it was OK. So we cooled the power supply down and then directed the hairdryer's heat via a funnel at various components in this section. The culprit turned out to be C2128. A replacement put an end to the nonsense.

We've had this fault before. Be careful about identifying the capacitor: there's another C2128, in the EW modulator circuit.

## Little Men

When I was a small boy I was fascinated by the voices and music that came from our wind-up HMV cabinet gramophone and our huge Ekco wireless set. I knew that Henry Hall's orchestra consisted of dozens of dinner-suited musicians and their instruments, because I'd seen a picture of them. How could they get into our wireless?

Obviously they would have to be shrunk. Assuming this to be possible – the early Thirties was a time of mechanical and electrical miracles – how, I wondered, did they sneak in and out?

Whilst they were in there, what did they do about eating and sleeping and other things. The answers evaded me.

And our gramophone. When father played an Al Bowlley record Al sang immediately. When the tone arm was moved across the record he would cut in with different bits of the song. How did he know which bits to sing? Did he slip along the tone arm and look through the hole beside the needle?



**Unfortunately Daddy B forgot about his Very Cruel Wires.**

Then there were Bix Beiderbecke's magic cornet sounds. He had died before I was born, yet he played for us from inside our gramophone. In the Thirties nobody scoffed much at the idea of ghosts. Had Bix slipped to some secret graveyard in the bowels of our gramophone?

My confusion increased when the wireless set when wrong and had to be opened. There were no little men or orchestras. Only a row of rosy-coloured valves, bits of wire and Bakelite.

Then the spring in our gramophone broke. Inside there was just a dowdy box full of greasy metal cogs. Nobody could live in there, especially in their nice clean clothes!

"Where do the voices come from, Dad?" I asked.

"Out of the air" he replied.

"Who put them in the air?"

"Never mind about that" he said brusquely. "Here's tuppence ha'penny. Slip over to Thomas's and get me a packet of Woodbines."

# What a Life!

"Elo Mr Bullneck" said a gravelly voice. I turned round and saw an odd cove who looked like Les Dawson in drag. He placed a Matsui 20T1 on the counter.

"Things ain't quite what they seem, dear" he rasped.

"Aren't they then?" I said, giving him a sidelong look.

"This thing here keeps ticking" he went on.

"Not a bomb, surely!" I exclaimed.

"Nah, nah. 'E's a telly all right dear. But 'e's a Grundig in hysguise."

"Right" I said, reaching for a job card. "Name please."

"Lotus" he growled. I wrote down Dawson.

When he'd departed I took the set to the bench, removed the back and found a Grundig G1000 chassis inside. When power was applied there

was no standby light, in fact there were no signs of life apart from a faint ticking. I switched off and scanned the chassis, looking for dry-joints, but couldn't see any. So I disconnected the line output transistor's collector connection and connected a 100W bulb between this point and chassis. When I switched on again the bulb lit. So the power supply was OK and the line output stage suspect. Time to switch off and carry out cold checks on the semiconductor devices in the stage.

As the line output transistor tested OK I began to check the diodes, starting with the larger ones – they can usually be reckoned to live more dangerous lives. When I got to the BY133 efficiency diode D304 there was a dead short. We didn't have one in stock, so I tried a BY127. When I switched on again the set sprang to life.

## Brother Terry

Then Brother Terry came in with an old toaster. "Can you fix this for poor old Doris Prattle?" he asked.

"Sorry, no can do" I replied.

"Oh, Well, I've brought along my neighbour's Sony television too. It's gone mental" he said.

The set was a KVC2122U, which is fitted with the AE1C chassis. Steven put it on the bench and we soon discovered that Terry was right. After working normally for a moment the sound blasted loudly then cut out. The picture flickered, the field cramped and then the picture disappeared, leaving a brilliant raster. Next it reappeared, expanded away and the field scanning collapsed. Finally the set grunted and died.

When we opened up the set we saw that there were dry-joints in all sections of the chassis. Steven undertook the resoldering. He had to attend to poor joints on the vertically-mounted sub-panels as well as the main PCB. This restored operation, but there was signal instability. So Steven removed the tuner and IF cans and

did some resoldering in these as well. When he'd finally finished the set produced excellent results.

Incidentally whenever you get one of these sets it's advisable to check R522, which is in the HT preset (RV501) network. It's a tiny 100kΩ, 0.25W resistor that tends to go high in value. When this happens the HT rises. The power supply is quite complex, using a master-slave IC control system. The master regulation part is contained in the TEA2028B chip IC501, along with the line and field generator circuits.

## Davey Ruggles

An ancient lorry full of junk rolled up. Davey Ruggles jumped out, oozing contentment. He's a grafting Roman who always seems to be on the losing end of things.

"My luck's in this time Don, I think." He had with him an immaculate colour set the like of which I'd never seen before. It claimed to be a Beko Model 19221 and was dead.

"Given to me by number 36" he said. "Nice people. Said there wasn't much wrong but wouldn't take a penny for it. The kids would like a telly again. Our set blew up just before Christmas." He left the Beko with us and went over to the Co-op.

When we opened the set up we found that the mains fuse, FU101, had blown. So did a replacement. When we investigated further we saw some very bad dry-joints in the power supply section. Resoldering them cured the trouble. The results were good too.

"Poor fellow" I said. "Let's put the set back in his cab and say it was nothing." Steven took it out, along with a few tapes from his video library which he closed down a while back.

## Mr Ng's Bush

Our next caller was Mr Ng. He's one who never looses.

"I'm owning a television set which is very, very bad to me" he said soft-



"Things ain't quite what they seem, dear" he rasped.

ly. He smiled, showing us two dozen front teeth.

"Goodness gracious me, what is being the trouble?" I asked.

He got a passer-by to bring in the set, which was a Bush 2714 (11AK03 chassis). It was stuck in standby.

Paul had a go at this one. He first checked the print side of the chassis to see if any of the fusible resistor leads – they are long and untrimmed – were shorting to the rectifier diodes. They weren't. So he checked the BU506D line output transistor which was very leaky. "That'll be it" he said after fitting a replacement. But the set was still stuck in standby. His smile faded. Then he moved over to the line driver stage, where the 3.9k $\Omega$ , 4W feed resistor R603 was open-circuit.

Steven suggested checking the BC639 driver transistor TR601 as well. "It was the cause of the trouble last time I had one of these sets in – the transistor was dead short."

Paul found that the same thing had happened with this set. Once replacements had been fitted the set worked well enough.

"Oh dear oh dear" said Mr Ng when he called for his set. "It is being my unlucky day. My car was having a puncture and the man was wanting two pounds to mend it. And a very, very nasty traffic warden is reporting me for parking it. Everybody is wanting my money, and I'm not liking it." He showed us his teeth again.

"Well, the set won't cost you much" smiled Steven. "Fifteen pounds."

Mr Ng gasped and his teeth disappeared. "Can't you be taking ten?" he asked.

"Fifteen" smiled Steven.

"Twelve?" asked Mr Ng.

"Fifteen" said Steven, still smiling.

"Shall we be saying fourteen?"

Steven smiled even more sweetly.

"Fifteen" he breathed.

Mr Ng took out a huge, embossed wallet and peeled three fivers from a fat wad of notes.

"I am paying you very, very much, and this is not good. I should be paying you only five pounds" Mr Ng concluded.

### Mrs Runner

Mrs Runner came in with her son Clarence, who is of slight build.

"Hello, Mr Billhook" she trilled, "Clarence's camera won't work, will it Clarence?"

Clarence began to open his mouth. "The cassette housing won't shut, will it Clarence?" she piped. Clarence raised his face ready to speak, but she cut in again. "It switches on all right, and he sees a picture in the viewfind-

er, don't you Clarence?" The boy managed a silent gasp of air.

"I don't know why he won't speak up, Mr Billhook, "just like his father, I'm sure."

When they'd gone Steven opened the camcorder, a Sharp VLC790H. There was no mechanical operation. It's one of the best for ease of servicing. The deck and lens assembly are simple to remove. You then see a pair of double-sided PCBs sandwiched together and secured to the bottom of the deck.

The cause of the trouble was quite obvious once the boards had been separated. C951 (220 $\mu$ F, 6.3V) had leaked badly over the PCB, corroding a section of the print. Steven cleaned off the corrosion, fitted a new capacitor and bridged the print. Then he noticed that another electrolytic, C3302 (10 $\mu$ F, 16V), was also leaking. Fortunately no damage had occurred this time. So he did some more cleaning up and fitted a replacement. On test the camcorder now worked well.

They came to collect it shortly after. "We're ever so grateful to you for doing it so quickly Mr Billhook, aren't we Clarence?" she sang. Clarence raised his chin. "Tell Mr. Billhook how pleased you are, Clarence." This time Clarence managed a tiny squeak before she cut in again.

"I dunno. He's very a very disappointing boy, Mr Billhook. Just won't say a word. Can't understand him. Come on, Clarence."

### Another Sony

Mrs Ruff came in with her lodger, Old Pukey. "It's me telly, Mr Bugbear" she rasped. "Seems to be doing whatever 'e likes. Go an' bring 'im in, you" she said, jerking her thumb at Old Pukey.

He staggered in with a Sony KVD2512U. When they'd gone we pulled it on to the bench and tried it. The problems were intermittent: sometimes the picture disappeared; sometimes the on-screen graphics went as well; at other times all we would see were a lot of peculiar on-screen display symbols.

When we opened it up we found that the troubles could be instigated by tapping the tuner/IF PCB (board A). It often suffers from dry-joints, but this time we couldn't see any. So we concentrated on the tuner, and found that even the gentlest of taps had a dramatic effect. Steven opened it and carefully resoldered every joint. That cleared the problems.

Though expensive, the models that use the AE1 series chassis seem to give poor results. Grainy pictures,

poor convergence and poor picture geometry are often seen with the ones we come across, and readjustment doesn't help much.

### Mitsubishi Problem

Mr McTurdey had a problem with his Mitsubishi Model CT2525. "Tis hab-solutely dead, Sorr. Hardly works at all."

I looked at him, then at the set. After taking details I waved him out.

When I looked inside I found that the 2SD1887 chopper transistor Q901 was short-circuit. D909, a 3V zener diode (type RD3-0FB2) that's in series with it, was open-circuit. R910, which is in parallel with D909, and the 4.7 $\Omega$  surge limiter resistor R902 were also open-circuit.

I noticed a crop of dry-joints in the power supply, and surmised that they could well have been the basic cause of the blow-up – Mr McTurdey mentioned that there had been intermittent operation for some months before the final failure.

### Back in Spain

It was when we returned to Spain that Greeneyes became a car thief. We had a call from Maisie who lives over her restaurant-bar in a nearby town. Her huge Hitachi set, Model C2846N, was operating intermittently.

Like so many in Spain we use an old Panda car as a runabout. I scooped a few tools into it and Greeneyes drove us to Maisie's place.

After a few minutes her set cut out and went to standby. Then it came on again, popped, flashed the Nicam signal and died again. I soon found that the 12V regulator chip was dry-jointed. Resoldering it cured the trouble.

On the way back we parked at a shopping parade to make a couple of purchases. Then we jumped back into the car and started it up. A drunken Englishman tottered from a bar and started shouting and waving his arms. "Let's get going" Greeneyes said, "he's paralytic."

Then Greeneyes noticed that the steering wheel was without its glove thing, and I noticed that the car was even untidier than usual. Suddenly we both realised that it wasn't our car at all. It was the drunk's. It was the same, sun-faded colour as ours, and as old and worn. But it was his, not ours!

Greeneyes drove back and we clambered out. I forced a laugh. "Ha ha ha, thought it was ours, mix up, sorry, that's ours there."

"They're shteating my car" the drunk continued to shout.

Awkward. Everyone else, apart from the drunk, thought it a great joke.

# What a Life!

**Mainly difficulties with TV sets this month. Donald Bullock on servicing and people problems – and that wordprocessor of his**

**C**omputers leave me cold. Son James has knocked himself up a beauty entirely out of units from CPC, but I haven't even mustered up enough interest to try to work it. Everybody tells me to throw away the Amstrad PCW8512 I use for writing. Now it seems that I might have to.

Because the heat in Spain dries out the exposed part of the Amstrad machine's printer ribbon, I keep producing articles full of white patches. I thought I'd found a remedy, but it hasn't worked out. It happened like this.

In Spain we put our refuse into a big communal bin. It's common practice for people to place anything they think might be useful to someone else by the side of it. That's where I found a mint Commodore MPS1270 monochrome inkjet printer, in its factory packing, but minus the instruction booklet and computer-to-printer lead. James tried it on his computer and pronounced it perfect. All I needed was a simple lead to connect it to the PCW8512. That was some months ago. I've tried here, there and everywhere, but haven't managed to get one.

Now I find that when I boot up the PCW8512 the little red light on the shift-lock key sometimes comes on and the machine won't respond to the keyboard at all. I have to switch off and boot up again. Dunno why. Do you? I does it with various start-of-the-day discs.

## **On the Cheap**

Mr Whiner brought in his ancient Hitachi VCR the other day.

"Can you get this going for tonight?" he asked. "Only the relatives are visiting. Got to have the video working, haven't I?"

"It's essential" I said.

"Not worth spending much on it

of course" he continued, "it's so old. Say perhaps a fiver."

As I cringed away James took it to the workshop. He found that the heat had congealed the mechanism's grease. A clean up made it work all right. So we charged him a tenner.

"Hope it'll last a good while" said Mr Whiner.

It reminded me of Walt, with whom I worked many years ago. He was an excellent engineer who had been in the trade a long time, and the customers had long since got to him. Now and again, after a particularly bad experience, he would cry out "immediately isn't soon enough, free isn't cheap enough and perfection isn't good enough!"

He eventually threw in the towel and got a job repairing bicycles.

## **Problem with a Mitsubishi**

Steven's problems with a Mitsubishi TV set began when Mr Bullneck pushed through the door and interrupted his conversation with the vicar.

"Can you pull me Mitsubishi outa the car, oney I've a bad back, see."

Steven stepped out and followed him to his car. It was about a hundred yards away, on the other side of the busy road, and it was raining. He staggered back carrying a black box about the size of a tea chest. It was a Mitsubishi CT2146TX (Euro 6 chassis).

Once I'd got Bullneck out I gave Steven a drink of water and before long he was able to stagger to the bench and try the set. It worked all right and continued to do so for the rest of the day. So he phoned Mr Bullneck. "Your set's all right" he said.

"Ill-ent" Bullneck rasped. "He goes dead every three days."

Steven opened the set and found a multitude of dry-joints where conductors joined the print. He spent a long time cleaning and resoldering them. Then he tried the set again. It was dead.

There are two chopper circuits in this chassis. The main one provides the HT supply and three LT supplies, at 24V, 12V and 5V. The other one provides standby operation, with 7.5V and -30V outputs. The 7.5V output feeds a 5V regulator, IC951.

As the HT was present, Steven moved over to the standby supply and found that the 5V line produced a hardly detectable reading. The smoothing capacitor C709 (10µF, 50V) was open-circuit.

Steven fitted a replacement and thought everything would be OK. "Not too tricky after all" he muttered. But when he switched the set on it was still dead. So it was back to the main chopper circuit, where the 12V output was missing because the 1-6A protector Z901 had gone open-circuit. He fitted a replacement and switched on again. There were still no results.

"Must be loss of line drive" Steven commented. He resoldered the connections to the line driver transformer T551 and checked the line driver and output transistors, which were both all right. But there was still no line drive. Scope checks showed that everything was OK on the primary side of the line driver transformer. There were no pulses across the secondary winding however. The windings produced DC continuity readings both in and out of circuit. There was no short across the secondary winding. "I reckon I might as well give this one back and recommend Snoddies or Crubb's Foodstore" he moaned.

"Why not take the driver transformer out and check it with a mag-

nifier?" I asked.

He found that the joints to the PCB were clean, but the pins had a tarnished look. So he removed the transformer again and cleaned the pins with fine emery paper. When they were shiny bright he replaced the transformer. This time the set worked at once and proved to be reliable.

"That transformer read OK despite its tarnished pins" Steven commented, "I don't see why the waveform couldn't get through."

"Perhaps the silver-plated pins had developed a silver oxide coating from solder-flux impurities" I suggested.

"Wish I'd shone the pins up earlier" Steven said.

### Turkish Delight

Then Greeneyes came into the shop. She'd been to the market.

"I've a packet of Turkish delight for you" she cooed.

"Good" I said, rubbing my hands. "Bring her in!"

Greeneyes made a silly noise and her expression turned cold. She placed a Bush 2114T portable on the counter. "Belongs to Molly" she snapped. "It's dead. Perhaps it heard one of your silly jokes."

The set boasted its Turkish origin and was dead all right. It clicked at switch on. While Greeneyes watched I went straight to the BU508D line output transistor Q402 and found that it was short-circuit. After replacing it I checked R811, the 1Ω resistor in the 24V supply. As expected it was open-circuit. I replaced this as well, and felt I was doing just fine. Show that girl who's clever. Then I switched the set on.

It emitted a curling whisp of smoke, made the same noise that Greeneyes had made over my Turkish delight joke, and looked at me just as coldly.

I checked the set again. Both the items I'd replaced had failed. So I did what I should have done before – I measured the HT voltage. It was high at 145V instead of 110V, and adjusting the HT preset VR801 made no difference. Time to switch off again.

The chopper power supply is of the standard TDA4601 control-chip type. I found that two electrolytic capacitors associated with the chip had fallen in value. C817 was only 6μF instead of 10μF (16V), while C818 had fallen in value from 1μF (50V) to 0.3μF.

I replaced them, also the two items I'd blown up, wound VR801

down to zero, switched the set on and adjusted VR801 carefully for an HT reading of 110V. Everything worked smoothly. The preset's slider ended up dead central along its track, and the set produced an excellent picture.

### Another Mitsubishi

At this point a large TV set with a pair of skimpy trousered legs trotted in. Steven saw that it was a Mitsubishi set and disappeared, with a squeaking sound. Being made of sterner stuff, I dashed out and hoisted it on to the bench. The legs stayed where they were, and I noticed that they were part of a tiny body, with a head and arms. Then an enormously amplified voice filled the shop and half the street.

"No picture at all Mr Bulbous" it said. Steven ran out, looking incredulous. But my attention was concentrated on the little fellow who had brought the set in.

"Just a blank screen" said the amplified voice. "Phone number is on the label there."

Steven ran back into hiding and I cringed. I waved the little chap out and tried the set. It was a modern one, and displayed a blank raster. I wanted to check whether there was any sound, but modern sets make me nasty, 'cos I can't work them. I called Steven out.

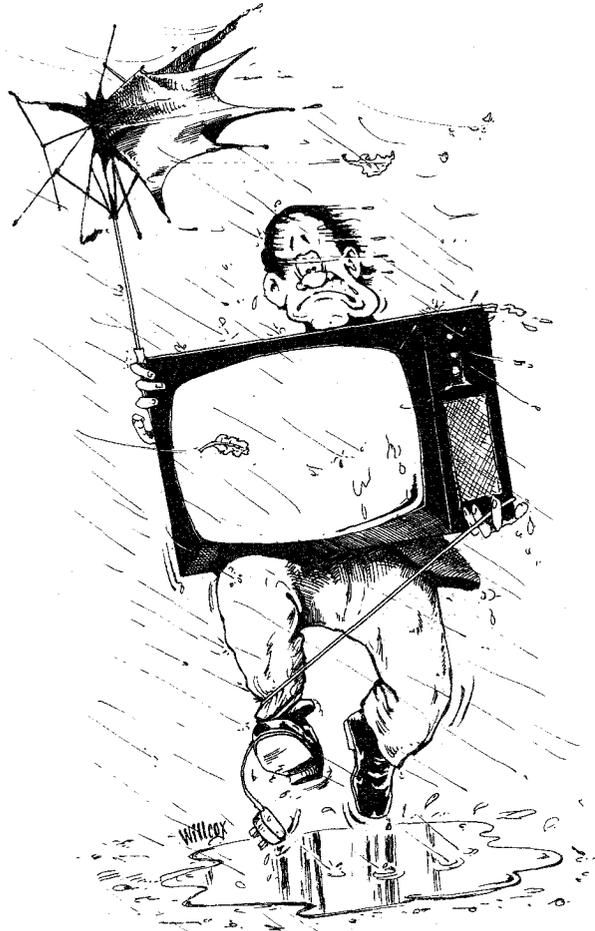
"It's only a simple fault" I said, "will you set it all up while I make the tea?"

When I returned he had an excellent picture on the screen. Then he switched the set off and back on again. A blank screen was present, as before.

"Ah" he said brightly. "The trouble will be to do with the X24C04P EEPROM chip IC702. When it fails various problems can be present. Often the one we've got now, or the teletext may be missing, there may be no Nicam sound or, with B series sets only, the rotating base. Or any combination of these faults." He was about to walk out as he spoke, and I noticed that his backside looked like a sackful of cats heading for the river.

"Rotating base?" I asked.

"Yes, permanently or intermittently" he continued. "SEME does a kit that puts matters right, at just £10.33 plus VAT. The part number is RK216G. In addition to the EEPROM chip it includes two 68kΩ resistors and an 0.01μF capacitor. These are not needed in all models. It's worth ordering the kit, because it comes with a technical bulletin



**He staggered back carrying a black box about the size of a tea chest.**

that lists every model affected and tells you which parts each one needs for the repair. CPC does the chip on its own at £6.68 plus VAT. This set will need just the chip – others need the whole kit and detailed picture geometry adjustments."

I sauntered off. Getting clever, this boy. Not a clever as me, only I just don't bother. And anyway his tea isn't a patch on mine!

### Sky TV

I've noticed that during interviews with overseas reporters in Sky TV's news broadcasts there is a noticeable delay before they seem to be able to hear and respond to the anchor man's questions.

The other day, during a conversation between the newsreader and someone in Ireland, the delays were longer – two or three seconds. The newsreader ended the interview prematurely, blaming a "slow line".

Are the delays the result of bandwidth problems I wondered? Does the transmitted picture have to be sent piecemeal and built up at the other end? At any rate the lip sync remains intact.

# What a Life!

## Curious faults and curious customers. Some TV sets and other items that have come Donald Bullock's way this month

I've done away with my Very Cruel Shocking Machine – it gave me more Vicious Shocks and dancing lessons that I've had from a lifetime in this trade.

The turning point came when Greeneyes screamed blue murder from the kitchen. I scrambled from my writing hut to help her, got tangled up in the wires yet again and finally tottered in to find her standing on a chair gibbering at a spider.

The dogs nevertheless bring me compensations. Whenever they annoy me and I get stropy Greeneyes makes me one of her excellent bacon and vegetable pies to sweeten me. To make sure that they work, I reach for my giant wineglass.

I've had a couple of these pies recently. One was presented to me a week or so ago after I'd struggled up our front drive with Father Docherty's TV set and trod in a huge dog-bowl full of water and fallen down. Father Docherty heard me bawl a Very Naughty Word. He crossed himself and clicked his tongue seven times before he scampered off.

### An ICC7 Chassis

His set, which was dead, was a Ferguson Model B59F (ICC7 chassis). I soon found that the mains fuse had blown, so I checked for shorts, fitted a replacement and gazed intently at the chassis as I held my breath and switched on. There was a huge and instant EHT flashover between the tube's anode cap and its earthed Aquadag coating.

The cause turned out to be one of the tuning capacitors in the line output stage, CL21. Its value is 11.5nF, with a voltage rating of 1.6kV. The value varies with different tubes and is critical. Fit only an identical replacement.

We've had flashovers before with

this chassis. They sometimes cause IC damage, the TEA5101A RGB drive chip IT01 on the tube's base panel being particularly vulnerable. The usual symptom when this IC fails is loss of one colour.

### The Akura Tourer CX10/Nikkai Baby 10

Father Docherty was so pleased with our efforts that he recommended us to a fellow cleric. So a few days later Father O'Sullivan rolled up with an Akura Tourer CX10. This ten inch set is the same as the Nikkai Baby 10, the Alba CTV10 and the Samsung C1210R.

"I'm told that you're a man who likes a good romp with his dogs, Mester Ballock" he said. "Well I likes dogs too. What would we do without them?"

It was another dead set. After ensuring that the bridge rectifier was developing 16V at the DC fuse F402, we bridged the relay switch RLY401 to pass the supply to the regulator IC402. The voltage fell to 11V, and IC402 could muster only 9V at its output.

The line output transistor was running hot but tested all right. Our checks on the supply to the line output stage brought us to the heavy-weight FR605 diode D410 which was dead short. It feeds pin 8 of the LOPT. A replacement cured the trouble.

It was the jovial Father O'Malley who came to collect the set. Greeneyes' dogs ran a friendly sortie around him. He spun around a bit then fell down.

"Oh, er – they've never done this to anyone before" I faltered, feeling my thigh and hip as I helped him up.

"Makes no difference t' me" he said, "personally I hate dogs. Every one of them. Especially those!"

There was a bacon pie for tea.

### The NEI 2891FTXN

Mrs Whiner asked me to bring in this monster set (another Nikkai chassis) from her car. She complained that the picture was slightly cramped and sometimes bounced. But when I plugged the set in and switched it on, in front of her, it exploded. This made her squeak a bit and dab at her eyes. But I managed to raise a false laugh and said that I'd have it right in no time. She pulled herself together and left.

I was almost afraid to take the back off but, being a stiff upper-lip type, I managed it. The top of the TDA8380 chopper control chip IC100 had blown clean away.

This was back in England, and Steven was hovering behind me. I turned to him. "Feel it's time for a cup of tea" I said, preparing to slink off, "do you?"

While in the kitchen I felt peckish and cut myself a slice from a huge polony-type thing I found in the fridge. It tasted horrible and was gritty. I scanned the label and discovered that it was dog food. My accusations of attempted murder duly brought me another bacon pie.

When I returned to the workshop I found that Steven had replaced the chip. He switched the set on and it blew up again.

"Can't go on like this" he said, "we'll have to ring NEI – they've got a very helpful technical chap."

We were told that this does sometimes happen and that there's a power supply repair/modification kit. It costs about £20 – and did the trick.

Here's what you get: the TDA8380 chip IC100; the TCDT1101 opto-coupler IC101; the SGSIF344 chopper transistor TR100; the 5-1V zener diode D104; R109 (13.7kΩ); R102 (0.22Ω); C107 (10nF, 50V); C108 (33pF, 50V); C122 (22μF, 100V); also a 3.3μF,

50V capacitor to replace C109, which was originally 2.2 $\mu$ F.

While Steven was at it he checked and replaced C122 (220 $\mu$ F, 35V) which had fallen in value to 200 $\mu$ F, also all the resistors – they are lightweight and look vulnerable.

Having got the power supply working, Steven pulled the scope over to check on the field bounce problem. This took him to the IF strip, where he discovered that there was sync pulse crushing. The cause of the trouble was C9 (10 $\mu$ F, 50V). For the slightly reduced height he simply adjusted the vertical amplitude potentiometer.

"Mrs Whiner won't be too amused" he said as he settled down to write out the bill. "Incidentally I feel peckish after all that work. Anything in the fridge?"

"Try a hunk of the polony" I said, "it's tasty".

### A Matsui 209T

Just then a chap ambled in carrying a 20in. Matsui set – Model 209T. He plonked it down on my hand. I tried my fingers: they still worked.

"By the way" he said, "the picture's faulty."

"Name?" I asked, drawing over a job card.

"Matsui" he replied. "By the way, the picture's faulty."

I wrote "Mr Prat" on the card. "What's wrong with the picture?" I asked.

"Ah, it's faulty" he said.

I waved him out and pulled the set on to the bench. The picture was cramped, with foldover. The field output stage uses a pair of transistors, and I saw at once that C303 (3.3 $\mu$ F, 160) was bulging and ready to burst. The circuit diagram says 4.7 $\mu$ F, so I fitted a capacitor of this value, rated at 250V. It cured the set's trouble.

### Another Matsui

Our next caller, a tall, thin woman, also brought in a Matsui set. She strode in as though she owned the place. Although she was a bit dowdy, she had this posh voice.

"Its pictyah gows braitght whaite – with laines across it" she pronounced as she placed the set on the counter. I like gentlefolk. So I pulled over a job card and smiled.

"Name?" I asked.

She gave me a toothpaste smile. "Hodder" she sang out.

Then she gave me a sideways look. "'Odder – Ann 'Odder. Gollit?" she said.

I looked up sharply. "We'll try to get it done by Friday" I said, backing

away a bit.

She looked at me and grinned. "Okey-dokey matey" she said. "I ain't mad, mind."

As I moved the set over she prowled out. The set was a TVR141, which is a combined TV/VCR unit. Steven found that it had a fault in each section.

The screen would intermittently flash to peak white, with flyback lines across it. We traced the cause to a poorly crimped wire at connector CP803 on the tube base panel. It provides an HT feed.

Paul took over to deal with the VCR fault. When a cassette was inserted it went in an inch then the deck reverted to standby. After switching on again the cassette travelled in another inch. If you repeatedly switched the machine back on the cassette would eventually disappear inside and play normally. The cause of this curious behaviour was the mode switch, which was dirty. It's under the deck, and is quite easy to take out and clean.

The Ann Hodder that came to collect it was the back-street one – until she'd paid and picked up the set.

"Good-bay and thank you very much, gentlemen" she sang. "Aim veray grateful."

### A Monitor

An Eco Scan 15 VGA monitor, Model AL5064PD, was sent to us by the local solicitors Dewey, Squeezem and Howe. It was made by Mitac International. We were told that the display had gradually become darker and darker over the past year. This was another one for Steven.

"Most monitors are set to work at full contrast to produce a sharp image at low brightness" he commented as he pulled it on to his bench. "Bright screens can cause headaches and migraine. This one's four years old. I reckon the tube might be flat."

But when he switched it on there was no blue in the display. The blue bias preset on the tube base had no effect. A further check showed that it had no connection to chassis. R714, a 51k $\Omega$ , 0.25W resistor, was open-circuit. Simple fortunately. A replacement put an end to the problem.

### Ribby Ellis

Ribby Ellis likes a good laugh – at the expense of others. "Who ran into your car?" he asked, jerking his thumb in the direction of the door. "That'll cost a few quid to put right."



**"Father Docherty heard me say a very naughty word."**

I ran out, fearing the worst. But the car was perfectly all right. I returned to find Ribby creased up with laughter.

"OK Pratty" I said, "what brings us the pleasure of your company this time?"

He fetched a GoldStar RQ205 VCR from his car. It looked new. "Doesn't play right" he said. "Seems jerky and inconsistent, and switches to standby when it gets warm. Then it won't start again till it cools down."

There's a separate power panel on the left inside this machine. The KIA7806 6V regulator (IC101) on this panel provides the 6V always supply, which is very critical. When it falls slightly the microcontroller chip shuts the machine down.

We soldered a wire to the 6V always supply, boxed the machine up and ran it with a DC voltmeter connected between the wire and chassis to monitor the voltage. Sure enough as the machine warmed up the voltage fell and the tape transport faltered in sympathy. After a while the machine switched to standby. A replacement KIA7806 regulator cured the fault.

With manuals at today's prohibitive prices, we don't have the luxury of a comprehensive stock of them. Our suspicion is that in this model the capstan motor depends on the 6V always supply. Anyway we keep a few of these regulators in stock, as we've had them play up before in these machines.

# What a Life!

## Bores and other problems, mainly with tellys. Donald Bullock's monthly round up

**G**reeneyes never forgets a face. I do. I can talk to someone for half an hour in the shop and, unless they have green hair or two heads or something, I'm unlikely to know them next day. Some of them find this disconcerting. They can't understand why the chap who showed such interest in a set brought in yesterday doesn't seem to know who they are when they call for it the following day.

### Bores

While I'm in the confessional box, here's something else. I find it very difficult to keep up an appearance of friendly interest with a bore. As I'm told for the third or fourth time how a set failed and what was on at the time, then the service history of their previous set is unfurled, my eyes glaze over and I find myself reliving the time I caught that 22-pound pike at Waltham Pits.

Take the fellow who staggered in the other day with a monster Philips set, Model 24CE3588/05B (CPI 10 chassis).

"Ha, ha" he started, "the set was all right until we pulled the plug and went on holiday. To Blackpool actually. We watched the Ester Poltergeist programme just before we went. Do you know Blackpool? Yep, right as rain it was till we went there. And her's was the last programme we watched. Funny, ennit? I remember the missus saying, as I switched 'im off, 'pull out the plug Charlie'. And of course I did. I likes Blackpool, do you?"

I picked up a pen. "Name?" I asked.

He looked at the set. "Philips" he said.

"And your name?" I asked, trying desperately in smile.

"Phillips" he replied.

### And Another

As he walked out a similar sort of chap came in and deposited a

Ferguson set on the counter.

"Pinged three times and died, he did. Just as that Bruce Foresight chap comes in. I was having me dinner at the time. The missus gets sausages and mash twice a week. Do you like sausage and mash? Yeah, pinged three times 'e did. Or was it four? No three times, that's right. I remember saying to the missus 'reckon these sausages are fresh?' Not as 'er'd give me bad uns, mind. Yea, Bruce Foresight was on at the time . . ."

"Name?" I asked, dishing my smile.

"Ferguson" he replied.

"No, *your* name?"

"Yes, Ferguson. Do you like Bruce Foresight?"

### Marconi

As Steven settled down to the sets a foreign looking chap came in with an old Marconi radio. I drew up a card.

"Mr Marconi?" I asked.

He raised an eye and looked at me. "I haf never called my wireless 'Mr'" he said, "vie do you call wirelesses 'Mr' in this country?"

"Oh, er, ha, ha . . . My mistake" I said.

### Work

Meanwhile Steven had pulled the Philips set on to the bench. "The capacitor 'battery' has gone" he said. For better access he pulled out both the speaker and the degaussing plug, then fitted the new capacitor. After doing that he was called to the phone.

I sauntered over and replaced the plugs. The yellow one in the yellow socket, the reddish-brown one in the red socket. When I switched the set on it went bang and emitted a puff of smoke. But it came on - without any sound.

"Ah" said Steven, "the yellow plug came from the red socket, and the reddish-brown one from the yel-

low socket."

"Of course" I said, "should have known."

We fitted a new TDA8190 sound channel chip but there was still no audio output. Its safety-type feed resistors R3102 and R3672 were both open-circuit. Once we'd replaced them all was well.

The Ferguson set was a Model 66M3, which is based on the ICC5 chassis. Steven disconnected pins 8 and 10 of the line output transformer, connected a 100W bulb from pin 8 to chassis and switched on. The bulb pulsed three times then went out.

"Power supply's OK" he said. After removing the line output transformer he tried again. This time the HT came up and remained, with no pulsing. The line output transistor proved to be OK, so we fitted a new transformer and tried again. The HT pulsed three times and shut down.

An hour later Steven had made no progress, despite checking a dozen or so associated components. He took the new transformer out and tried again. As before, the HT came up and remained. Steven sat down and pondered. I was at a loss too. Could the new transformer be faulty? We checked it for shorts and didn't find any, but this didn't prove much.

As a long shot Steven moved over to the power supply and checked the BU508A chopper transistor. It tested perfectly of course. But he fitted another and tried again. This time the set sprang to life.

### An Akai VCR

Meanwhile Paul was working on an Akai VSF30 VCR. After replacing the usual carriage gear he tried it out. The monitor's screen flickered blue a few times then the machine died.

"Now I'm in trouble" he com-

mented. After a further hour's investigation he found that FR221, a 120Ω safety resistor, was open-circuit. It's in the 30V line to the tuner/display and control circuitry. No reason for its failure could be found, and a replacement brought the machine back to life.

### Mr Zwyrmer

Then Mr Zwyrmer brought in a Ferguson T14R portable. "Is new" he said, "unt is dead. Bot fot can I do about it? Ze vife von it in a rafle. Silly voman! Vie did I marry such a voman?"

The set's fitted with the TX805 chassis, and there was no HT across C17 (100μF, 160V). So the Wessel combined chopper/line output circuit wasn't working. Most times it's not necessary to do anything other than check the three 68kΩ resistors in the start-up circuit. Sure enough RP41 had failed.

When Mr Zwyrmer called for it we presented him with a bill for £12.50. He broke into an hysterical laugh.

"Vie, that is chicken feed" he declared, "now I lof my vife again!"

### A Tatung

Squadron-leader Pettigrew has a moustache that's wider than his face. "You'll have to get the old telly out of the car for me" he said. "You and you" he ordered, pointing at Paul and me. "I'm giving it one last chance. Seems to want to mess me about - and nobody does that!"

We brought it in and he took his leave. It was a Tatung TV9704 (170 series chassis). We plugged it in and switched on. As it warmed up the picture started to flicker and shake. Then it slipped sideways across the screen, went to black and white, next to a blue screen, then faded to nothing. We reached for the freezer, but it didn't help.

At the back of the chassis there's a 4in. PCB that stands upright. Between this and the metal chassis surround there's an LM317T regulator (1802) that provides a 12V output. At some time in the past it had been unscrewed from the metal, which acts as its heatsink. As a result it had overheated and was now leaky.

A replacement cured the fault. When we'd boxed the set up and tried it again I let it know the score. "No more playing up" I said, "or it'll be curtains for you."

### Some Onwas

Doris Blugg called in with a Bush 2059NTX. "No picture, Mr

Bugbear" she grinned, "he's like my husband, no good for nuffin."

The set was dead and wouldn't go into the standby mode. When we advanced the setting of the first anode control we got a milky raster with flyback lines. This proved that the 12V supply was missing. So we checked R422, the 3.3Ω, 2W safety resistor that feeds the 12V, 1W zener diode D402. As it was open-circuit we fitted a replacement. Then we checked the zener diode, which was short-circuit. This was replaced as well.

Before switching on again we checked C909 (47μF, 25V) and C910 (10μF, 50V) in the power supply. C909, which couples the drive to the base of the chopper transistor, produced an odd reading. We fitted a replacement rated at 50V, 105°C. Although C910 tested OK, we decided to replace it with a 105° type.

When we switched on again we had a picture. But when standby was selected the set remained on though the screen darkened. We've also had this fault before: Q907 (2SC2335) goes short-circuit and R920 rises in value. We fitted a new BUT560A transistor in the Q907 position and a new resistor. This time all was well.

When Doris Blugg returned she was still on about her husband. "He wants to take some of that Niagra stuff" she said, "if there's one thing worse . . ."

"Thank you Mrs Blugg" I cut in. "Now we'll just get this set to your car."

As you'll have gathered, the set uses an Onwa chassis - though it's a rather more complex one than usual.

With the next set, an Osume OS1464 14in. portable, we were again faced with an Onwa chassis. It tripped three times at switch on.

"We should be able to polish this one off quickly" said Steven. "We'll check the usual suspects." The 12V zener diode ZD401 was short-circuit and its feed resistor R414 was open-circuit. After replacing them we checked the BU508D line output transistor Q402 which was also short-circuit.

Once we'd fitted replacements we moved to the power supply and renewed the troublesome electrolytics C909 and C910, using 105° types.

"That'll probably be it" Steven said, "these stock faults can be moneymakers."

When he switched the set on there was terrible arcing from the



**A foreign looking chap came in with an old Marconi radio**

scan coil area and from the tube's anode cap to its Aquadag coating. Looking shaken, he switched off quickly, then disconnected the feed to the line output transformer and checked the voltage across the HT reservoir capacitor. It was very high at 193V.

"It's still unregulated despite what we've done" he said, then started to examine the chopper circuit in greater detail. The two zener diodes ZD901 (8.2V) and ZD902 (9.1V) and the 0.1μF capacitor in the drive pulse shaping network were all short-circuit. He replaced them and, for good measure, the 2SA1815 error detector transistor Q901, though it read OK.

When he switched on again the HT voltage reading was correct at 109V and was properly adjustable. But when he reconnected the feed to the line output stage the set tripped three times and shut down.

Further checks showed that the line output transformer had been damaged by the over-voltage condition - it had shorted internally.

The customer had accepted our quote for regulator repairs, but refused the increased quote to include the transformer. So the work we'd done was a waste of time.

# What a Life!

## Some test card music takes Donald Bullock on a trip back to the Fifties. Followed by some more up-to-date problems

**W**hile listening to the radio recently I heard a programme about a society for the preservation of the music that used to accompany the TV test cards, in the good old days when they were displayed for the best part of the working day. Its leading light was interviewed during the programme, and some of the tunes were played. They seemed to go back no farther than the Sixties however.

My mind floated back to the Fifties, when I worked in the busy TV servicing workshop of Foyles Furnishing at Gloucester. Happy days – in spite of the off-peak heaters, full of firebricks that warmed up all night and gave off their heat next day whether we wanted it or not. In the spring and autumn, when

the days started off nippy but soon became hot, we suffered.

The 405-line sets we worked on at the time had large wooden cabinets and big speakers. Most of them produced excellent quality sound. I can still hear the sprightly melody of Sylvia, one of a lengthy medley of strict-tempo tunes that came on each day to accompany test card C. Does anyone else remember it? I've no idea which orchestra played it, but I'd love to hear those arrangements again. Just the thought of them nowadays conjures up some rose-tinted memories.

### Rhoda Roughneck

One of our customers was Rhoda Roughneck, who ran a dockside pub. She had a 14in. Ferguson set. In those days the BBC's Band I transmissions reached us from Birmingham without difficulty. But the ITV signal, in Band III, didn't do so well: we were well into the fringe area and, even with a masthead amplifier on a high rig, poor, fading reception was common.

To deal with this situation many manufacturers, including Ferguson, produced service- and fringe-area models. The latter would incorporate flywheel sync. Mrs Roughneck's set was one of them, and this compounded the problem. In those days flywheel sync caused us as much trouble as it was supposed to avoid – ask anyone who had to repair a Pye V4.

We would see Rhoda three or four whiskeys into the morning, after her set's line sync had flown off. She would be bawling away and we would creep down to watch as she marched around the showroom, twisting the music racks on the pianos, pummelling the keys and slamming the keyboard lids up and down.

### Tenpercent Morris

Then there was Tenpercent Morris, another pub landlord, who boasted

that he never paid for anything in full. He'd come in, choose a couple of TV sets and perhaps a pair of tables, then, when told the total price, remind everyone within earshot that he was a loaded cash customer who was always given a discount.

"Come on, ten per cent off, as usual" he'd declare.

Stan would smile ruefully, shake his head sadly, and do the sums. Then Morris would pay up and walk out, smirking.

After seeing this performance for about the third time, I ventured to ask Stan how he could afford it.

"Easy" he replied, "I always put ten per cent on first."

### Sony Stacking System Faults

My oldish Sony stacking system, which lives in Spain, has given me two bits of trouble. Both cassette decks failed and jammed, and the pick-up arm in its Model PSLX50 record deck took to returning only half way back towards its rest position.

The tape deck trouble was, in both cases, caused by the tiny drive tyre cracking apart. We didn't have any replacements, but we did have one tyre that was of exactly the right diameter and thickness but twice the height of the original ones. Son James found an old pen of the right size, slid the tyre on to it, then carefully cut centrally around it with a craft knife to divide it into two. The result matched the originals and worked. While at it we replaced the belts and cleaned up and lubricated both mechanisms before reassembling them.

The pick-up problem was caused by failure of Q101, a transistor that's associated with the record-size selector. It had become leaky between its collector and base.

### Amstrad PCW Problems

I referred recently to my Amstrad PCW8512 word processor's habit of



We would see Rhoda three or four whiskeys into the morning

locking up when booting up. When it did this the red light in the shift lock key lit up. This prompted a detailed letter from Simon Pearson of Chipping Norton, who suggested that I check whether the 5V supply was incorrect or unstable. He also referred to my comment about the printer's ribbons drying out quickly in the Spanish heat. Apparently there used to be an aerosol for re-inking ribbons. Its contents resembled black WD40. You had to raise and remove the ribbon cassette's cover, spray the ribbon inside, then the bit outside before winding it in, and finally leave the cassette for a fortnight to steep. He went on to suggest that ordinary WD40 might do the trick. I didn't have any WD40, but I've sprayed a dry ribbon or two with another make of oil aerosol.

Simon also referred to my difficulties in using with the PCW8512 the mint Commodore MPS1270 ink-jet printer I found. It seems that in addition to a lead I need an "interface" which, I think, is a pair of back-to-back sockets that connect the printer wires to the right places. He also drew my attention to an article on adding such a printer in the January 1994 issue of *Television*.

### Fidelity CTV920

While I was back in England recently Miss Pinhead, the traffic warden, strode in with her Fidelity CTV920 TV set. "Is that your car?" she asked, pointing to a Bentley across the road. I gave her a pained look.

"Spluttering and whining" she said.

"I didn't say a word" I protested.

She jerked her thumb at the set. "This 'un, I mean."

When she'd departed Steven put the set on his bench and removed the back. The cause of the trouble was easy to see. C171, the 3-3nF, 1kV ceramic disc capacitor in the chopper circuit's snubber network had turned to coke. He fitted a 2kV replacement which did the trick.

### A Camcorder

Then Mr Parker came in with an Hitachi camcorder, Model VMC1E.

"Good morning" I said. He just glowered at me. So I picked up the camcorder and looked it over while he watched in silence. "What's its trouble?" I asked. He just shrugged. Two lots of trouble here I thought. Then I shot him a false smile.

"Some time tomorrow?" I asked. He walked out.

I can't even work camcorders let alone mend them. This was clearly

one for Steven. It was completely dead.

He checked the 2A circuit protectors on the power input board below the battery compartment, either of which can go open-circuit to cause the symptom, but they were both OK. He then followed the power input along to the underside of the main PCB, where he spotted C824, a 22µF, 6-3V capacitor that was sitting in a little patch of leaked electrolyte. This was clearly the cause of the trouble.

Steven removed the capacitor and set about cleaning the nearby section of print, which supplies pin 8 of the syscon chip IC802 with 5-3V from regulator IC804. It had corroded through at one point. After bridging it and fitting a replacement capacitor all was well.

Next day Mr Parker came in and stood at the counter.

"It's ready" I said, placing the camcorder in front of him. "Fifteen pounds."

He peeled some notes from his wallet, put them down, picked up the camcorder and left.

"Not exactly a gabbler, is he?" commented Steven.

### Some Sony TVs

Paul, who is most at home dealing with VCRs, had been working on a Sony Model KVM2151U (BE2A chassis). Instead of a picture it displayed just a few dim patches of colour. The fact that the tube had no first anode supply took him to D806 (GP02-17) which was short-circuit and R812 (1kΩ, 1W) which was open-circuit. After replacing them the set worked well. It's a common fault with this chassis.

Our next caller was Victor Smallpiece, a timid, thin-faced Welshman with a piping accent.

"My Sony tele-viss-ee-on set's in the caah, Mistah Bull-ock" he trilled. "Ac-chew-al-ee my silly wife took it to Gumboils while I was in Way-yells last week."

I went out and brought the set in. It was a KVM2130U (BE1 chassis) and the line output stage was in trouble. In this chassis the line output transistor Q802 must be a BU506DF. Gumboils had fitted a BUT11AF, which isn't up to the job. It doesn't incorporate a diode either, so they'd connected an unmarked, heavy diode from the collector to chassis.

The line output stage is protected by a 1A Wickman fuse (PS802) which blows in the event of a short-circuit. It had been replaced with a 100Ω, 1W resistor that had gone

open-circuit. Once the correct parts had been fitted the set worked perfectly.

When he called back Victor Smallpiece was delighted to find his set working. "Per-son-all-ee I don't bee-lee-ve Gumboils to be at all com-pett-entt" he observed.

"Victor" I said, "you've got it in one."

### Video Faults

Meanwhile our video department Paul was dealing with a Matsui VX755A VCR, which is similar to the Saisho VR3600Z. The fault was reported as no functions, with parallel stripes of test signal displayed in the E-E mode whether the test was on or not.

Paul switched the machine on and the standby light lit. The clock display was all right, but the machine wouldn't accept a tape. He decided to check the STK5332 regulator chip IC501 and found that there was only 3V instead of 5V at pin 1, thus disabling the machine. A replacement restored normal operation. We've had the voltage fall as low as 0V – in this condition the display lights but there are no other functions.

Then he pulled up a Panasonic NV366. It produced a clear picture, but the top half inch was marred by a displaced ghost several inches higher. With a freeze frame the entire picture was clear. The cause of the problem was the head – a replacement from SEME cost £20.

### Business

Our last caller that day was a fattish businessman, Mr Hubblewaite. He struggled out of his Jaguar with an old Matsui portable, Model 1402.

"Evening chaps!" he wheezed as he tapped cigar ash about the place. "This belongs to the girl friend." He winked, then formed a series of curves in the air with his podgy hands.

The set was dead. It uses an STR50103 chopper chip (IC650) which had died. The basic cause of the trouble seemed to have been the 100µF, 400V mains bridge rectifier's reservoir capacitor C658, which had fallen in value to 1µF. The R2M overvoltage protection diode D668 and the 2-7Ω, 5W surge limiter resistor R655 had also failed.

The set worked well enough once these items had been replaced. Mr Hubblewaite was more than pleased when he called to collect it, with his ladyfriend. "Thank you boys" he said as he departed, propelling her to the door with a finger in her back.

# What

# a Life!

## Everything from a troublesome microwave oven to an ancient radio and a bucket aerial. Donald Bullock's commentary

I was musing the other day about couples. Married ones, friends and those who go into business together. Sometimes they are both pleasant or both nasty, or both pushy or both considerate. More often however they compensate for one another. One may be dominant for example and the other easygoing, prepared to take the back seat. This became very clear to us when we began our lives in the TV trade. Figuring out which of a pair to concentrate on when selling a set or discussing a repair can be half the battle.

Take Mr and Mrs Hudson. He had recently retired and was slight, mild, well-mannered and, I suppose, a bit dodderly. She was big, loud and blunt, as insensitive and self-centred as they come. They were an interesting though unnerving pair.

He'd brought in a little bathroom extractor fan for repair. Because I liked him, we had accepted it – expecting the cause of the trouble to be a dicky switch. We should have known better. Its motor had burnt out, as they very often do. So when they called in I handed it back to him.

"We'll pay you for your trouble" he said, reaching for his wallet.

"Don't be an old silly" she cut in. "Mr Bullock wouldn't charge you for a job he can't do. Just pick the fan up. We'll take it somewhere else to get it done. Snoddies are better for some jobs. And don't keep holding your belly – it isn't going to run away."

She carried only her bulky handbag. He was festooned with shopping. While he struggled to pick up the fan she made her way out.

"How about that?!" I said to Steven. We were to have further dealings with the Hudsons, but

more about that another time.

### Funny Noise

Mr Shawster then came in with a 14in. Philips portable, one fitted with the CP90 chassis. Like Mr Shawster, it was well past its prime.

"E's been a good set" Mr Block. "But lately it's been 'm m m m m'. That's all. 'Just m m m m m'. Then last night, about ten past eight, just as I was putting the cat out, he burst out like thunder. It was 'M M M M M'. Yea! 'M M M M M'. Me missus nearly had a yuppilectric fit. That can't be right, can it?"

I looked his missus over. "I dunno" I said, "but leave it with me. The set, I mean. Steven will have a look at it. He's very clever with these sets."

"That makes about six of them in recent weeks" Steven said as they departed. "Philips advise replacing the 6MHz ceramic filter, circuit reference 1103. I did that with the first one and it certainly worked. When the second one came in I didn't have a filter and decided to try adjusting the slug of the detector coil 5108. That worked too, and I've done the same with the others. I've not had any bounces!"

### A Sharp Microwave

Paul had been working on a Sharp combination microwave oven. "Don't get it" he said. "They're usually easy to fix, but this one is tricky." A while later he was still at it, and looking glum.

"Can't work it out" he said. "The fault is in the convection section of the oven. When convection cooking, it stops after exactly three minutes. When you restart it, there's another stop after precisely three minutes. And so it continues."

"Timer?" I suggested.

"No, I've tried that."

"Er . . . I'll go and make the tea."

Steven went over and had a look at it. He was equally baffled.

"We could e-mail Jim Bryant" he suggested, "he lets the trade e-mail him for microwave oven advice. I bet he'll have the answer."

He did too. The reply was in Steven's computer next morning.

"To diagnose this fault" he wrote, "set the convection temperature to 250°C and press start without entering a time. The oven will then go to 'pre-heat' to raise its temperature to 250°C. After a few minutes, press and hold the convection button. Read off the oven's temperature at this point. It might be say 78°C. If it isn't, the chances are that you have a faulty thermistor. To get to it, remove the rear cover. You will then see it close to the back of the machine, at the bottom right, embedded in insulation material. It will probably be cracked through the middle."

It was all just so! We ordered a new one from Willow Vale, and it arrived next day. Once it had been fitted the oven worked perfectly. The part no. is 31868T – the cost £3.75 plus VAT.

Our thanks to Jim and, while at it, to *Television* for bringing so many of the trade's top brains together (don't ask me how we managed to creep in!).

### A Wireless set!

Meanwhile Steven had picked up an ancient Philips wireless set. "Oh look, valves!" he said.

"What's the trouble?" I asked.

"Belongs to Syd Tubb over at the garage. It's been on all day, every day, for the past thirty years. Now it produces bursts of thunder-

storm noises in sympathy with the music."

"Can you blame it, after thirty years?" I said. "Clean all the valve bases with switch cleaner. That should do it. With any other make I'd advise checking the yellowy waxed-paper capacitors around the audio output stage. But this set will be full of black-pitch encapsulated ones that last for ever."

He soon had it working right.

## Reminiscence

The set reminded me of an experience I had about forty years ago, in a seedy backstreet. It was an identical set, with the same fault. I found that I was out of switch cleaner – the Radiospares stuff in a red and yellow spout tin – and asked the lady of the house whether she had any cleaning spirit. Petrol? I suggested as she lit a Woodbine with her lighter.

Then her young daughter came down from upstairs. She had varnished nails. Perhaps nail-varnish remover would help?

"Do you have any nail-varnish remover?" I asked. A small bottle of clear liquid was promptly produced. I poured some into the output valve's base, then lifted it and pushed it home a few times. When I plugged the set in and switched it on it spluttered and sent up a column of blue smoke. I'd been given nail varnish! The only thing to do was to take the set back for bench attention.

When I returned to the workshop next day I found Joe, the inside engineer, livid. He'd had a few difficult faults that day and had then picked up the set I'd brought in.

"You won't believe this" he ranted, "but someone has glued the output valve into this set with Durafix!"

I said not a word.

## The Baby Ten

The Baby Ten portable TV has probably appeared under more guises than any other set. The one Mr Bradshaw brought in was a Goodmans Compact 10. It's a 10in. mains/battery set of course. The trouble is that Mr Bradshaw mumbles.

"Mm yib yob banged an smoke an mmmmm. Frightmmmd us to death" he said.

When he'd departed, Paul opened it up and found the contents of an electrolytic capacitor plastered all over the place. It took ages to clean up the mess. Paul then dis-

covered that it had been the non-polarised 4.7µF, 50V capacitor that couples the line scan coils to the output stage. He tried to find the cause of its failure before fitting a replacement, then spent some further time checking its operating conditions. Everything seemed to be OK, and the replacement ran cool. It produced a perfect picture. After a good soak test the set was pronounced fit to travel.

## Interlude

Greeneyes clip-clopped in looking as gorgeous as ever.

"Thanks a million" she said, planting a kiss on my forehead.

"For what?" I asked as I reached for my handkerchief.

"For buying me that beige skirt to match the trouser suit" she breathed.

"Beige skirt?" I said. "What trouser suit?"

"The one you're going to get me from Marks for Steven's wedding. To go with the oatmeal shoes I'm getting from Debenhams."

"And when do we go and win you all these treasures? I asked.

"As soon as you've finished your silly article. By the way, why does it take you so long to write a ten-minute article?"

## Sky News

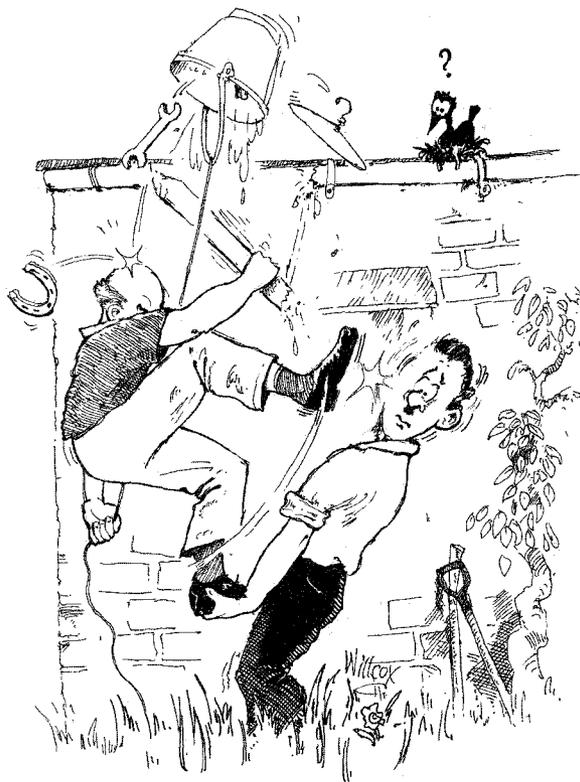
I dropped in on Sky News the other night, and dropped out just as quickly once I'd sampled it. The newsreader occupied only a square cutout in the centre of the screen. While he was recounting the day's tragedies, the space around him was a swirling mess of globes or something. In addition, an intrusive musical thumping accompanied his comments, and phantom flames played over various news pictures. Not for me.

## John Berryman's Aerial

John Berryman the undertaker lives in the deep and leafy countryside. I was happy to call on him – he'd complained about his picture. It had been raining, and I had to pick my way to his front door via masses of tall grasses and overhanging lilac. By the time I got there I was sweet-smelling but wet. He greeted me through the window.

"You can't get in this way, Don. We never use the front door. Go back down the lane, cross over the brook's stepping stones, through the paddock, past my hearse and up to the back door. Take no notice of Banger the bull.

When I reached him he threw



He gave me a leg up . . .

me a towel. "How are you keeping?" he asked.

"Never mind the business enquiries. What's the trouble? How's trade?"

"Awful" he replied, "it's all this good weather."

"You'll have to sneak out with your twelve-bore" I said, "hurry them up a bit."

"If I did, I'd start with the clergy" he laughed.

I looked at his TV picture. It was a mass of hazy ghosts.

"The aerial's down the garden, Don. Just follow the cable."

I did. It led to the privy, where the cable was taped to the handle of a bucket on the roof. He gave me a leg up and I saw that the bucket contained various bits of metal – some horseshoes, a few old spanners, some coathangers and an old egg-whisk. Also a lot of water. Warm water.

I was astonished, and decided to pour the water away. John's wife then came running from the house.

"Picture's good now" she called.

"I should think so" John said, "the aerial was full of water. Don twigged it. Clever chap, always was."

"Good 'ealth Don. It ain't many I says that to you know. But I don't mind how long you keeps me waiting. Straight I don't."

# What

# a Life!

## All sorts of video equipment, all sorts of customers. Donald Bullock's day-to-day servicing commentary

The work really started to pile in once Steven had gone away to Cyprus on his honeymoon. Isn't that always the way?

"Tape jammed in Mr Pullet" the shiny-faced man said as he marched in with a newish Toshiba VCR. "Can't be much wrong, because it's not very old. Just as well too, 'cos I can't afford much."

As I booked the repair in, I heard Paul groaning in the background.

At almost the same time that Shiny-face left, a man wearing a cowman's smock came in. He was also carrying a Toshiba VCR. Identical to the first one in fact.

"I put the tape in, Mr Tarbuck, and started it playin'. Then it clicked and went off" he said. "An' I couldn't get the tape out to try another one. Take it out for me, there's a good chap. I'll pop back after market. Won't cost me anything, will it? Not for poppin' a tape out."

Paul, in the background, gave another groan.

"That's two more" he moaned. "What's the matter?" I asked.

### The Toshiba Problem

"It's these latest Toshibas" he replied. "I did two of them last week. There's a main cam lever to do with pulling the tape out of the cassette. It's a sort of metal rod with a ball at the end. The ball snaps off, and to carry out the repair you have to take the front off, take out the cam motor and cam, then the mode switch, cassette housing and pinch wheel. These all have to be put back again and set up. It's quite a business!"

The first one to come Paul's way had him guessing. So he'd phoned Toshiba. The technical wizard at the other end said "the ball

will have snapped off the main cam lever. You'll have to fit another one."

The two I'd just taken in had the same fault. So to make Paul's life easier I slipped out and made him a strong cup of tea. And one for myself, too.

### Telly/video Thing

While he was busy with the Toshiba VCRs I noticed that Mrs Gabber had bumped into Mrs Sapp outside the open shop door. They were having a great chat, and it was Mrs Gabber I could hear.

"... yes, we came home from our trip up town and found him dead. Absolutely dead! And he was only just three years old. The house is so quiet without 'im. He was on all the time of course..."

"What are you going to do about it?" asked Mrs Sapp.

"I've got him in the car. I'll get that Mr Bullock to take a look at him."

Then she came in.

"I've brought our telly/video thing for you to have a look at dear" she said. "Dead. But it can't be much. We don't hardly have him on. And another thing, he's only just over a year old. And my husband's a pensioner."

I followed her out to the car. The set was a GoldStar TV/video combination, Model KY14V30.

When she'd gone we put it on the bench. The power supply for both sections is on the TV chassis. It didn't take us long to find that the STR6707 power chip was short-circuit. So we fitted a replacement and tried the unit: the recorder and the TV were both in standby. When we pressed the standby switch the relay shattered.

We eventually found that the cause of the trouble was a leaky

zener diode, ZD802 (6.8V). It's in the base circuit of Q1801, which smooths the DC supply to the power chip. A replacement restored normal operation.

### Sport's the Word

Our next customer, Bob Chancer, brought in a Sony TV set, Model KVM1921U (BE2A chassis). He plonked it on the counter.

"See the match?" he asked. "What did you think of that second goal? Ref wants shooting if you ask me. But - fair play - do you know..."

"I don't follow golf" I cut in, tapping the top of the set. "What's wrong with this?"

"Dead as a doornail" he exclaimed. "But - fair play - it's been a good 'un. We bought him to watch the Cassius Clay fight. The one that lasted ten seconds. Waste of time. But - fair play -..."

I waved him out and took a look at the set. It was dead with no standby light. When I opened it up I found that there was 330V DC across the mains bridge rectifier's reservoir capacitor but no start-up voltage at the STR54041 chopper chip IC601. We'd have found the culprit, R602 (270kΩ, 0.5W), sooner had it not been hidden under the chopper transformer. In fact we removed the chopper transformer on spec before we found it.

Bob called back for it straight from a local football match. He was red about the gills and hoarse.

"Never had a chance; we didn't. I tell you, no team that puts a half-back in the goalie's place can expect to win. Bloody madness. But - fair play -..."

"It's ready, Bob" I said. "A resistor had failed. Twenty five pounds to you."

"Twenty five pounds?" he spluttered. "But them resistor things are

only tuppence, aren't they?"

He paused for a minute, then continued.

"Nah - pair play - you got it done quickly. I'm happy at that, fair play."

And he paid up and went.

## Transport

Mr Nuggins brought his set along in a wheelbarrow. It was a Matsui 21VIN, about two years old - a 21in. stereo model. He heaved it on to the counter and stood there clawing at his rib cage. Then he stretched and danced around trying to scratch the middle of his back.

"Don't know what makes me itch so" he said.

"Visitors?" I suggested.

"On my own this week. That's why I'm missing the set. It's dead."

As he gyrated out, I took the back off and saw that its 2.5A mains switch had died a violent death. There was a dead short across the mains input. I made for the BY127 diodes in the bridge rectifier circuit and found that they were all short-circuit. Once replacements had been fitted there was still a short-circuit across their output. The cause turned out to be the IRFBC40 chopper transistor T60020. This MOSFET device is rated at 6-2A. I fitted a BUZ91, which is rated at 8.5A, and also replaced the UC3843 chopper control chip.

As everything now checked out all right I switched the set on. There was an excellent picture.

## Electronic Screwdriver

There was a time when few TV sets with the excessive height symptom would have got as far as the bench. But that was the problem with the next set I pulled from the pile, a Sharp DV5161H. The reason why no one had turned the height control down was that there isn't one. In fact the only potentiometer on the chassis is the set-HT one. The picture geometry adjustments are all carried out via the 'electronic screwdriver' chip. I obeyed the instructions, as follows.

At the back of the chassis there's a teletext subpanel which has two connection plugs marked TA and TB. I fitted a wire link between pins 3 and 6 of plug TB. Then I switched the set on and pressed the remote control unit's mode button. The word SERV appeared on the screen. Once the added link has been removed the set is in the service mode and you can use the remote control unit's channel up/down buttons to find the required adjustment.

I called up 'vertical amp' and used the up/down buttons next to the mode button to get the correct setting. You finally press the mode button once to exit from the service mode. All the picture adjustments - grey scale, width, etc. are carried out in this way.

## A Decoder Thing

Mrs Rivetto is about seventy five. But she has false eyelashes, blue rinsed hair and an unshakeable belief that she's still eighteen.

"Hello sunshine" she trilled. "I've brought our decoder thing in. It went bang the other night and my silly old hubby says it's faulty."

It turned out to be a Ferguson SRD6. The mains fuse had gone to its maker and the BUT11AF chopper transistor was short-circuit. In addition the 2.2Ω fusible resistor was open-circuit. Once these items had been replaced the unit worked perfectly and produced good results.

Mrs Rivetto was delighted when she called back for it. "He'll be able to bury himself in his silly old telly again" she sang. "Me, I like to get off out. No good sitting about getting old, is it?"

## Sympathy

We've seen Mr and Mrs Hudson before. He's mild and well mannered, while his wife is loud and insensitive. He looked poorly, and the Philips CP110 TV set he was carrying was clearly almost too much for him. I helped him ease it on to the counter.

"You shouldn't have bothered Mr Bullock" she said, "good heavens, whatever next?"

"Aren't you too well today, Mr Hudson?" I asked.

"He's all right. Just likes a bit of sympathy" she replied.

He smiled faintly and looked embarrassed. Then they departed.

The set was 'dead', but there was plenty of life in it. Checks showed that the mains bridge rectifier's output was low at only 190V. The cause was reservoir capacitor C2656. It should have been 150μF but read only 70μF. A replacement restored normal working.

When they called back for the set I carried it out to their car. He was rebuked for his "laziness".

## Authority

Mr MacPhail, an ex-military man, strode in. He's used to authority and shows it. He looked at Paul and pointed to his car.

"In the boot my boy" he said,



"He's all right. Just likes a bit of sympathy."

"bring it in will you?"

Paul looked at me, then MacPhail, then went for the set.

"On here" MacPhail said, tapping the counter. "Blasted thing's playing games with me. I'll have none of that. When I switch it on it bursts into life. Then, before I've had time to sit down, it goes off. Three nights it's done that. I want it right, or out it goes."

Once he'd departed we tried the set, an Hitachi C2114T. The EHT came up, then the set switched itself to standby. I tried it again. Same thing. Then I opened it up, expecting to find a dry-joint in the line output stage or something like that. But everything looked fine. So I adopted a more professional approach and studied the circuit diagram.

Next time I switched the set on I had an analogue voltmeter connected across its 27V supply, which is used for the field output stage. The supply came up then decayed. I let the set cool down, upped the first anode control's setting then tried again, with one eye on the meter and the other on the screen. I was just able to detect field collapse before the set died.

In this chassis a protection circuit comes into operation when there's a short across the 27V supply. I replaced the TA8427K field output chip IC601 and tried again. This time the set came on normally.

# What a Life!

## The life and death of Dylan. Various TV and VCR repairs. Treatment for a conductive PCB. Donald Bullock's servicing commentary

I was thinking the other day about an old friend, Dylan. When I first noticed him he was poring over a propped-up magazine at the other end of my then local, the Royal Oak. He was thick-set and pale, with neglected hair. Rather rough and tough looking in fact.

He was there when I next called, and before long seemed to be a fixture. He would always sit in the same place, his face lost in the magazine.

Then, one night, someone touched my elbow. I turned and saw this very man. He smiled slightly and said "I hear you're a TV engineer. Could you advise me about a problem set I have?"

He spoke quietly, with a captivating Welsh accent, and I noticed that the magazine in his hand was the current issue of *Television*.

### The Life and Death of Dylan

I came to know him well. He'd been brought up in a remote Welsh valley, where he had taught himself to 'pull voices from the air' by making crystal sets and one-valvers. He'd then been conscripted and, after leaving the forces, had come to live in local lodgings. He lacked formal education, was slightly eccentric and was sparing with words. But he was reliable and straight – and came to call me 'son'.

His job was as a motor fitter. One day he offered to help with a fault in my car, and subsequently started doing odd jobs in our workshop. He would sometimes bring with him an old television set to tinker with. I still recall my astonishment at his method of testing paper capacitors – he would squeeze them with a pair of pliers while watching the screen. He 'checked' transistors by warming them with the iron. We introduced

him to an Avo, and he soon took to conventional fault-finding methods. Being quietly dogged, he became an expert at dealing with some of our more tricky faults.

The bane of his life was Doug Trickey, a small bundle of fast-moving energy who would leap into gear and think afterwards.

"What d'you think he did today?" Dylan once said, "washed some spiders out of the works' fusebox with a water hose. Shut us down for half a day!"

Dylan and I would have the occasional drink together. One night he was restless and glum. I asked if he had a problem.

"I did something despicable today, son. I stole Doug Trickey's insulated side-cutters."

"How come?" I asked, "had he stolen something from you, done you a bad turn or something? Was it to pay him back for washing out the fusebox?"

"Nothing like that" he said. "I just wanted them."

His conscience wouldn't let him rest. Next day he returned Doug's side-cutters.

He was also inventive. His old Morris van was the only one I ever knew that had a built-in driver's urinal. A sort of funnel arrangement with a copper pipe that passed through the floor of the van.

"I live a long way from the pub" he explained when I expressed my astonishment.

Dylan's landlady liked him well enough. This rankled her husband, who was so thick he couldn't tell the time. With her permission, Dylan carried out the odd wireless repair job on the kitchen table. Until her husband objected.

This pettiness upset Dylan. "I worked neatly on a thick cloth and always cleared up afterwards" he

said. "Her husband starts work at seven each morning, and prides himself on his punctuality. But he'll be late tomorrow!"

Next evening he was gleeful. "It worked, son" he said.

"How come?" I asked.

"Before turning in I took a valve out of his wireless" he replied. "He didn't know the time."

Eventually Dylan opened a little TV repair shop in a busy backstreet. His bond was his word, and the business thrived. We would help each other out with the odd transistor or capacitor, parting with them when we met in the Royal Oak.

One night he wasn't to be seen. His shop was closed the next day, and I couldn't get him on the phone. I figured that he'd popped back to Wales for a day or two, as he often did. But it wasn't that.

Alerted by neighbours, the local policeman got a ladder to his bedroom window, above the shop, and found him dead on the floor. He'd suffered a massive heart attack. At just forty four.

### A Strange Daewoo TV

"This set's driving me mad" said the dusky, deranged-looking chap who strode in with a 20in. Daewoo colour set. "The sound keeps cutting out." I reached for a job card.

"And that's not all. I'm watching ITV, right?" He tapped my chest with a finger. "ITV, got it? ITV."

"ITV, yes" I said.

"Next thing the picture's changed to BBC1. BBC1!"

"BBC1!" I echoed.

"So I grabs the remote control thing to get me picture right, only 'e don't do nuthin. Not nuthin."

"Nuthin" I said, looking him straight in the eye.

"Then the set tunes himself to one programme after another."

"Does it do anything else?" I asked, reaching for my pen.

"Ain't that e-bloody-nough?" he yelled.

The set, a Model T202 (CP330 chassis), gave us as much trouble as it gave him. The cause of the trouble was the 24C08P EPROM memory chip IV02. Anyone who gets this fault will save himself a lot of time and bother by being sure to replace it with the correct Daewoo type.

## Stuck

Mrs Moss is a big woman. She brought in a JVC C14A1EK and plonked it on the counter. "Stuck!" she bellowed.

"Right" I said, wondering what she was on about.

When she had gone Paul put the set on the bench and found that it certainly was stuck – in standby.

"Where d'you reckon the fault will be?" I asked.

He pondered. "In the standby circuit" he eventually suggested.

I nodded. "You could well be right" I said.

The chassis has a power supply based on the STR50115A chopper chip, with a three-transistor HT switching circuit on the secondary side of the chopper transformer.

Paul set about checking the transistors here and found that Q903 (2SA1370) was open-circuit all ways. A replacement restored normal operation.

## Save Me!

The Reverend Goode's ancient saloon car came to a halt outside. He waved a video recorder at me from the running board.

"Save me, Donald!" he boomed. "We're due to record a Christening this afternoon, but this chap doesn't give us any sound."

"Doesn't give us any sound" confirmed his curate, the Reverend Blande.

They left the machine, a JVC HRD500EK, with us. When we tested it we found that it produced sound from a prerecorded tape but wouldn't record sound.

Steven made for IC1, the thirty-pin LA7295 chip, and found that pins 15, 21 and 23 were dry-jointed. Resoldering them cured the fault, and we later phoned the reverend to let him know that all was now well. He expressed his delight and called shortly afterwards.

"God smiles upon the blessed, Donald" he proclaimed. "You're so good to us. Er . . . my curate will carry it to the car.

"Carry it to the car" said the curate, doing just that.

## It Blew Up

Our next caller was as delightful a young lady as you could wish to lay eyes on. "Who'll bring in my telly from my little car" she asked as she wriggled in.

Paul disappeared outside and was next seen yanking a heavy-looking TV set from the boot of her car.

"It was all right till one of my silly boyfriends wanted the sound louder" she purred. "Alec, it was. Plugged his 150W hi-fi speakers into the two little sockets at the back. Went very loud, then blew up in a cloud of smoke."

"Alec did?" I asked, hopefully.

"No, the set" she laughed.

It was a 21in. Panasonic set, Model TX21V1, with stereo sound and Fastext. There are external speaker sockets at the back, with a switch that disconnects the internal speakers when external ones are being used. Alec's experiment had led to the disintegration of the LA4270 sound output chip, which is capable of an output of 6W. A replacement restored the sound.

Alec later called to collect the set. He looked anything but Smart. More like a dyspeptic question mark I thought.

## Sony VCR Problem

Paul had meanwhile pulled a Sony video recorder on to his bench, an SLV815B which has a very high-specification. The complaint had been about interference on the picture and was confirmed when we played back a known-good tape. Further tests showed that the fault was also present with E-E operation.

"It'll be the Elnas" Paul said.

I eyed him suspiciously. "Some family of goblins?" I asked.

"No. Elna capacitors. The chopper power supply is full of them. I suspect the ones on the secondary side of the transformer. There are thirteen of them. When they leak the voltage supplies become unstable. Sometimes one or two of them dry out completely. If they go short-circuit the machine fails or gives the dead symptom. I'll replace them with some off the shelf, but there's a modification kit



*Dylan carried out the odd wireless repair job on the kitchen table . . .*

that consists of the complete set. CPC supplies it as Kit 777, their part part number being SYA 675 957 4A."

When he got into the power supply he found that the problem was more serious. C207, an 820 $\mu$ F, 10V electrolytic, had leaked heavily. The electrolyte had soaked well into the PCB material, with the result that a small patch of the panel had become conductive. A resistance check produced a reading of 500k $\Omega$  over half an inch of the board. The effect of this was to inhibit the action of the 3PJ4 thyristor THY201, with loss of the 12V supply.

Superficial cleaning, though carried out thoroughly, didn't help. Paul eventually decided to give the board a number of applications of isopropyl alcohol. When the board had dried out he found that, though it was still conductive, the resistance reading was now higher. So he repeated the process, which produced a further improvement. He continued the treatment frequently over several days until his meter failed to show a reading when in its 20M $\Omega$  range.

He then replaced all the capacitors and switched on. The result: perfect operation.

# What a Life!

**A collection of TV sets this time, with weird and wonderful faults and owners. Donald Bullock's servicing commentary**

**A** shady-looking customer came in with a 10in. Bush CTV100. He placed it on the counter and tapped it with his finger.

"This set. It's very annoying. When it is going it's stopping, and when it is stopping it's going. My wife is upset too. She is getting very tired of it. And I am in agony with my brother."

"Right" Paul said, "what name is it?"

"Mustafa Norange" the man replied.

Paul made a note and the chap departed.

"Funny sort of name, funny sort of fellow" Paul said when he'd left. Paul tried the set, which seemed to be all right. He tapped about, but it continued to work. So he took the back off and had a good look at the chassis. As there were no obvious dry-joints or poor connections, he put it together again and left it on test.

## More Nutters

Then Mr Beezer staggered in with a 25in. Goodmans set, Model 2575 (F11 chassis). He bumped it on to the counter, just missing my hand as I whipped it away.

"Phew" he exclaimed, "en't as young as I was. These things be heavy. And hard to keep a grip on. Like trying to carry a giant greased pumpkin they be."

"What's the trouble?" I asked.

"Well, it's like you can't hold 'em properly. They keep slipping see."

"The set" Paul broke in patiently.

"Oh, the set. Keeps going off. And when it does, all we hear is whining."

"Not surprised" said Paul, "must be very upsetting." He plugged the set in and it worked all right.

As Beezer left, Paul looked from one set to the other. "Just fine!" he

exclaimed, "two sets brought in and there's nothing wrong with either of them."

At that an odd-looking fellow strode in. There was a sort of grin on his face.

Paul smiled back. "Can I help you?" he asked.

"Name's Weatherspoon. Maddening it is. Brought my set in a month ago. It was cutting out. You fiddled about with the mains plug while I waited. Said it was a wire nearly off and that there was nothing wrong with the set."

He smiled but was beginning to sound rather hysterical. Paul looked a bit frayed. "I don't see a job card here" he said, "what did we charge you?"

"Nothing" Weatherspoon said. "Now I've had to bring it back. It's totally maddening. You must have put a different fault on it. Picture's too short."

He strode back out to his car and returned with a 21in. Toshiba set, Model 2100TB.

Paul plugged it in. The picture that appeared was a couple of inches short at the bottom, and there was a liney gap at the top. "You've a frame fault here" he said, "nothing to do with the plugtop."

"Funny it happened after you'd fiddled with it though. Gets my goat, this sort of thing."

As he strode off he almost knocked over little Mrs Pugh, who was bringing in a Matsui colour portable.

## Grundig CUC7301 Chassis

"So you've had old Weatherspoon in" she said. "Troublesome man if ever there was one."

"Oh, I don't know about that" Paul replied, "he seemed a bit sharp but said it all with a grin."

"That was no grin" said Mrs Pugh, "he tripped over his cat a

year ago and damaged a nerve in his face. It's left him looking like that."

I asked her what the problem was with her set – a 14V1R (Grundig CUC7301 chassis).

"Dead as a doornail" she replied, "except for the standby light flickering. But if you leave it plugged in and switched on for half an hour it starts up."

I seemed to remember having had this problem before. After removing the back I made for C667 (100µF, 35V), which is the reservoir capacitor for the UC3842A chopper control chip's supply. The voltage across it was low at only 3V. I applied heat to it from a hairdryer for a minute or two, then the set started up. The voltage across the capacitor was now about right. Clearly its value was temperature dependent. A replacement restored normal operation.

## Servicing Session

Meanwhile Paul had taken the back off the Toshiba 2100TB and was checking around in the field output stage. It didn't take him long to find that C317 (2.2µF) in the feedback circuit was leaking. He fitted a replacement and tried again. There was now full field scanning.

"Weatherspoon's set done anyway" he said, "we might see a grin on a grin when he comes back for it."

Then the Bush CTV100 started to crackle a bit. Before long it was going off and on. Paul removed the back and tapped around. He found that there was a gap between the 3-15A DC fuse FU651 and its holder. "Wonder is that it worked at all" he said. After tightening the fuseholder he left the set on soak test.

Shortly afterwards the Goodmans 2575 clicked off and started to whine. When Paul

removed the back it came on and stopped whining. He tapped about a bit but couldn't instigate the fault. So he boxed the set up again. Just as he finished, it started to play tricks again. This time he left it. Eventually it died and stayed like that, whining away.

Steven came in and saw it. "Had a couple of them last week" he said, "both whining and intermittent at first, then dying altogether."

In one set the cause had been the TDA4601 chopper control chip IC14. In the other it had been the resistors in the start-up circuit, the associated 100µF capacitor C102, and the chopper transistor's base drive coupling capacitor C103, also 100µF. He'd decided to replace all these items in both sets. Paul set about the same routine, and before long the set was working a treat.

The soak-testing Bush CTV100 then started to play up. It crackled and blinked, then died.

Paul looked surprised. "Thought I'd fixed that fuseholder well enough" he commented. He opened the set up and had another look around. There's a second fuse, FU631 (1A), in the AC feed to the mains transformer T631. Its fuseholder also had a wide gap and a loose fuse. The set was OK once this fuseholder had been tightened.

Steven had been ordering spares. He looked up. "Had several of those Bush sets with fuseholder problems" he said. "They're cheaply made and seem to give a lot of trouble. I'll look about for better replacements that fit the panel. We'll probably be needing them."

### Strange

"Joo mend tellys?" asked an unusual, deep voice. I turned around and saw a strange apparition. Bristly chin, skirt and high heels. With a cigarette on the go.

"We try" I smiled. All I got was a scowl.

"This 'un's dead" was the reply.

It was a 14in. Sharp set, Model 37AT25H. "Name?" I ventured.

"Strange. Mr Strange - Nancie."

The set's owner minced off. I couldn't work out the customer, but soon sussed out the set. It was the usual trouble - the start-up resistors R704 and R705. They are both 560kΩ, rated at 0.5W. Both were high in value. In fact R704 was almost open-circuit.

### A Philips G90

All we saw of our next customer was a small face in the centre of a huge, bushy black beard. He was

carrying a 21in. Philips colour set, Model 21GR2550 (G90AE chassis), which he placed on the counter. He then pulled his face into a smile and beamed intensely at me.

"It is being faulty" he said.

"Right, name?" I replied.

"I am being Abdul Ahmed, and I am delightful to be here. This set is being dead."

I took a note of his name and he departed. Steven looked at the set and found that someone had tried to repair it with the Philips kit. This is quite complex and includes a number of surface-mounted devices. Whoever had attempted the repair had made mistakes but had gone ahead and switched on. The BUT11AF chopper transistor had exploded, and the mains fuse was a charcoal tube. There was terrible soldering.

Steven started by tidying up the soldering, then found that the 6.2V zener diode D6617 in the chopper drive stage was short-circuit. This was replaced, along with the other parts in the kit. The set was then gingerly started up, applying the mains supply via our variac. A raster appeared when the AC input was 60V, but at 100V or so the set began to trip, with the 95V HT supply pulsing between 30 and 40V. The cause was traced to R3668 (150Ω), a surface-mounted resistor in the overload protection stage that shuts down the chopper circuit. It was badly dry-jointed.

When Abdul returned we gently suggested to him that his set had perhaps been got at. He switched his grin on. "No, no. That is not being so at all" he said softly, "as soon as it was failing I was bringing it straight to you gentlemen."

We left it at that.

### Murky Picture

A couple of huge chaps in gumboots carried in a 28in. Goodmans set, Model 2875. Another F11 chassis.

"Picture's sorta dark, murky red" said one.

"Bit like thee" the other one said to him. As we were raising a job card, he looked at me then at his friend, as though I'd reminded him of something. "Good beer at the Rose and Crown" he said, "ad about fourteen pints the other lunchtime, and knew I'd 'ad 'em."

I looked at him sternly.

The set's picture was certainly very dark and red. Steven soon found out why. There was no blue gun output, and the green gun hard-



Paul looked a bit frayed . . .

ly worked either. The chassis uses a TEA5101A RGB output chip, with an external 68kΩ, 0.5W feedback resistor in each channel - R26, R28 and R29. One had gone high in value, one had gone very high and one was open-circuit. Steven replaced them all, fitting 1W resistors. He also noticed that the Nicam sound was crackling. The cause was traced to some bad dry-joints at the connectors on the Nicam board.

### A Tripping Ferguson

Paul decided to tackle one more set before taking a break. It was a 24in. Ferguson Model 59P7A (ICC5 chassis). The card said it tripped three times at start up. On test it did just that. After checking whether the HT was high he moved over to the line output transistor, which was short-circuit. As usual the cause was spikes created by dry-joints in the line output stage, particularly at the driver and output transformers.

Having fitted a new transistor and attended to the dry-joints Paul switched the set on. There was a bright screen with flyback lines. The cause was RV82 (10Ω) on the tube base panel. It's in series with the HT feed to the RGB output stages and seems to fail whenever there's a line output stage fault.

# What

# a Life!

**Christmas time can mean more work for some of us, with increased expectations from customers. There's always a last-minute "can you help, ha ha, sorry I have to trouble you!" Donald Bullock's servicing commentary**

It was getting close to Christmas and we were up to eyes in work – yes, really! The door opened and an armful of rags sallied in. It was Dancing Fred Entwhistle.

"Brought you boys a little job" he cried. "Our set went wrong about a fortnight ago. Thought it time to get you to look at it for me."

Paul took the set and started to check it.

"This one'll kill you" Fred piped as he danced about. "Here. Take a card." He fanned a handful of playing cards and pushed them towards us. Steven, looking perplexed, thought it best to humour him and took a card. It was the ten of clubs.

"Don't let me see" Fred ordered. "Now put it back. Anywhere. While I'm looking away."

Steven slotted the card back and Fred started flinging them at the counter, one by one. He stopped at the four of spades.

"That's it, isn't it?" he asked.

When Steven shook his head Fred repeated the performance and came up with the ace of hearts.

"Ah, of course. This one."

Steven again shook his head. On his third attempt Fred came up with the two of diamonds.

Steven looked up with a frown. "Forget the cards" he said, "do something useful. Make the tea."

Fred went off to the back and Paul tried the set, a Toshiba Model 1400RBT. About a third of the raster was cramped at the bottom while the top was badly stretched. "What could this be?" he asked.

"The field time-constant is non-linear" I replied with, I thought, commendable cleverness.

"Yeah, but why?" Paul continued.

"God knows" I said. He studied the field output stage and removed the 2.2 $\mu$ F, 50V feedback capacitor C317 to test it. It had been sitting in a pool of dried up electrolyte and produced a reading of less than 1 $\mu$ F. But when he fitted a replacement and switched the set on again the fault was still present. He studied the board again and came across C303, which has the same value/rating and had failed in the same way. It decouples the height control and read 0.3 $\mu$ F. This time the replacement restored a fine, linear picture.

## Flighty's Combi

We heard our next caller, Mr Flighty, chatting up a lady passer-by before we got sight of him.

"Not at all my dear. You pass first. This isn't heavy – or am I telling you I'm strong? Ha, Ha. I say, those are lovely ear-rings you're wearing. Nice colour, and they match your eyes."

Then he pranced in, carrying an Aiwa TV-and-video combination.

"Oh God" I let out.

"Don't you like Aiwa telly-cum-videos?" he asked.

"They're all right" I replied.

"Then what are you moaning at?" he said.

"Guess!" I said as Greeneyes came in wearing her £150 trouser suit, the one worth thirty bottles of Bells.

"I say, I say I say" jabbered Flighty. "What luck I have. How are you my dear? Not liverish like your father here?!"

I shot him a stern look.

"Your hubby I mean, yes of course. Silly me. Lucky chap!" he jabbered on.

Greeneyes glowed, and I wondered how such a bright girl could be so gullible.

"How's Mrs Flighty?" I enquired.

That quietened him and he sloped off.

Flighty's set was a Model VXT1000 Mk. 2. Its TV section was dead. Steven soon had the STK7348 chopper chip IC4 out and found that it was short-circuit between pins 3 and 7. R103 (1.5 $\Omega$ , 3W), R104 (27 $\Omega$ , 3W ceramic) and R105 (1k $\Omega$ , 0.5W) had also failed.

Replacements didn't complete the repair – the set wouldn't start. Further investigation brought Steven to C90 (1 $\mu$ F, 50V), which was short-circuit. It had obviously been the cause of all the trouble.

## Colour Drop-out

Mr Tell is a tiny, tidy retired dentist from Wales. He has a perceptive mind, a soft voice and a delightful accent. He also has a 21in. Sony set, Model KVM2150U (BE2A chassis), that has given him quite a bit of stick.

"The colour drops out, Mr Bullock" he said carefully. "Sometimes it happens when my wife just walks across the room."

Surely such a small, pleasant man wouldn't have a wife that large, would he? I wondered how I could find out.

Paul took a look at the set and found that the trimmer capacitor CT332 in the colour oscillator circuit was pappy. It's a common offender. Sometimes just cleaning

it helps, but we prefer to fit a replacement and keep a few in stock – the Sony part no. is 1-141-418-11.

When he called for his set Mr Tell complained about a record he'd just heard on his car radio.

"Dreadful it was, Mr Bul-lock. I had to switch it off. Those Beatles. Whining voices, the same over and over again and a heavy-handed beat. Noel Coward was right, wasn't he, when he said 'wonderful lads – quite without talent'."

"And how" I replied.

## A Monitor Problem

Eddie Ebworth is a worrier. He's going grey the wrong way, from his crown to his ears, as the worst worriers do. He was carrying a Philips computer monitor, Model 17A280BQ-02C.

"Worries me to death it does, Paul" he said. "It's like my missus. All right one minute, useless the next. What d'you think it is?"

"Hard for me to say, Ed" Paul replied. "Haven't met your missus. Did she have an unhappy childhood?"

"Not my missus. I know her trouble all right, and am patiently awaiting the cure. I mean this monitor."

"Dunno about that either, Ed. Leave it with us for an hour or two and we'll see."

Paul put it on the bench and tried it. The monitor came on once or twice but not the third time.

"You're in luck" I said, "there's one thing you can usually count on – that an intermittent fault will seldom show up in the workshop."

He opened the unit and probed around in the chopper circuit. "Amongst all the bits and pieces here, I suspect R3944" he declared.

I asked him why.

"Well, it's a small resistor and its value is 1M $\Omega$ " he replied.

"Prejudice!" I said. But he was right. The resistor was virtually open-circuit. A replacement restored reliable starting.

## Intermittent Loss of Signals

Hank had meanwhile dropped in. He does a bit of servicing in a nearby village. Just enough to finance his trips to the local pub. He was carrying a Daewoo TV set, Model T514 (CP365 chassis).

"No hurry for this chaps" he said. "It's supposed to loose the signal now and again. Maybe I've been unlucky. I've seen the fault at the house, but not at my place. You might have better luck."

When Steven tried the set the fault was present. There were on-screen displays but no pictures. He switched the set off and tried again. Up came a picture. But not for long. Half an hour later it disappeared, leaving just the on-screen displays.

It seemed likely that a supply was intermittent. Steven used a magnifier to study the circuitry on the secondary side of the chopper transformer and found several dry-joints. He resoldered the lot and pronounced the trouble cured.

## An Alba 4859

The day wore on and we were also feeling worn. We were just thinking about sloping off to the Barley Mow when the phone rang.

"Hello Mr Bullock, ha ha ha" the voice said. "Sorry to ring you so late, ha ha. Thought I'd just phone to wish you a merry Christmas."

"That's kind of you" I replied, "I didn't catch the name though."

"Mr Nudger of 9 Flupps Road. But you don't know me. I'm a friend of Mrs Slye who knows the church verger. He always speaks well of you, though he reckons you're on the other side, ha ha ha. I've often seen you in the pub with your lads. Nice lads, you should be proud of them."

I looked into the phone's ear-piece. It didn't help.

"Just one thing" the voice continued. "Ha ha. Our set's just gone dead. What a time to fail, eh? Ha, ha. Trouble is my wife's an invalid and her father's just been told he has diabetes. We're out of cat food and Miss Puke, our neighbour, is also a bit down. Her old donkey died a fortnight ago, and you know how lonely Christmas is without the telly. I just wondered, like. I'm only across the road, round the corner and up a bit. Do you think you could pop over? It went wrong when Terry Wogan came on..."

Paul went round and collected the set. We asked Mr Nudger to call round in half an hour's time.

The set turned out to be an Alba Model 4859. Its 2SK2750 chopper transistor R801 was short-circuit. We had ordered some from Alba only a week or two previously and had been sent P2N60s, which aren't insulated like the original type. We had already fitted one in another set, making sure it was insulated from the heatsink, and this had been OK. So we decided to do the same again.

The 0.47 $\Omega$  safety resistor R809 was also open-circuit, as expected. It's there to provide protection



"Here. Take a card..."

when there's a short in the chopper circuit. We also checked the high-value resistors in this area, as they can be troublesome. R802 (100k $\Omega$ ) and R805 (330k $\Omega$ ) were open-circuit while R826 (100k $\Omega$ ) was high at 140k $\Omega$ .

After replacing these items we switched the set on. It powered up nicely and produced an excellent picture.

"This one had less wrong with it than the last 4859 I did" Paul commented. "With that one I carried out all the replacements we've just done and it still wouldn't work. I had to change the TDA4605-02 chopper control chip as well."

Mr Nudger popped in just as we'd finished. "You managed to get it done!" he cried. "So good of you. I've had to park across the road. I'll take the set over and call back."

He took the set and, a couple of minutes later, stuck his head around the door. "Thank you very much indeed boys. You've been very good. I'll spread the word. Oh, I didn't have time to bring any money with me. I'll settle up after Christmas, if that's all right."

He returned to his car at such a lick that I swear I heard the Doppler effect from his footsteps.

# What

# a Life!

**Where on earth did this strange crowd come from? Is it some sort of clinic or a telly repair shop that Don runs? Donald Bullock's servicing commentary**

The other morning I decided to go fishing before work. So I made myself a flask of hot soup and another of hot coffee, wrapped up well and arrived at the pool just before dawn. It was still and cold, and a mist rolled gently over the surface of the pool. I tackled up, fixed my bait and swung it gently. But instead of hearing it plop in, there was a scuffling noise. I looked towards my floats and saw that they were resting on ice. I should have stayed in bed.

My glasses were misting up. When I took them off to wipe them they fell to the ground. As I bent forward to retrieve them my flask of soup fell from the basket on to my shin. I bawled out then heard the crunch of glass.

I was beginning to feel nasty, so I decided stop an calm down.

Someone came threshing through the reeds. It was Walter Wainright, one of our customers, with his spinning rod. He recognised me and smiled.

"Fancy seeing you here Don. Lovely day, ennit? Makes you feel good to be alive. Actually I have my set in the car. Ticking. Caught any?"

I beckoned him over and said a Very Rude Thing into his ear. He jumped up and strode off.

That was enough. Time to get back. When I arrived at the shop Steven and Paul saw the fishing tackle.

"Catch anything?" Steven asked. I shook my head.

"Well, I expect you enjoyed yourself, anyhow" he continued.

I said something that wasn't very polite. They both breathed in deeply and got on with their work. As I was making a cup of tea

Walter Wainright came in carrying his TV set.

## A Ticking Philips TV

"Hope you've got over whatever was bothering you, Donald" he said, then tapped his set. It was a Philips Model 21ST1730/25B – the GR2.1 chassis.

"Dead" he said, "no life at all. No, I tell a lie. It's ticking. I tell a lie."

When he'd departed I removed the back and checked the HT voltage. It was pulsing between 30-60V. So I disconnected the feed to the line output stage, by pulling out the plug for the line scan coils, and connected a 100W bulb as a load instead. The set continued to tick. It was clearly a power supply fault.

I made some checks in the chopper control circuit and found that C2611 (68µF, 25V) produced a high ESR reading. A replacement cured the fault. When I checked its capacitance it was only slightly low at 61µF. It was the resistance that had caused the problem.

## Video/TV Combi

Shortly afterwards William Cramshaw called in with a Matsui TV/VCR combi unit. I don't like these combination models one bit.

"What's up with it?" I asked.

He scratched his brow. "Let me see now, just a moment, let me see . . ."

There didn't seem much point in carrying on with the interrogation.

"One for you, eh?" I said to Paul.

"Not me, Steven does tellys."

I turned to Steven. "You can do this one, can you?" I asked.

"No, Paul does videos" he said.

As I was getting nowhere I decided to make a start on it

myself. I switched it on and found that it was dead. The 2.2Ω surge-limiter resistor R501 was open-circuit and the 2SK2056 chopper transistor short-circuit. I replaced them and switched on again. The unit flickered to life for a second then died. Steven noticed.

"You should have checked R508 – the 47kΩ, 3W resistor there by those two capacitors" he said. It was open-circuit. I replaced it and also the two items that had blown up again. This time nothing at all happened when I switched on.

"Did you replace the TDA4605 chopper control chip?" Steven asked, "it often fails with this fault."

When I did as I was told the unit sprang to life.

## A Monster TV

As I was boxing up the combi unit the door of the shop flew open and a monster TV set with legs staggered in.

"I'm Faggot, Ernie Faggot" it croaked. As it settled on the counter a tiny man appeared from behind it.

"Can't tell you how little it is" he said. "See what I mean?"

"How little what is?" I asked.

He tapped the set. "This 'un. See what I mean?"

I looked at the set, which seemed very big to me, then at him.

"Joo know, 'e ain't this big" he said, holding his thumb and finger slightly apart. "See what I mean?"

"Do you mean the picture is not very high?" I asked.

"Course I do!" he replied, holding up his hand again. "Little as this! See what I mean?"

As he pranced off Steven removed the set's back and went straight to the field output chip.

The set was a 28in. Baird Model RR6890N.

"Struth, I've never seen dry-joints like these" he exclaimed. He spent ten minutes resoldering them then switched the set on. There was full field scan, then it collapsed. As there didn't seem to be anything else amiss he replaced the chip, a TDA8172 (IC401). This time the field scan came up and stayed up.

### Fed up with it

Mrs Bison is a large lady. She was wearing a fur coat and smoking a pipe. Steven raised a polite smile as he wove about through the haze.

"I've brought my what's-it" she announced, "you know, my thingumajig."

Steven's mouth moved a bit, but words escaped him.

"Right fed up with it I am" she continued. "All right to look at, but a pain in the neck. It's in the car out there."

Steven and Paul went out and returned with a 28in. Philips set, Model 28SL5770/05B. It was certainly an attractive set, with its polished teak-effect cabinet.

"Goes into standby just when 'e wants to" she explained, "sometimes six times a night. Then 'e'll work all right for a month. Last night 'e went off when Max Bygraves came on. Course I didn't mind that."

"Course not" I interrupted.

Paul had a go at this one. He tapped about the chassis endlessly and finally found that he could trigger the fault by very lightly tapping around in the line output stage area with a plastic trimming tool. Shortly afterwards he localised the cause of the trouble to the line driver transformer. One of its pins was dry-jointed. He had to use our giant magnifier lens to see this.

### Takes 'is time

"Don't get me wrong" Albert Featherpenny said as he bowled in with a Toshiba colour set. "I ain't saying 'e don't work like. All I'm sayin' is that 'e takes 'is time. We often 'as to switch him on two hours before a programme. And sometimes 'he takes all of three hours. But don't get me wrong. He allus do come on."

Featherpenny's set was a Toshiba 219T9B. Paul removed the back and checked around in the power supply section. As he couldn't find any poor joints or loose connections he decided to replace the electrolytics on the primary side of the main chopper circuit, in the

control section. There are three, the drive coupler C814 (100µF, 50V) and two LT reservoir capacitors, C818 (22µF, 100V) and C823 (10µF, 16V). Once replacements had been fitted the set fired up without any problems at all. It joined the awaiting-collection pile.

### Only so much

Our next caller was a large, bullet-headed man. He didn't seem to be exactly sensitive. "Grype's the name" he hollered, "and I'm calling in about 'er." He jerked his thumb at his wife. "Sits in the dark for hours every night with a silly look on her face. I mean, a man can take only so much. A man can take only so much."

Mrs Grype blinked. Steven didn't know what to do. He coughed and scratched the back of his neck. Paul decided to look for something under the counter. I clattered about in the scullery. When I returned Steven was doing his best.

"Er . . . I . . . what . . ." he muttered. Then his face brightened. "We repair television sets here Mr Grype."

"I know" said Grype. "I want you to get ours to work. After all, a man can take only so much . . ."

The set was a 24in. Sony K VX24WS1U (BE3B chassis). It seems that Mrs Grype had been watching an extremely dark picture for several weeks before the set died. We found that the causes of the two faults were not related.

The set was dead because R600 in the start-up circuit on the primary side of the power supply had failed. When this resistor was replaced the set came on but its picture was so dark it was unwatchable, even in a dull light. Checks on the various supplies showed that the 12V line was very low at only 3V. The cause of the trouble was a faulty MC7812 regulator, IC605. Once a replacement had been fitted the set presented us with a picture of exceptional quality.

### Collections

By now the shop floor was littered with repaired sets and Paul was having trouble stepping around them. Fortunately Walter Wainright put in an appearance.

"Ello, 'ello Donald old fruit" he said. "still playing the prat are we, or have you settled down now? You weren't in too good humour this morning. No - I tell a lie, I tell a lie. You were downright nasty!"

As Walter was paying up William Cramshaw came in, fol-



Mr Featherpenny drew himself up to his full four foot eleven.

lowed by Ernie Faggot.

"Let me see now, let me see" said Cramshaw, "I've called for my set. Let me see, where is it?"

"I've called for mine too" said Faggot, "see what I mean? I hope it's ready. Only we've got visitors tonight. See what I mean?"

As Paul was dealing with these customers Mrs Bison stumped in, followed by Albert Featherpenny and the Grypes.

"Right" said Mrs Bison as she tapped her pipe out on Featherpenny's set, "where's my bloody what's-it? You know, my thingumajig?" She turned to Albert, "have you seen it, my thingumajig?"

Mr Featherpenny drew himself up to his full four foot eleven. "I certainly haven't, and I've no wish to!" Then, as Mrs Bison gave him a withering look, "mind" he said, "don't get me wrong."

"Mr Bullring" said Grype, "if I could just have my set. It seems to be a bit of a madhouse here. How did you get all these nutters together?"

I shone my nails on my lapel. "Influence" I said.

"My set please, Mr Bullring" continued Grype, "a man can take only so much."

Well, at least we'd had a busy time and made a few pounds.

# What

# a Life!

## Ants and electric current, is there a link? No lack of repair work in Spain. In fact all too much of it, mainly from the expats. A lesson in line output stage testing. Donald Bullock's servicing commentary

One thing Spain doesn't lack is ants. I've never seen as many colonies as we have here. The other day I decided to run a mains lead out on to the patio, so that I could listen to the radio while we were sitting beside the pool checking the condition of our wines. Later I noticed that crowds of ants were running along beside the mains lead, in both directions.

After a while Greeneyes switched the radio off. The ants immediately dispersed and found other things to do. Then, when she switched it on again, they immediately returned to their jogging along the lead. I've noticed this before when I have used a power lead in the garden. Who knows the answer to that one?

### Expats

The wine turned out to be good, and improved each time another glass was poured out.

"How good to get away from repair jobs" I said. She patted my hand and made me feel almost as important as her dogs.

But we're not the only expats here. There seem to be hundreds of 'em. Our peace was soon disturbed by Dick Pushie, who sailed through the gates carrying a video recorder – just as we were about to start on the giant prawns.

"Don't say it, don't say it" he grinned, "I know you're not here to do repairs. And I don't blame you. But this 'un's different. It's for me. It can't be much, 'cos it was all right yesterday. If you could just have a look. No hurry. I'll come back tonight if you like."

"If you leave that thing here, Dickence, you'll be lucky to see it in a fortnight" I said, "and I'll charge you the earth."

But he left it all the same. It was a Panasonic NVL25B and it was dead. So I decided to hide it away until I

felt well enough to face up to overhauling the power supply.

Shortly after he left Mr Peste marched in with a computer monitor.

"Drunk again eh?" he guffawed, "here, I've got something for you to do to relieve your boredom. Cuts out every half hour. Can't be much, 'cos it only started doing it lately. Just as well too, 'cos I can't spend much on it. I can get a new Hankypanky 80 Coo Coo for next to nothing at the supermarket when I'm in England next week – with a free overcoat thrown in."

"Call back in August" I said, lunging at the wine bottle and wishing it was whiskey.

### Genius

The next day brought heavy rain and a power cut. It's not all sun, oranges and bullfights in Spain. When power returned I had a look at Peste's monitor. It was a Philips 17A280BQ, the like of which I'd never seen before. As I sat staring into the chopper circuit, wondering where to start, I spotted a little 1M $\Omega$  resistor. Might as well follow hunches I thought. No, not hunches – profound understanding of electronic failure mechanisms! Anyway I tested it and it was open-circuit. A new one put the monitor to rights.

"How did you know it was faulty?" Greeneyes asked.

"Genius" replied.

Then I opened Dickence's Panasonic VCR. Dead, eh? I gazed into the power supply and saw C9, a 1 $\mu$ F, 400V electrolytic capacitor. I don't trust low-value electrolytics, especially when they live a high-voltage life. So I hooked it out and tested it. Almost open-circuit. When I fitted a replacement the machine burst into life.

Greeneyes looked over. "More genius?" she asked.

"You've got it in one" I replied.

"But if you were a bit cleverer you could stop all these repairs coming in" she said. "Here's Tarzan coming up the path now, carrying another recorder."

### Videos

"Mr Blunkett?" piped a high, silvery voice.

I looked around but there was no one else. It was Tarzan talking.

"I'm told you do repairs to these things" he piped, as he handed me an Hitachi VCR. "It's dead. Was all right until the power cut."

I opened it up and noticed another 1 $\mu$ F electrolytic in the power supply. This one was rated at 250V working. I checked it and found that it read 0.3 $\mu$ F. A replacement did the trick.

I looked over at Greeneyes, who hadn't noticed. So I attracted her attention, pointed to the electrolytic and held up three fingers.

"Same to you" she said, "and don't look now, you've another visitor."

She was right. This tall, thin woman with thick glasses was carrying a Daewoo V200 video. She had a bulky hearing aid in her hand. And there was a short woman with her.

"I hear you repair videos" said the tall, thin lady.

As I breathed in to say no she pushed her microphone box against my lips.

"It works only when it feels so inclined" she continued, "like my dear departed husband." She pulled out a hanky, took off her glasses and nearly fell into the pool as she dabbed at her eyes.

"I miss my husband" she said. The short lady laughed.

I breathed in to speak and got the microphone treatment, so I skipped well back and gabbled "give me a call tomorrow".

It was another machine I didn't

know. Intermittent operation could be a difficult one. I dismantled it and gave it a look over, hoping to see something obviously wrong. But I couldn't. I did however see a 1 $\mu$ F, 100V working electrolytic in the power supply. So I checked it and got a reading of 0.5 $\mu$ F. When I fitted a replacement the recorder worked every time. I began to wonder whether I'd acquired some sort of magic, and pondered on how rich I might become.

Just as I boxed the Daewoo up the two ladies returned.

"I couldn't wait until tomorrow" the tall, thin one said, "with nothing to watch I kept thinking of my poor husband."

The small woman laughed again.

I spoke to her as Mrs Tall walked off down the drive. "Forgive me asking, but is there something I don't understand about her husband?"

Another laugh. "You think he's dead" she said, "but he got enormously fat and she threw him out."

### Odd jobs

The next day was sunny and hot again. Greeneyes, who likes to do a little gardening, listed a few small jobs she wanted done. She tends to do that.

"You do realise that since we arrived here I've spent every single minute doing repairs?" I said. "I came here to relax. To loaf about."

As I spoke the gates clanged and a jogger ran in, wearing a silly blue and yellow outfit. He was carrying a VCR - Hitachi VTF70.

"Ha, there you are" he bawled, as though he'd been looking for me for the past week. "This little chap gave up the ghost yesterday. During the power cut. Most annoying. Fix it if it's cheap, old bean. Not worth spending much on them these days. So dashed cheap new."

He passed the machine to me, spun around and was 500 yards away within a few seconds.

I tried a tape in the machine. There was no playback. I couldn't detect any mechanical failure, and feared that there was little else I could do as I didn't have any servicing information. But before giving up I decided to check a few voltages. Those around the STK5372H power chip were obviously haywire, and what's more the IC was running hot.

So later that day I picked up one from Pedro's in the village. When I'd fitted it the machine worked normally.

### Some TVs

That evening we decided to go out for some tapas. "Thank heaven for a bit of peace" Greeneyes said as we

sat down. Bert was sitting at the next table. He does the nasty gardening that Greeneyes' lazy husband ought to do.

"Just the chap" he declared, before I'd a chance even to order anything. "My TV's as dead as a doornail and my missus is giving me hell. I'll bring it around tomorrow."

He did too. It was a JVC C14ET1EK - the 14in. JVC set with an Onwa chassis in it. When I looked inside I immediately saw that the surge-limiter resistor was open-circuit. As I couldn't detect any reason for this I fitted a replacement and switched on. The new resistor immediately failed.

I disconnected the bridge rectifier diodes and carefully checked them. They were all OK, and there was no detectable short across their output. What else could cause this fault? As I was gazing at the chassis and thinking, I spotted a small green disc capacitor with a tiny burn spot. It was one of the protection capacitors in the bridge rectifier circuit. A resistance check across it produced a reading of about 350 $\Omega$ .

No wonder the surge-limiter resistor kept blowing! I fitted a new capacitor and resistor then switched the set on again. This time it sprang to life and produced a good picture.

An hour after he'd collected it, Bert was back with his Spanish neighbour and her set. It was yet another Hitachi product, Model C2146TN.

"He is good, then pff - the picture he flies to the clouds" she said. She looked up, and so did I.

When they'd departed I connected the set and tried it. It worked perfectly, with an excellent picture, for an hour or so then the brightness suddenly died. A voltage check at the collector of the line output transistor Q702 produced a reading of about 2V. So I disconnected its collector and checked again. The HT was now normal. I naturally assumed that there was a line output stage fault and checked the transistor. It read OK, but I fitted a replacement anyway. I then switched the set on again. It worked for about an hour, as before, then cut out. Once again the HT at the collector of the line output transistor was down to about 2V, the transistor read OK and the HT rose to the normal value when the transistor was disconnected.

I checked the usual components in the line output stage - the EW modulator diodes and the tuning capacitors - but everything was OK. Next time the set failed I felt the line output transformer to see if it was hot. It wasn't. Surely, I reasoned, if the HT was suddenly being reduced to 2V some-



*Greeneyes had listed a few jobs she wanted done...*

thing would be overheating? When the set again failed I plied the board with freezer. It made no difference.

I considered the situation. The HT was normal, but was being suddenly reduced to a very low level after an hour or so. There had to be excessive current flow, didn't there? This usually means overheating, but there wasn't any. It didn't add up. What was wrong? Could I be sure that the cause of the fault was in the line output stage? Perhaps the HT was collapsing because of a fault in the supply.

My first priority had to be to isolate the fault area. So I disconnected the line output transistor's collector and wired in a bulb as a dummy load. Then I switched the set on again. An hour later the bulb went out. That cleared the line output stage and indicated the presence of a supply fault. I used the meter to check back from the bulb and came to R738, a 6-8 $\Omega$ , 7W resistor. There was no HT at one end of it, plenty at the other. So this was the site of the fault! I checked the resistor and its joints carefully. The resistor was OK, but the joint at the output side was bad. For an hour or so this had no effect. After that there was enough conduction to operate my digital meter but not enough to operate the line output stage.

Resoldering the joint cured the trouble of course. The lesson was that experience leads us to make assumptions which are usually correct but can be misleading. There's a right way to diagnose faults, and taking short cuts can simply result in wasted time.

# What

# a Life!

**It's mostly the larger TV sets that come in nowadays. We also had a CD player problem recently. And a problem with an NTSC tape. Don Bullock's servicing commentary**

I was guarding the fort with Paul the other day. It wasn't long before we had a customer, Mr Hersey. "Which of you is Steven Bullock?" he asked.

"Neither" I replied, "Steven is out. I'm Don, and this is Paul."

Hersey nodded and jerked his thumb at his car. "I've brought the set in Steve" he said to me. Then he turned to Paul. "Give him a hand with it will you, Don?"

## Big TVs

It was a massive Sony KV24WS1U widescreen model. I didn't fancy trying to yank it about on the bench and decided to leave it to Paul. "I'll do the next one that comes in" I said.

This was a mistake. The set was even larger, a 29in. JVC Model AV29SX1EK. It required the efforts of the customer and the two of us to get it on to the bench.

Paul's Sony set worked all right for a few minutes, then the picture began to break up intermittently with the standby light flickering. "Do you think it could be a bit of EHT discharge?" he asked.

"Dunno" I replied, "why not open it up?"

Naturally the moment he opened it and drew out the chassis the trouble stopped. He spent some time tapping here and there before he managed to instigate the fault by tapping around the tuner, which is on the horizontally-mounted tuner/IF panel. A careful examination of the panel, once it had been removed, revealed several dry-joints. After some careful resoldering Paul refitted the panel and tried again. The set now seemed to be OK, but he put it on soak test to check.

Meanwhile the JVC set was giving me trouble. The complaint was

field collapse. When I carried out a visual examination I saw that the TDA8350Q field and EW correction output chip IC401 had a burnt look about it, so I fitted a replacement and switched on. There was a noise like an exploding crackerjack and the front of the new IC shot past my ear.

Silly me. I should have checked more thoroughly. This chip requires two supplies, at 45V and 16V. Both are derived from the line output stage. The BYW95B-20 rectifier D552 for the 16V supply was short-circuit. After fitting a new diode and IC there were no bangs or earshots – but no field scanning either. The 16V supply was missing because the 0.82Ω, 2W safety resistor FR552 was open-circuit. Once this item had been replaced there was field scanning and a good picture.

"That's two done" Paul said with a smile as I boxed up my set. At this point the soak-testing Sony set's standby light flickered and its picture broke up. Its speaker crackled with laughter, and Paul's smile faded.

"It's done it again" he said. He soon had the panel out for a further check, but every joint looked good. To be sure, he resoldered the lot. But the fault was still present. A tap on the tuner made it worse, and a look inside revealed dry-joints aplenty.

After half an hour's further resoldering he reassembled the set and tried again. This time it behaved itself.

## A CD Player

Mr Drain padded in. He had a blank expression and was followed by his wife. She looked at us and said "he's dim and he won't work".

I looked at Drain and understood. Then she popped a Toshiba CD player on to the counter, a Model XR9219.

"We're expert at CD player repairs, madam" I told her with a smile, "particularly our Mr Paul."

She grinned at Paul but he didn't notice. He was giving me some fierce looks.

"How the devil do I mend this?" he asked when they had shuffled off.

"No idea" I said as I struggled to get a 28in. Loewe 5128 on to the bench. It was dead and had a burnt smell about it.

Paul got into the CD player's power supply section and discovered that R901 (10Ω, 0.5W safety type) was open-circuit. Its output feeds several voltage regulators. To Paul's relief a replacement restored normal operation.

## The Dead Loewe

I searched around inside the Loewe set but couldn't see anything that was obviously wrong. So I plugged it in and switched on. Forty fire-crackers exploded in my ears and Paul made for the door.

I switched off and surveyed the chassis. A wisp of smoke was climbing from a silver chimney in the power supply. When I took out the panel to see what was what I found that the silver chimney was C653 (47μF, 250V) in the 142V HT rectifier circuit. There was leakage from its base, and as a result arcing from the HT line to the earthed copper side of the double-sided PCB.

I removed the capacitor, carefully cleaned the spilt electrolyte and carbon from the board, then fitted a replacement. After that I switched the set on again and monitored the HT voltage. It was correct and

remained so during a soak test. Easy enough really.

## The Sketch

"Dah de dah doe" sang the sketch who danced in with a 25in. Panasonic colour set. He looked at me.

"You'll be Steven, I suppose. Dah de dah de do."

"No, I'm Don" I replied. "Steven is out shopping, and Paul is working over there at the bench."

"Ah!" said the sketch. "I'm Dave, Paul. This is my set." He looked over at Paul. "OK Don?" he asked. "Dah de dah de dah dah."

Just then Greeneyes clopped in, followed by the cat.

"Ah!" exclaimed the sketch, "you'll be Steve's wife. Dah de dah de doe . . ."

"No" I said. "This is Greeneyes, my wife. Steven is still out."

"Of course" the sketch said, turning to Greeneyes and jerking his thumb at me.

"So this old-timer here is Paul, right? Dah de dah de dah . . ."

"No, no, no" she replied, "this, er, old-timer is Don, my husband. Steven is out. This is Twiddles the cat. You're Dave and that's Paul."

Steven came in.

"Who's this then? Asked the sketch. "Dah de dah de doe . . ."

"Steven" I replied.

"But I though Steven was out?" said the sketch, "dah de dah de doe."

I wearily pulled the sketch's Panasonic TV on to the bench. It was a Model TX25MD1, which is fitted with the Euro 2 chassis. When I tried it I found that the picture was confined to the top half of the screen, and that a few red, green and blue lines shot across it intermittently. Perhaps there were two faults.

I decided to tackle the field fault first. The chassis uses a TDA8175 field output chip, IC451. I replaced it and tried again. There was an excellent picture, and I breathed a sigh of relief. The new chip had cured both the field fault and the flicking lines.

I boxed the set up and called over to the sketch. "Your set's ready, Paul" I said, "or is it Steve?"

"Oh, good-oh Dave" he replied. "I shall know where to come next time. Dah de dah de doe . . ."

As he danced off I turned to Greeneyes. "Come on Don" I said, "let's get out of here before we go mental too. Dah de dah de doe."

## An NTSC Tape

While surfing the internet the other day with the help of my younger son James I discovered that one of my favourite films, *Cabin in the Sky*, was

available as a videotape in the UK. I ordered it, then searched other sites for *Stormy Weather*, which I'd never seen but had heard was just as magical. After some time I found that it was available from an American company, as were many other attractive tapes at good prices. I ordered this one as well.

When *Stormy Weather* arrived I tried to play it and soon discovered that it was an NTSC recording. All I got from my VCR were a few lines and no sound. The machine is a bit long in the tooth: it hadn't been replaced because I cannot work modern electronic models with complex control panels. But Stephen thought there was a Toshiba VCR that ordinary mortals like me can operate. The upshot was that he and Greeneyes went off to the shops to look for one that would play NTSC as well as PAL tapes.

Steven is a Toshiba fan. He reckons that the company's products are extremely well engineered. The spares service is excellent, and he finds that Toshiba is very helpful with technical advice and help, even with firms like ours that don't have a Toshiba account. Of how many companys can you say that?

Stephen and Greeneyes discovered a Toshiba V709B that appeared to fill the bill and was on offer at £179.99. But the only one the shopkeeper had was in the window. He seemed reluctant to disturb his display. The same machine was on offer, this time at £169.99, at a nearby shop which could supply one in its box. So they bought it and returned.

The machine is compact, well finished and simple to operate. It has four heads, one-touch recording, simple channel selection, a scart socket for AV input/output, another for satellite purposes and separate audio output sockets. Other features include automatic digital tracking, Nicam sound and Video Plus capabilities. The handset works even for me, and from the garden. The auto set-up works a treat.

There are lots of features that baffle me, so I don't think about them. I settled for being able to operate the controls necessary for simple recording and playback. It's an excellent machine to handle, with very good performance. We'll see how it behaves.

## A Request

I've searched the internet for another videotape I nearly had once but have been unable to get since. Let me explain.

In the Seventies the BBC sent



Paul made for the door . . .

cameramen and actors to a nearby village and produced Laurie Lee's *Cider with Rosie*. It was to be transmitted one evening at a time when we had to be away. So I slipped out to get a new VHS180 tape, put it in the machine and set the timer carefully. We then departed. It was a Fujitape.

When we returned we found that the tape had moved only an inch or two then stopped. So we had no recording. I tried another tape, which worked, then tried the Fujitape again. The machine stalled. I tried the tape in another machine which also stalled. When I picked up the tape's box a tiny slip of paper fluttered out. It contained a warning, printed in red capitals, to fast forward and rewind the tape before use. I hadn't noticed this and of course hadn't done so.

My efforts over the years to get a copy of that programme have been unsuccessful. Recently James found a dealer who was offering it on the internet, so I ordered it by bank card. It turned out to be no longer available.

If any reader can find a copy for me I would be delighted. One final word about it. ITV recently produced a different version of *Cider with Rosie*. I have this one. It's the original BBC one I'm after.



**TV expertise and how to handle the customers. Reflections on the trade in earlier, happier times and the present decline. Don Bullock's servicing commentary**

**WHAT A LIFE**

"He fades, then he cuts out right to nothing" said Mrs Ponsonby as she settled her fluffy little dog on our counter. "Sit there Fifi" she continued, "if you're good, Mr Bullock might find a tit-bit for you to eat."

As Paul slipped out to her car for the set I smiled at Fifi and Mrs P smiled at me. Then she looked away and I gave the dog a cuff. It flew off the counter, yelping.

"Stop being a silly, Fifi" she said as she sat it on the counter again, close to me, "or Mr Bullock won't like you. And that'll mean no snackies."

I smiled indulgently.

The set was a Ferguson C49F. Paul connected it up and switched it on. Sure enough the picture began to fade. It didn't take him long to find some classic dry-joints at plug BV03, which connects the heater and HT supplies to the CRT base panel. Resoldering them put an end to the fading, but a minute later the line output stage died. This was obviously a separate fault. Paul and Steven conferred over the lifeless chassis and decided they would need a bit of time.

"I'll call back when you ring me" Mrs Ponsonby announced. Then, turning to me, she continued "look after my Fifi while I open the car door, there's a dear."

As she went Fifi stood up and bit my hand. I clouted its ear. Fifi yelped and barked at me, so I gave it another clout. Then Mrs P came back in.

"Stop being so noisy, just because nice Mr Bullock hasn't got a snacky for

you" she said to the dog.

"I gave her one while you went to the car" I said, "she just kicked up."

Mrs P smiled. "How kind you are" she said, then scooped up the dog. "Come on you little silly" she said.

**Cutting out**

The cutting out proved to be a difficult and time-consuming fault. There were some dry-joints, which were resoldered. Some more were found and attended to. After that the set seemed to be working all right, so it was boxed up. But as soon as the back had been fitted it cut out again. Paul then discovered that the set could be made to trip by flexing the chassis ever so slightly. But a search for a hairline crack, using our magnifier, failed to find the cause of the tripping.

We eventually got to the bottom of it however. The TDA8218 field timebase and line generator chip IL01 has a V-shaped heatsink attached to its top. During manufacture it had been crushed slightly. As a result, its right-hand side was almost touching some of the IC's pins. When the back was refitted the board was flexed slightly, shorting the heatsink to pins 1-4 of the chip. Fortunately the IC had withstood all this, and bending the heatsink back cured the trouble.

When Mrs P called back her dog looked at me and howled.

"Don't start that again, Fifi" she said, "there's no kinder man than Mr Bullock."

I smiled nicely and waited for the

JASPER

chance to give it another clout.

But she swept Fifi up and went to depart. "We'll see that nice Mr Bullock again, won't we Fifi?" she cooed.

"Hooee wooo" howled Fifi.

### Field trouble

"Sharp it is" said the chap who bounced in with a set whose cabinet had been in the wars. "It don't say so but I know, 'cos I left it in front of the fire one night last year. It's a Sharp all right. Something funny at the top of the screen."

The picture was cramped at the top, with separate red, green and blue bands. Steven suspected the TDA8170 field output chip IC501 and fitted a brand new replacement. The result was field collapse. Puzzled, Steven fitted another one. This brought back the field scanning, but the initial fault was still present. He decided to carry out some scope tests.

There should be 23V at the supply pin 2. Instead there was 15V with a lot of hum. Time to check back to the source, where the 100µF, 35V reservoir capacitor produced a reading of 30µF. A replacement restored the correct voltage level and cleared the fault symptoms.

"It certainly looks like a Sharp set" said Steven, "don't know about the model number, but several use this arrangement."

### The Mulligans

Mr and Mrs Mulligan came in with a Ferguson set. Mrs M is lovely. But Paddy, her husband, is a huge, rich fiftyish market trader who wins every argument he gets into – and there are many – without needing to say a word. He uses his raised chin and, to emphasise his point, clenches his fists.

"Set's dead" he announced as he placed a 21in. Ferguson model on the bench. "And don't be telling me it isn't."

I looked up at the underside of his chin. "I'm sure it is" I said. "Steven, Paul: Mr Mulligan's set is dead!"

"But the button things light up" said Mulligan.

"Right" I said.

The Mulligans departed and Paul made some checks in the power supply. There was HT but no start-up feed. A check on the TDA8138 multi-output regulator chip showed that its 17V input was present and there was a 5V output, but there was no 12V output. Was this output being loaded down or was the chip faulty? Paul decided to try a new TDA8138 first. This brought the set back to life.

### A Granada set

An old banger drew up in front. The Reverend Goode alighted.

"Donald, your looking bonny" he said. "I've brought you the verger's set. It's a Granada. He says it's dead. Would you take a look at it for him?"

When we switched it on there was no

picture or sound. It was a CD66JS6F.

"I'm off to get some whiskey" the Rev. announced, "I'll pop in on the way back. You will get it right, won't you?"

When we took the back off we saw that the TDA8170 field output chip had blown its top off. Not surprisingly, R715 in its supply had failed. So replacements were fitted. When we tried again the top of the new chip flew past Paul's ear. It taugth him all about the Doppler effect.

Time for a more detailed investigation in the field output stage. We found that C658 (3,300µF, 35V), C705 (1,000µF, 35V) and C706 (2,200µF, 35V) were all leaky. Then we checked R715 again. It's actually a circuit protector, type N25 (1A). Not surprisingly it was open-circuit.

We replaced these items and fitted a new chip. When we tried again Paul ducked. He needn't have bothered. This time everything was OK and an excellent picture appeared.

"Excellent, Donald" the Rev. declared on his return, "you're for heaven, that's for certain."

"But not just yet, eh?" I asked.

"Excellent" the Rev. laughed, "that's a good one Donald."

### Times past

A recent article brought back to my mind the rather different conditions in the trade in earlier times, and the way in which leading companies then operated. Take Ekco for example. When Mr E.K. Cole decided to start producing radio sets he gathered together some leading engineers to work on his ideas. It took them some time to come up with a design that Cole considered to be worthy of the name.

When he was satisfied, he put the set into production and insisted on quality checks throughout the production process.

Then he sought a limited number of top-class dealers, generally one in each town. They were closely checked to assess their integrity and service capabilities. If they passed muster, he offered them a sole Ekco agency on certain conditions.

They had to stock and display his range of products, agree to demonstrate them in the homes of prospective customers, and sell them only at the recommended retail price. In addition they had to promptly service all in-guarantee Ekco products, both those they had sold and those brought in by people who had moved to the area. They also had to service all out-of-guarantee Ekco sets, whether the repair was profitable or not.

In return, he undertook to provide sales leads from national advertising, technical training, excellent service sheets at no charge, and advice on any technical problems that became apparent. Where modifications were advisable, the components required were provided promptly at no charge. Each dealer was duty bound to implement these modifications. He set the highest standards

throughout his business.

The same was true of Mr Murphy and his sets. When our local Murphy agent retired, the town was checked to find a suitable replacement. Our company was one of two that were considered for the franchise, and in due course we received a visit from a couple of representatives.

We were closely questioned on a variety of trade matters. After that our workshop and technical capabilities were checked. We were then told that they would let us know.

In fact they chose the other dealer. I couldn't complain. He was a good man who had been established for many more years than we had, and already had the local Ekco dealership. He went on to sell a great many Murphy sets, made a lot of money, and deserved to.

They were good times for this trade. The setmakers took a pride in their products, and dealers took a similar pride in their standard of service. The public were offered first-class products with an excellent after-sales service. These who wanted to buy cheaper products could do so.

Then some kind sole decided to make Retail Price Maintenance illegal. The whole trading system collapsed, and our trade was never the same again.

### Today

The article that set me thinking about all this was Michael Maurice's piece in the March issue. It was closely reasoned and summed up the present dire situation. "Ours is a diminishing and dying trade" he said: these seven words write a book.

Michael referred to the cheapness of today's products. Mass production, free trade and the excessive value of the pound have all contributed to this, and Joe Public has got used to paying less for more. Unfortunately, the less a product costs, the less Joe Public feels inclined to spend on repairs or a reconditioned set.

Michael is also right in saying that Joe Public no longer knows or cares what make his set happens to be. In our trade, pride of ownership has gone. It's not the case in the motor trade. Thirty years ago most of our customers would identify the make of their sets as soon as they brought them in. No longer.

It's true but sad that our trade is in decline. There are no newcomers, and numbers are falling. Think of the number of independent dealers there used to be in your area, and count how many are left. Customers suffer. It's no good telling the pleasant lady at Argos about the way your picture flutters on Channel 5 at twenty past eight every night.

But Michael's comment that "in most trades or professions you are over the hill at 35 and positively old at 46" really twists the knife in for me. Oh dear. Slip the Aspirins into my quivering hand somebody.



**Customers and their mannerisms. Pops and blow ups. Servicing in earlier times. The problem with car radios. Donald Bullock's servicing commentary**

**WHAT A LIFE**

There's something about this trade that makes you notice people's mannerisms. Take Mr Worrett for example. The other day he struggled in with a 28in. NEI Nicam teletext set. He kept opening his mouth wide while shutting his right eye and rubbing it.

"My eye's itching" he said. "The screen's blank, dark and narrow and the remote control don't work." Then he heaved the set on to the counter, stretched himself, opened his mouth, shut his eye and rubbed it.

"You need a shot of Joshua Juice" I told him, "there's a chemist over the road." As he departed, we took his set to the bench.

It was a Model E28G1TFXN, which is fitted with the E5 chassis. It seemed sensible to start by checking the voltages on the secondary side of the MOSFET chopper power supply. Most were OK, but there was only 2V instead of 8V across D683's reservoir capacitor C692. The output from this rectifier circuit feeds a 5V regulator transistor, T681. We decided to check the 2-2Ω fusible surge-limiting resistor R686, which is in series with D683, and found that it had risen in value to an astonishing 500Ω. As we couldn't see any reason for this, we simply replaced it then switched on again. We now had a picture, and the remote control unit worked. But the picture was narrow, with a one-inch gap at each side, and was slightly too dark.

This suggested trouble in the line output stage, and a check on C704 (2.2nF, 1.6kV), which is part of the tuning circuit, revealed that it had fallen in value to 54pF.

It was an Iskra type, which is suspect in this position, so we fitted a different replacement. The result was a full-width picture with normal brightness.

It wasn't long before Mr Worrett returned.

"Got 'im done boys?" he asked. When we nodded he stretched, opened his mouth, closed his eye and started to rub it. Then he reached for his wallet.

**Pop, pop, pop**

Our next caller, Mrs Autridge, has a long, scraggy neck. She's all right until she starts to speak, then she starts to lift her chin and stretch her neck as though trying to pull a few extra inches out of her collar. She had with her a 21in. Sanyo Model CBP2145 (E2-B21 chassis).

"E goes pop, pop, pop when I switch 'im on, an' the picture's snowy" she said as she stretched her neck. "but when 'e gets warm 'e's better."

Steven took the set over to the bench and got into the power supply to check C364 and C398. They are both 100μF, 16V 105°C electrolytics and are the reservoir capacitors for the 12V and 5V supplies respectively. When checked, both were found to be very low in value. We had only ordinary 25V types, so fitted these. While there was an improvement the faults were still evident. Further checks failed to reveal anything amiss, so Paul went out and obtained the correct type. Fitting them did the trick.

**About to blow up?**

Mrs Weir always looks and sounds as if

she's just seen a ghost. She padded in with her husband's VCR, which was a Panasonic NVJ35.

"I think this has been Visited" she said, pointing a long finger at the machine's tape slot. She tucked her chin in and looked up at me.

"It's dead all right, but when you plug it in there's a noise as if it's about to blow up" she continued.

I stepped back smartly, then pulled myself together.

"You've brought it to the right place, Mrs Weir" I replied, "our Mr Paul is an expert on these Panasonic machines."

Paul plugged it in. It was dead and, sure enough, started to tick.

"Wonder what's causing that?" he asked.

"Dunno!" I replied, "perhaps it's about to blow up."

He spent a good while checking through the electronics and eventually found that when he carried out some tests around the microcontroller chip IC7501 the ticking speed increased. When a new IC was fitted the recorder came back to life, minus its tick.

### Cider with Rosie

The note I included in the May issue about my failure to record the original BBC version of *Cider with Rosie* brought me a welcome phone call from John Bateman, in Somerset. He had also set out to record the programme, all those years ago. But there was one important difference. He had succeeded, and has the recording to this day.

He made and sent me an excellent copy, and the other night Greeneyes and I were able to settle down and watch it. The programme I had set out to record depicted Laurie Lee's childhood in an isolated village nearby, fifty years earlier. By the time I came to play it, twenty eight years later, its nostalgic value had greatly increased.

I'm most grateful to John, not only for sending us the tape but also for bringing back, during our conversation, so many memories of this trade in those earlier times. He too had worked for the legendary John James in his Broadmead Wireless Company days.

"I could tell many a tale of the chaos at that time" I told him.

"Me too" he replied. "I found his set up so legendary that one day I upped and walked out, never to return."

We swapped one or two yarns and, later that night, while checking the quality of our whiskey stock, I reflected on some of the mishaps that befell me over my years in the trade. I remember one particularly awful day all too well.

### A bad day

There had been a bad start to the day. Our van had gone in for a service and the engi-

neer's report meant it needed big money spent on it. With this on my mind I decided to do my service calls in the car, which was a Mk 10 Jaguar.

The set at the first house had an intermittent fault. I decided that it would have to be dealt with in the workshop. The customer was edgy, but offered to help me carry it out.

"What might it cost?" he asked as we trudged down the path.

"All depends" I replied. "It could for example be the tube."

Just then he caught sight of the Jaguar and froze.

"Hang on" he said, "I don't think I'll bother. Let's take it back in."

The next call was at an isolated farm cottage across a meadow, where an old woman was with her strange son of about thirty. He was somewhat unkept, and sat by the fireplace in a haze of tobacco smoke, surrounded by matches and lighters and ashtrays and packets of cigarettes. He lit one up then another, and had two going at once.

As I picked the set up he threw back his head, bawled and threw himself flat on the floor. The old woman started to whimper and ran around me.

"He's gone again" she cried. "You'll have to help me get him to the doctor. There's no telephone. We gotta hurry!"

The upshot was that we half dragged and half carried him across the meadow, then into the car, and sped to the doctor's house.

"Again?" said the receptionist.

### Not quite myself

By the time I reached the next house I was not quite myself, and tried to change a line output valve while the set was still working. I received such a large dose of pulsing RF that I shouted a naughty word and threw my tools across the room.

As I left the house I realised that I was late for an important meeting back at the shop. So I ran to the car, flung open the door, sat down and tried to pull myself together. Then I brought my hands up to the steering wheel.

It wasn't there. Nor were there any foot pedals. And there was no dashboard. In my haste I had jumped into the back seat.

Two or three people outside a paper shop had witnessed this and were curious. I did the only thing I could. I adopted a nonchalant air, fiddled with some imaginary papers on my lap, then fiddled a bit more at my shoelaces. Then I climbed out, casually, and re-entered the car via the driver's door. I drove off sedately until I was around the corner. Then I drove like hell.

### Car radios

Years ago I learnt the hard way not to get involved with the repair of car radios. At first it had seemed a good idea. There

were lots of them about and, since they used valves and mechanical vibrators, they tended to be unreliable. In addition they were not all that difficult to repair. So I cordoned off a corner of the workshop, rigged up a 12V car battery and a simple charger, slung up a simple aerial and a speaker on a hook, and settled down to make a few extra shillings.

They came in all right. But all too often the real trouble started a day or two after a radio had been collected and refitted in its car. The internal phone would buzz, and I'd answer it.

"Mr Chipper is here about the car radio he picked up the other day. He says it isn't quite right. Could you pop down and have a word with him?"

Down I would go. Not to speak, but to listen. This sort of thing:

"It crackles a bit when I signal left. Didn't do it before."

"It's not as clear as it was."

"It cuts out when I go under a bridge."

"It used to be louder on Luxembourg."

And so on. The upshot was usually an unwilling walk to some remote car park, or to the edge of town, where the car was parked. Sometimes it meant a drive to the offending railway bridge.

It always ended up with me crouching, wedged under a dusty dashboard, to press the aerial plug in or tidy up the battery or earth or speaker connections. Having done so I would find myself imprisoned there while the fanatical owner fiddled and twiddled and tuned and tested, and revved up and gradually convinced himself that all was now well.

After two or three consecutive outings in the rain, during one of which I had to buy a tin of Vaseline and remake the owner's battery connections, I decided I'd had enough.

On the way back I bought a drawing board. It wasn't long before our new sign went up: "No car radio repairs accepted."

### Sad loss

My brother Terry died last week. He had a fine sense of humour, which was often directed towards me. I've mentioned him now and again in this column in the past.

He'd been all right a bit earlier, when I'd left to return to Spain. Then I got a telephone call to come back, and arrived to find him semiconscious.

"Donald's here. Can you see him?" he was asked.

"I can smell him" he replied.

"Would you like some orange juice?" they asked him.

"Hm" he said, "two pieces of ice, a splash of juice and - he lifted his thumb and finger well apart - that much whiskey." A little later he slipped away.

# WHAT A LIFE

**Customers and their equipment, the difficulty with today's barbers, and an unusual overheating power supply problem. Donald Bullock's servicing commentary**

I'm in the doghouse again, and Greeneyes' spoilt little dog Flash is living the life of Riley. I had knocked up a Mark 2 version of my electric shock machine and installed it at the doorway of my writing hut in the garden. This provides a rich current flow from the step to anything that's making it wet.

Flash let me know, in his own special way, that it was quite effective. He did a few backward somersaults then shot off at 80 m.p.h., yelping his delight. Greeneyes mistook this for a sign of his displeasure.

"You're a wicked sadist" she informed me coldly as she scooped up the mutt. Then, to the dog, "come on to mammy, Flashey Washey."

After that she stopped speaking to me, which was unfortunate as I badly needed a haircut and Greeneyes has been my barber for years.

A day or two later I thought I'd call a truce, mainly because it had turned hot and my straggly hair was annoying me. But she turned on her heels and went off to fondle the dog. I wandered back to the workshop just in time to run into Mrs Gabber.

## No Light

"Ah, Mr Blower" she gushed. "What's the matter with your hair? Now, you won't believe this, you simply won't. You won't believe it."

I stopped and looked at her. She seemed reasonably intact.

"My light's gone out" she said.

I believed her.

"It's my Ferguson video recorder" she added. "I disconnected it from the mains supply to clean the room and when I plugged it in again it was dead. No clock display, no nothing. What else could I do? Anyway four hours later the clock was back on again. Ah, I thought, it's all right now. I won't have to take it to that Mr Blarney's place and have to pay him a lot of money to repair it. And what do you think happened next?"

I shook my head and looked blank.

She brought her face close to mine. "It went off again Mr Bullfinch" she said.

I fetched the machine, which turned out to be a Model FV71LV, from her car. Paul had a look at it and found that it worked all right, except for the clock. When he checked its DC supply he found that it was low, which led him to CP41. This 10V electrolytic smoothing capacitor had fallen in value from 220µF to 35µF. A replacement restored the clock display.

When she called to collect it, Mrs Gabber eyed me closely. "There's a good unisex hairdressers just behind Grubbs Foodstore Mr Butcher" she said.

When she'd gone I looked in the mirror and decided to slip out to a barber. The last time I visited one I paid a shilling. It wasn't a high price for a chap whose pride was at stake.

The first one I came to was full of women and kids, in addition to a few trendy-looking saps in trousers. So I tried another – and another. They were all the same. And some had women barbers.

I went back and made some telephone enquiries. "You won't find an old-fashioned men's barber" I was told, "we're all unisex hairdressers these days. Have to move with the times you know."

## Stuck in Standby

Not knowing what to do I went to the workshop, where Steven was talking to a tiny man with a strong Irish accent. He'd brought in his colour set.

"Name's Amstrad" he said, "and the set's a Murphy."

Steven looked at the set. "Seems to be an Amstrad" he said.

"Ha, then it would be me who's Murphy."

"What's the trouble?" Steven asked.

"Dunno" the man said. "I tink I'll take an Aspirin when I get home."

The set was a Model CTV3121N, about twenty months old. It was stuck in standby. Steven put it on the bench and, after carrying out some checks, found that there was trouble in the line output stage. Some further tests showed that the line output transformer was the cause of the fault. A replacement is available from CPC at £20.32 plus VAT.

The part number came as a surprise: AM60420000280! We ordered one which

turned up next day. It looked different physically from the original, but fitting it cured the fault.

## Repent

Mr Cantor has the sharpest and shiniest red face I've ever seen. He came in with a Goodmans TV set and, while I was booking it in, put a leaflet over the job card.

"Repent" it proclaimed.

I looked up at Cantor, who smiled. "It's never too late" he said.

"If you know about a filthy little dog, that's not so" I replied. Then I tapped his set, which was a Model 2032. "We'll try to have it ready tomorrow" I said.

There were signs of burning in the line output transformer area. I feared the worst, but the cause was the 330pF, 2kV tuning capacitor C444.

Next day he was back to collect the set. Before he left he smiled and leant towards me.

"What shall it profit a man if he gains the whole world and loses his soul?" he asked.

Shortly afterwards Mr Murphy was back for his set. This time he had his wife with him. They were delighted with the picture their set displayed and paid the bill in cash – with an extra fiver for Steven.

"It's never been as good" Mr Murphy said. Then he leant towards me. "I don't like to say this, sorr, but you could do with a haircut."

## A Philips FL1.6

When he'd gone I looked in the mirror again. "It's either a haircut or a cheap violin for me" I muttered. But my thoughts were interrupted by the arrival of Mr Crust. He struggled in a with a 25in. Philips set, Model 25ML8500/05B (FL1.6 chassis).

"It's a very high quality receiver" Crust told us, "but it's dead."

He was certainly right about the





specification. It's a digital scan set that operates at a field frequency of 100Hz. The 3-15A mains fuse was open-circuit, and we soon found that the BUT12AF chopper transistor Tr7216 was short-circuit. There were several dry-joints in the line output stage, and these had no doubt contributed to its failure. After carefully resoldering each one and fitting a new transistor we switched on and were rewarded with an excellent picture.

A day or two later another of these sets came in with the same fault.

When Mr Crust came to collect his set I tried to keep a low profile – I didn't want more comments about my hair. He didn't make any, but I had the feeling that he studied it a bit.

### At the Barber's

I simply had to get it trimmed and decided to phone around in the next town.

"I'm looking for an, er, mature type of barber. One with a little corner shop and a few older men sunk into a few old-fashioned chairs" I said to one likely sounding hairdresser.

"I've been here thirty years" the barber said soberly, "just pop in and you'll get the haircut you want from me or my assistant."

I sped off and found the shop to be as I'd hoped. He was chatting to his customers in the way I'd expect. "Want anything for the weekend, sir?" I was delighted.

As my turn came I sat in the chair and the barber flung his cloth over me. Then he slipped on his jacket and walked out. Two or three women came in and sat on the chairs, and a young lady in a smock came through a door at the back of the shop. She smiled at me.

"Just a light trim is it, love?" she asked.

**"Would you be good enough to cut my hair?" I asked gently.**

**She nodded and went off to get the scissors. I kicked the dog's bone away and gave it a good clout.**

I was cornered. All I could do was nod. She threw a jug of water over my hair, took a curly pink comb and a pair of nail scissors out of her pocket and started to comb and snip and pat my hair. Not at all what I wanted.

"What's your job dear?" she asked, "is that your used car place at the top of the road?"

"No" I declared, "I'm a television engineer."

"Our set needs a panel thing" she continued, "have you got one that would do? It's a brownish set, about this big."

She drew a big square in the air with her scissors.

"We got 'im from Jaspers, only he's a rogue. Charged us five pounds last time it went wrong. My boyfriend said it was just a loose wire. You've a lot of rogues in your trade, 'aven't you? Course we don't watch it much."

After an age of this sort of thing she said it was done. I looked in her mirror. My hair seemed the same to me, only wet.

"Five pounds seventy five" she said. I went dizzy but paid up, then ran out.

The car mirror confirmed that I still

needed a haircut. On my way home I popped into our butcher's shop.

### Return

When I got back I looked for Greeneyes, who eyed me coldly.

"I've behaved very badly" I declared, "treated Flashey Washey very badly. Devil must have got into me. Promise I'll never do it again.

I opened the newspaper parcel and a huge bone fell out. The dog went for it and wagged its tail. Greeneyes gave me a warm smile.

"Would you be good enough to cut my hair?" I asked gently.

She nodded and went off to get the scissors. I kicked the dog's bone away and gave it a good clout.

### Power Supply Problem

I've mentioned before that when we are in Spain we receive BBC Radio 2, 3 and 4 via satellite. The signals are fed to a low-power FM transmitter that enables us to hear the broadcasts anywhere in the house or garden using an ordinary VHF radio receiver.

Various regulator units that I tried out for powering the transmitter were not as stable as they might have been. I finally settled on a fairly rugged one from CPC, order code PW00140. It's an extremely stable unit that can deliver 1.2A at 14.4V, which is far in excess of what's required. I considered this to be just as well, as the transmitter is in continuous use.

The other day I was surprised to find that the power pack had become very hot and was giving off a strong smell of burning. Yet the transmitter was still working normally, with its usual current consumption. I switched the power supply off and placed it near an open window to cool down. A few hours later I tried it again, leaving it in the same position.

This time it ran coolly all day. So I came to the conclusion that it was OK, though I couldn't account for the earlier overheating. I then returned it to its previous position by the satellite receiver.

A few hours later I noticed the burning smell again, and found that the power supply was hot. I also established that it ran coolly when placed elsewhere. I was forced to the conclusion that the overheating had to do with the power pack's position. It had run coolly for ages in one position: what had changed?

Then Greeneyes came in and switched on Jimmy Young. I noticed how much better my substantial, powerful new loudspeakers reproduced that unusual voice. That was it: my new speakers! One of them was only inches away from the power supply.

I soon confirmed that the proximity of the speaker was the cause of the overheating. Presumably its bulkier and more powerful magnet inhibited the alternating flux changes in the core of the power pack's transformer, encouraging its primary winding to work harder and, in the process, overheat. ■

Holiday time, when you can forget all about TV sets and VCRs. Only it doesn't always work out that way. Donald Bullock's troubles started even before he got aboard the plane



# WHAT A LIFE

It was time to return to Spain. Green-eyes and I were looking forward to a nice rest, away from TV sets and VCRs and the like.

"I don't want to see any television there" she said, "I just want to loll about in the sun and visit little Spanish restaurants and bars tucked away in sleepy fishing villages."

"But I suppose I'll have to face up to a bit of work" I replied. "There'll be the latest batches of whiskey to check out, and I'll have to make sure that the giant prawns are still up to standard. But no television pests or repairs. If anyone sidles up to me and says he's sorry to bother me but his set isn't quite right, and asks his missus what was on when it went on the blink, there'll be trouble."

The latest issue of *Television* arrived as the boys were preparing to take us to Birmingham airport. I picked it up to read on the plane, then off we went.

## The Camcorder

As we were sitting in the departure lounge a fat fellow caught my eye.

"Excyouse me" he smiled, "but I see you're reedin a magazine oi like. Good, aynit?" He sat down beside me.

I gave him a watery smile and gazed around the room.

"That what a life column's crap though, aynit? Cor, I'd like to meet that Donald Bullock and tellim wot a prat he is."

I looked at him afresh and noticed a few things I'd missed previously. He had close-set, furtive little eyes, long straggly hair and a red nose. Not a nice fellow at all.

He smiled again. "Oim not in the trayde. They can't 'ang that on me. Oim a skilled man. Troipe dresser. You need skill to be a troipe dresser."

I smiled understandingly, cadged a humbug off Greeneyes and gave it to him.

"Oi 'ad a Samsung camcorder brought in the other day" he continued, "a VP-A20. Owner complained the dew indicator kept cummin on. Well they do, don't they? The dew sensor goes. I mean, I've 'ad it several times loike."

I gave him another watery smile.

"Anywise I did wot I olways do with 'em. Fitted another loading motor assembly."

I looked at him sharply. "A loading motor assembly?" I questioned.

He nodded. "Yow've got no choice but fit the complete unit. Didn't you know

that loike?"

I smiled knowingly. "Oh yes, er, yes of course" I said.

He stood up, looked at me and walked off.

Greeneyes caught my eye. "Not a bad start to your 'no TV' holiday" she commented.

## In the Plane

In the plane we were sat next to a lumpy looking fellow in a jerkin thing. He too noticed the magazine.

"I pokes about with tellies" he said, "it ent me job. I'm a cleanliness inspector. Come across a telly atopa noshbox the other day. Toshiba 175T9B if I remembers right. 'Ad a picture but a funny un. One minute 'e was tall, like this." He stretched himself and put up his hands, as though I had a gun. "An' the next 'e went down like this." He sort of crumbled, as if shot.

I gave him the fisheye smile. "We call it a field linearity problem" I said.

He ignored that. "Well, I went into the local telly shop and asted the chap what it was. Didn't want to know. After I'd called a few more times 'e gave me a condenser thing. Replace C317 with this un" he said. "I did, and it cured the problem. Here's the old un. Looks all right though, don't 'e?"

He showed me a 4.7µF, 35V electrolytic capacitor.

"Mendin' tellies is easy, ennit?" he added.

I looked at him then slipped the magazine to Greeneyes. "You have this, it

keeps getting me into trouble" I said.

The woman at the other side of Greeneyes smiled sweetly at her. "My husband's like yours" she said, "he's ever so clever."

"That's the first difference" I muttered.

The woman rattled on. "He's got a soldering iron thing and all. Mended our video the other day. It's an Akai. There were speckles over the picture, even on films from up town. We weren't going to go to any of them telly rogues and pay through the nose. Oh no. Did it himself for nothing."

I noticed that Greeneyes' eyes had glazed over. But the lady was now in full flight.

"Well, he said it was earthing spring trouble or something. Took the little printed panel thing off the top of that big round head thing, cleaned the spring and retensioned it with his fingers, then put it back together."

She leant forwards and half closed her eyes. "And do you know, that recorder thing came as good as new. Yes, as good as new. Now a shop would have charged us - I don't know what. A hundred pounds I expect."

When the woman had dozed off, Greeneyes asked if I knew about that one.

"It's a common fault with the Akai VSG770 and the other models in the range" I replied.

### **Paco's Bar**

We arrived in the baking heat of Alicante airport and sloped off to Paco's bar. For once the television set was silent. In fact it was missing off its high shelf.

Paco, who used to be an electrician, had the chassis half out of the cabinet on one of his dining tables. After pumping my arm and giving Greeneyes a big kiss he pointed to the chassis.

"This I no comprehend" he said. He beckoned me over and used his simple meter to check the set's line output transistor, which he had removed, showing me that it was short-circuit.

"So I buy this one" he continued, showing me the new one he had just fitted. "But the set - he still no work."

It was a Philips set fitted with the AA5 AB chassis.

"Stop" I said, "or you'll have another blown transistor." Then I checked at the back of the connector on the scan coils. Sure enough there were some dry-joints.

"Resolder these and try again, Paco" I said. He did, and the set worked.

"You very clever" beamed Paco. "I tell everybody and you will earn lots of money."

"Paco" I said, "don't breathe a word to anybody. We came here to eat and drink and relax."

### **Jose's Bar**

A while later we arrived at our holiday home and set off for Jose's bar. Jose, who always has the latest Mercedes car, serves delicious

prawns with garlic dishes. As we drew up I noticed a TV service van in the car park.

"Ah, justa the chap" cried Jose as we entered, "what do you think of this?"

Miguel, a young trainee TV mechanic, had just loaded the bar's television set into his van. Jose had also got him to have a look at his camcorder, a Panasonic NVM7B. The E-E results were normal, but it would play back only in black and white.

"I no good yet" Miguel told me, "I am new. Can you repair it?" He had partly dismantled the camcorder.

I shook my head. "I'm no good either" I said, as I peered into the chroma section. Then I noticed that there was virtually no solder at the collector of the chroma amplifier transistor Q8006. "Try a drop of solder here" I said.

He did, and it cured the trouble. In no time Greeneyes and I had a dozen giant prawns in garlic on a plate as large as a dustbin lid. Our table sat crowded with drinks.

"You very clever" cried young Miguel. "It is because you are old. Jose's television set, in the van, is another mystery. See this."

He ran to his van and returned with the set. It was a Sony model fitted with the BE2 chassis, which I know fairly well.

"This set too sometimes has no colour" Miguel said, "why I don't know."

The fault is fairly common with this chassis. It's often caused by a dirty trimmer in the colour decoder's reference oscillator stage. I dropped some switch cleaner on to it, twiddled it, then reset it precisely as before.

When Miguel tried the set the colour was back. "You want a job with my firm?" he asked, "I see my boss."

I put my hand on his arm and shook my head emphatically.

"I tell my customers about your skill" cried Jose.

"Not a word to a soul" I replied.

### **Syd**

Greeneyes looked at me when we got back to the villa. "Some holiday" she said.

"We've hardly arrived in the country and you've been doing nothing but carry out repairs, and all for nothing. Maybe life would be more peaceful if we went back to England and the shop!"

A knock on the door interrupted us. It was Syd, the old stick who looks after our pool when we're away.

"Good to see you two again" he breezed. "I've got our set in the car. The sound's all right, but the picture's gone all dark and murky. 'Ah' I told my missus, 'don't you worry. Don will fix it in no time when he gets back.' Then I see you draw up in your car. Talk about a bit of good luck! Still, it will help you keep your hand in, so to speak. Don't want to get rusty, do you?! Oh, an' Charlie South's got trouble with his video recorder and old Mrs Fluck's dish has blown down. I'll tell

them you're back."

He danced out and returned with his set. It's a Panasonic, one fitted with the U5 chassis. We connected it up and I saw that the picture was as he said, dark and murky.

"You've got no luminance" I said, "no black and white content in the picture, only chroma - colour to you. There are just patches of low-definition colour." I started to dismantle the set.

"Where's this luminance thing gone then?" he asked, looking into the chassis. "It must be there. We ain't had the back off 'im. Never do."

I looked around the colour decoder section for signs of dry-joints, but couldn't see anything obviously wrong. The likelihood, it seemed to me, was that the TDA3562AP decoder chip was faulty. It handles just about everything in this area.

I decided to ask Syd to get himself one, and extracted it so that he could get an identical IC from a village dealer. "Accept only the same make of chip with the identical number on it" I told him. "That's important. A replacement might not cure the fault, but I haven't got much kit here and trying this first might save a lot of hit-and-miss work."

Off he went. He was soon back with an identical replacement. Once I'd fitted it there was a normal picture.

"Good" said Syd, "the missus will be pleased. Oh, by the way, I popped in on Charlie South for you and brought his video recorder along. He was thinking of taking it to the village, but I said 'no, Charlie, let old Don do it. He ain't got nuthin to do out there and is sure to appreciate the chance to do something.' Many folks don't think, Don. They don't know what it is to be bored."

He ran out to his car, leaving me wondering whether a series of perfect murders might really be possible. But I concluded that I didn't have the time, what with so much stuff to repair.

### **The Orion D4500**

The recorder was an Orion D4500. Its deck is used by eight or nine other brands, including Saisho, Matsui, Tatung, Bush, Alba and Amstrad. Its faults were frightening. For a start, it was intermittent mechanically. When it did work, it sometimes failed to load, or it loaded but then wouldn't unload. Even when all these functions were right it wouldn't always fast forward or rewind or both.

The only common factor I could think of was the mode switch. I took it out and cleaned it, then refitted and reset it. This cured all the troubles.

"Well, that's the last job I'm doing this trip" I announced. But Greeneyes didn't hear me. She was deep into an Agatha Christie book. I noticed that its title was *Ten Little Niggers*.

"I've got a wheeze" I said. "Shall we arrange a little get together for a few of the folks we've encountered of late?" ■



# WHAT A LIFE

Was the TV trade such a good choice?

Donald Bullock's contemporaries seem to have done rather better. Some aerial trouble at a caravan site, and a few video problems

It had been a tiring day. Mrs Macham had just told me that her set had never been right since I'd done it and she was going to have me seen to. Mr Pugh had bowled me out for incompetence because his aerial blew down just after I'd done his set. And old Mrs Vigner had told me that I knew nothing about television and had always been a fool.

I hadn't felt much like entertaining the Browns, but we had to as we'd already invited them. We'd just seen them off and I was slumped in my chair. I asked Greeneyes to get me a whiskey.

"It had better be a small one" she said as she trickled me a thimbleful of happiness, "don't forget it's high time you began your article for *Television*. If it was me I'd have them written and sent off by the first of every month, without fail. The trouble with you – amongst all the many others I could think of – is that you've got no system.

## Reflections

When she clopped off to the kitchen I systematically topped up my glass to a reasonable level and settled the bottle at my elbow. Then I sat back and reflected.

What a life this trade has given me. I'd been handy with wires and things at school, and often made the odd half-crown by knocking up crystal sets in matchboxes. I also made telephones that worked, using wooden switchblocks to make the microphones and earpieces. Other chaps would have had to run errands for hours to equal such earnings. And whenever a group of us went camping up the hill the others had to get the fires and food organised while I merely had to sling up an aerial and conjure Dick Barton's adventures into our tent.

Yup, I'd an aptitude for the intricacies of electronics, the essence of things to come, and it was already paying off. My future was

obviously secure. How proud I was that things had turned out that way, and how sorry I was for my schoolmates – the sports-mad Will Horner, who couldn't walk and chew gum at the same time, and old Muddy Mawson whose people ran a back-street fish-and-chip shop. He was decent enough, but slightly thicker than a chimp. Where are they now, I mused?

Ah yes. Old Horner's retired to Bermuda with his young wife, having just sold his chain of sportswear shops to a national group. And the last time old Mawson brought me his set to fix he came dressed in hunting gear.

"I've got no interest in foxes. I'm only into this to kill time" he'd said modestly. "I've nothing else to do but spend my money. My managing director runs all the fish-and-chip shops of course, and looks after my investments."

## No picture, see

Still, they probably haven't had the fun I've had. I remember the Saturday morning a bossy and rough-voiced woman who called herself Mrs Craddock called me to a country mansion to fix her set. It was ten or twelve miles away but was a sunny day, so why not? Off I cruised and, when I got there, the house was very impressive indeed. I rang the polished brass bell-pull beside the wide, dark blue front door. Out came a maid dressed in a black and white uniform.

"Can I speak to Mrs Craddock, please?" I asked.

The maid faltered then went inside. Eventually a tall, stern woman with blue hair appeared.

"What is it you want?" she asked in a clear, plummy voice.

"Are you Mrs Craddock?" I asked.

She looked horror-struck. "The Craddocks are to be tenants of ours" she declared. "They arrived here last evening and are in the orchard. Go through the gate at the bottom of the lane beside the house. Oh, and please remove your van from the drive."

I did as she asked and found an orchard full of mostly expensive caravans. Mrs Craddock's caravan was a rather shabby looking one at the back. She was clearly a traveller.

"Come in luv" she rasped, "I can't get no picture, see."

There was a skimpy aerial outside on a pole. Its download was cut short. I had no aerial equipment with me, so I went off to the next village to buy some coaxial cable. When I returned I set about dismantling the guy wires. It was an ancient rig, and it was ages before I had her set working.

"My daughter's got no picture either, luv" she said. "Course 'er 'usband's skidaddled, so you'll have to tack any charge on to my bill.

She led me to an even shabbier caravan. Her scruffy daughter gave me a smile and a wink, so I thought of England. It was again aerial trouble – this time there was no download at all.

"It must have got lost in the move like" her daughter said.

Fortunately I'd bought enough cable. The guy-wire fittings were rusty, so I had to borrow some oil. When I got the aerial down I saw that it was fractured and that its connection box was missing. This meant another visit to the dealer. When I eventually finished the job I saw that Mrs Craddock and her daughter were dressed for going out.

"Just make sure her picture's right, there's a dear" Mrs Craddock said. I did, and it was.

"Now check mine again, luv" she said.

It was OK. As I came out both women locked their doors. This didn't look too hopeful.

"I'll just do you a bill" I said, reaching for my pen.

"Good idea" said Mrs Craddock, "post 'im on to me, luv." Then a bus came along and the women rushed off to get it.

The telephone was ringing when I arrived at the workshop after the weekend. It was Mrs Craddock.

"Don't bother sending me a bill luv" she rasped. "I knows you done yer best, but both aerials 'ave fell down. We've 'ad to get someone else." The line went dead.

## Payment

Over the next month or two I sent bills and reminders, but got no response until I wrote a letter which was to the point. This produced a phone call.

"I've told you I ain't paying 'cos it all fell down. You shouldn't 'ave left it like that."

"Listen, Mrs Craddock" I said, "I came ten or twelve miles to The Gables and found you on a caravan site. Instead of coming away I spent some hours running about and renovating your makeshift aerials and leads. And I left you with pictures. I've raised a bill and I want it paid. Are you going to pay it nicely, or do I take steps?"

"You ain't gettin' nuthin" she replied then hung up.

I phoned The Gables and spoke to the blue-haired lady. "I'm about to issue a summons against two of your tenants" I said, "am I right is assuming that their address is The Gables?"

Twenty minutes later the phone rang. It was a man who sounded like a traveller.

"Hello boss" he said, "oi've got some money to pay you for the work you kindly done for Mrs Craddock and her daughter, and I want to pay it quick like. That's the way we pays our bills. 'Ow do I find you?"

Half an hour later the money was in the till. He was a genial fellow, a gentleman.

## Beans

Mrs Crabright called into the workshop with a JVC VCR and her boy, who was about five.

"This 'un was all right until this little perisher pushed his spoonful of beans into it" she said.

"Don't like beans" blurted the boy. I flexed my right hand.

The recorder was an HRFC100EK, and was dead. I decided to give it to Steven, our video expert, to deal with. He opened it up and took out the spoon and beans, then moved over to the power supply. There were no outputs, and a quick check on the 2SC4517A chopper transistor Q1 showed that it was short-circuit. He replaced it with a BUT11AF, but this made no difference. A check on Q2, which was a 2SD2144S, revealed that it was leaky. He replaced it with a BC637 then carried out some further checks. R10, an 0-27Ω, 1W resistor, was open-circuit. Once this had been replaced the machine worked perfectly.

## Tape chewing

It has been commented that people get to look like their dogs, or vice versa. It seems that you can also get a behavioural link with a VCR. Mr Postgate is a nice enough old boy, but he has a wet chin and he chews away. He brought in his VCR, another JVC machine, Model GRAX55EK.

"How are you these days, Mr Postgate" said Steven.

The old boy put his VCR on the counter. "I'm all right, but this 'un here started chewing tapes yesterday evening" he replied. "Try as I might I can't stop it."

Steven soon had the top off and immediately saw the cause of the trouble. The back-tension arm had snapped in half, so there was no tape tension.

We've had this fault several times. The arm can be obtained from SEME, part no. YQ43377A, at a modest cost and is easy to fit: remove the back-tension band, fit the arm

and refit the band.

## Toshiba V709B

Last spring Greeneyes and Steven went out to buy a new VCR for us and came back with a Toshiba V709B. I said I would let you know how it behaved itself. It was all right until the other day, when Greeneyes played a C60 tape and said there were white flecks all over the picture.

"I'll clean the heads" I said.

"Shouldn't need it" said Jamie, "there's a built-in cleaning device."

But I cleaned them anyway, and Greeneyes settled down to watch *Gone with the Wind*, which is on a four-hour tape. The VCR behaved perfectly.

Next day Greeneyes tried her C60 tape again. The white flecks were back. I gave the heads another clean and Greeneyes tried the C60 tape once more. There were white flecks.

"Have you another C60 tape?" I asked.

She produced one and tried it. White flecks.

"Try *Gone with the Wind* again" I said. No white flecks.

I came to the conclusion that the problem had to be to do with the tape and decided to try a C180. There were white flecks, but far fewer.

Jamie opened the machine up. The tape carriage sits in the middle of the main PCB. He discovered that pressing and lifting the panel affected the fault. So he assumed that dry-joints or a print crack were likely to be the cause of the trouble and spent a good while with a magnifier and his soldering iron trying to bring about a cure, all to no avail.

He eventually found that pressure applied to the tape carriage affected the fault. No pressure, lots of flecks. Moderate pressure, fewer flecks. A lot of pressure, no flecks. Hence the different fault symptoms depending on the length, and hence the weight, of the tapes we'd tried.

The tape carriage is secured to the main panel by its connecting plugs and sockets only, and can easily be lifted up and out from the panel. Once this had been done the cause of the problem was evident. The carriage is earthed to the panel by means of a flexible earthing leaf which, in this case, was tarnished and thus made poor contact. Jamie cleaned and reflexed the leaf, which completely cured the fault.

Had we been average customers, I reflected, we would have called the dealer out, which would have been one service call to set against his profit. I wonder what percentage of these machines have given this trouble, or are about to do so, and how much running about this small fault could cause?

Otherwise the machine has behaved well and gives excellent results. There are however features that I still can't work, like the one that permits programmes to be recorded when I'm out by previously feeding in a VideoPlus number. I can't get this right, so I have to bribe one of the boys to stand in for me and do it manually. ■

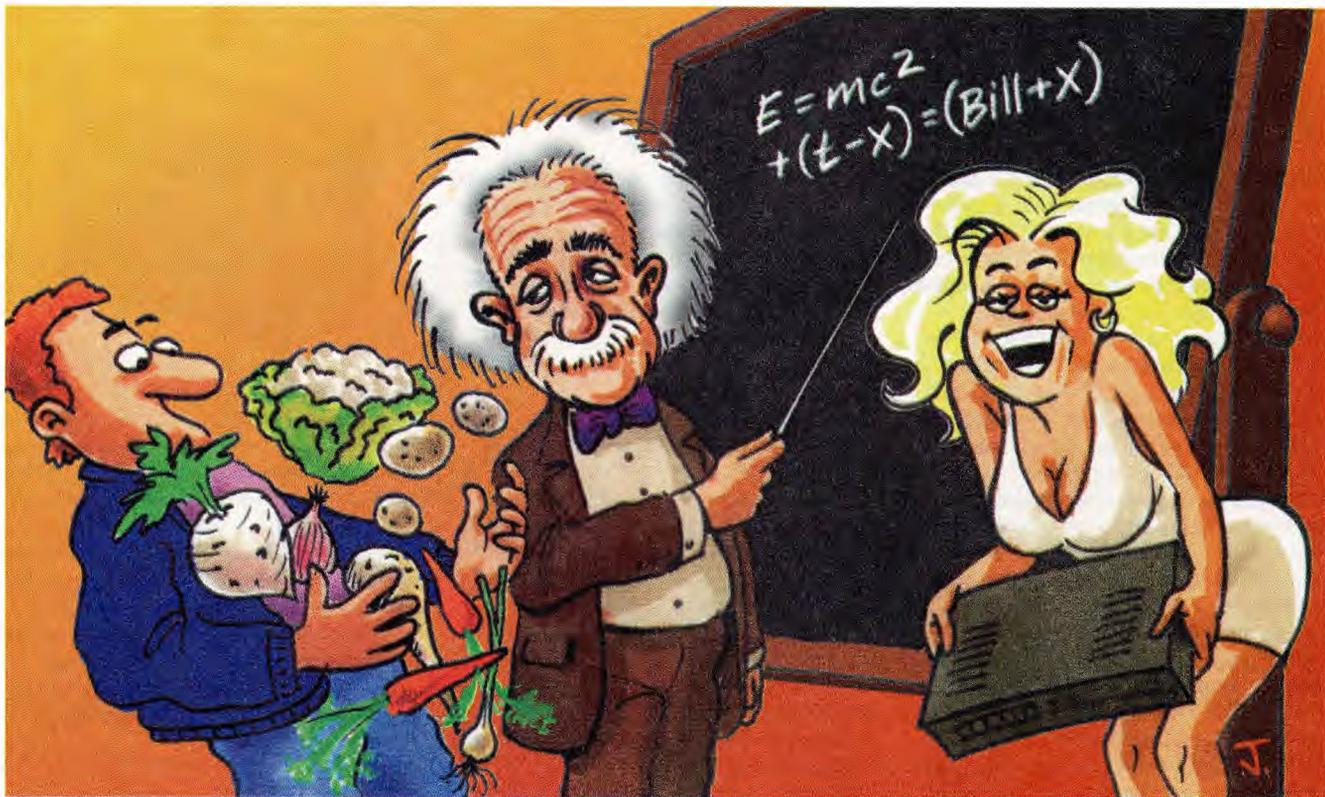


Illustration Dave Bell

# WHAT A LIFE

**Some video faults. A deficiency with servicing courses. Learning about customers, good and bad. Donald Bullock's servicing commentary**

**A** scruffy cove came in the other day. He had half a dozen kids with him and an Amstrad recorder, which he handed to Steven.

"Haven't been here for nigh on four years" he commented. "We moved to Stanford but now we're back. This recorder works when it feels like it. By the way, where's the old fellah? Is he still alive?" Then he caught sight of me. "Hey, didn't you used to be Mr Bullock?" he asked.

"Yes" I replied, "and didn't you used to be Mr Grazer?"

When he'd left I turned to Steven. "The Grazers' umpteen kids used to give their set a beating" I said, "his missus would prop them up in front of it as soon as they got up and leave them there till bedtime."

The VCR was an Amstrad UF40. "I don't like these cheap machines" Steven moaned, "for a start R1018 in the power supply will be dry-jointed."

He opened it up and found that R1018 was as he'd just said. There were more dry-joints all over the power supply section. The trouble is that the cabinet has only a single section of air vents, at one side. So there's insufficient air flow and the machine gets overheated.

Steven resoldered the dry-joints, then

found that the mechanical functions were irregular. The machine produced tape loops and suffered from poor ejection and shutting down. This was caused by the mode selector assembly, which was dirty. Once it had been cleaned the machine worked normally. Mode switch problems are common with these machines.

## **Miss Monroe's Sanyo**

The girl who wandered in was a Marilyn Monroe look-alike, only twice as soft voiced. "That boyfriend of mine is useless" she purred. "All mouth. Claims he can do anything - ride rodeo horses, fly aeroplanes, tame crocodiles and hypnotise chimpanzees to stop them smoking. Says he's a trapeze artist and can mend tellies and videos and cars. Yet when we're out he bumps into lamp posts. He can't get a job, and when he helped the paperboy he put the wrong papers through all the doors. Don't know what I see in him. Anyway, here's something else he said he could do but couldn't." She placed a Sanyo VCR on the counter. "It's dead. Can you mend it?"

It was a VHR776. When she'd gone, Paul looked at it. "I'll tell you exactly what's wrong with it" he said, "it'll be the 0-8A fusible resistor PR511 in the

power supply." He was dead right.

"You're almost as smart as that boyfriend" I said, "only not quite. Where's your Marilyn look-alike?"

## Dealers

Just then Eric came ambling towards our door. He has a few open-market stalls that sell cheap, imported electronic goods and had a couple of mini-TVs for us to fix. As he opened our door however Ackie Timberland appeared and touched his arm. Ackie is a likeable layabout who can't half spin a yarn. Harmless, but a time waster.

"A word with you" he said to Eric.

Eric looked him up and down, frowned and stepped back.

"I've got over fifty of them sets"

Ackie said to him. "Very same name on 'em. All sealed in their boxes. Got 'em from a chap who went bust. Don't know what to with 'em."

Eric sensed a bargain. "What do you want for them?" he asked.

"Say fifty quid the lot?" suggested Ackie. "ere let's go over to The George and talk about it."

"Eric - don't bother" I shouted. But it was no good. He was heading towards the pub with Ackie.

Eric was back next afternoon with his faulty sets.

"That fellow who waylaid me yesterday" he said "arranged a deal. He was supposed to deliver some tellies to me this morning but didn't turn up."

"I did try to warn you" I started off, but at that moment Ackie passed by and Eric rushed out.

"What about those fifty tellies you were supposed to bring?" he asked Ackie. "I waited all morning with your fifty quid."

"Waited for fifty tellies, for fifty quid!" Ackie exclaimed. "You 'ave to be jokin'. You couldn't get fifty tellies for fifty quid. Nowhere. Nor five hundred. Anyway I ain't got no tellies. I'm a gamekeeper. You've got me mixed up with someone else."

At that Eric came back in. "I dunno" he said, "I filled that fellow up with beer over The George, and did he move some. And a stack of crab sandwiches!"

"I tried to warn you" I said. "He's waste of time."

Eric stood thinking, then grinned ruefully. "My own fault" he said. "Thought I'd do all right out of it. Should have known better."

"Perhaps I could offer you a hundred of 'em for twenty five quid" I said. "We'll go over to The George to discuss it. I'm a bit thirsty, and peckish."

"Not likely!" Eric exclaimed. "Not twice in two days boy, not twice!"

## Experience

More years ago than I care to recall I embarked on a television servicing

course at the local technical college. The teachers were good and, eventually, I felt competent enough to step out into the servicing world to make my fortune.

I was wrong, even then. Those who taught me had forgotten to take into account the problems I'd get with customers. My course should have included a thorough grounding in psychology. I had to learn about this the hard way, by face-to-face dealings with the public. The practical psychology course has taken over fifty years so far, and I'm still learning.

My first lesson came on the first day of my first job. It was about repairing sets in the customer's house.

I accompanied an old hand on a series of outlying calls. About fifteen miles into the sticks we drew up at an enormous house, with its own drive, to look at a valve set. Its line output valve wasn't working because the 2.2kΩ screen grid feed resistor was open-circuit. When we'd fitted a replacement a picture appeared. The customer was so pleased that, after getting us a cup of tea, he patted us on our backs, walked us out to his garden and presented us with a huge haul of cabbages, new potatoes and an assortment of other vegetables.

A fortnight later, after receiving the bill, he arrived in the shop waving it and bawling about our incompetence and the firm being a bunch of rogues.

"Nearly two pounds for two minutes' work and a penny resistor" he yelled. "And another thing. Our ITV was all right before they came. Now it fades when it rains."

Our aerial riggers led tough lives too. They had to work in pairs, as the aerials were bulky. When there was a fault they might have to drive for umpteen miles, assemble their ladders, then run up and make good the fault. The more competent they were, the quicker they got things done. But that would rebound on them.

"Three pounds!" a customer might exclaim. "They were here for only a minute. That's £180 an hour, over twelve hundred quid a day! I'd like a job like that. Nearly eight thousand quid a week for doing hardly anything!"

## "I don't watch it"

Another fact I quickly learnt was that no one in the family actually watched TV, though they couldn't manage without it when the set failed. I was told this week after week, year after year.

"I don't watch it myself" the husband would say. "It's the wife."

She would give me the same line. "I never watch it. It's my husband. He likes the sport."

If they were together they'd blame the children. "We never watch it. Have to have it for the kids."

## It's gone again

And set after set wasn't really right after it had been repaired. I would learn about this when the next breakdown occurred. The bill hadn't been paid of course.

"It wasn't really right when you did it last time" they'd say, "but we thought we'd give it a chance to settle down."

I learnt about loftier things too, like the little-known addition to Einstein's theory of relativity: time shortens, in inverse proportion to the bill, once a set has been mended.

"Our set's gone again" I would be told, "you mended it only two months ago and it cost us fifteen quid." In fact it had been repaired ten months ago and I'd charged a fiver.

## Mistakes

But mistakes were made, and some customers were very understanding. I recall the day when Phil, who ran a repair shop single-handed, telephoned me to say how distressed he was. At the time projection sets were new, and very expensive. He'd just started to work on one when his wife had dropped off their six-year old son Sydney for him to mind for half an hour.

So he decided to do something less taxing instead - put up a shelf in the workshop. Even so he was finding work hard because of his son's pestering.

"I just had to step into the office here to talk to someone" he said, "the boy's sending me mad. He's just made me drive a tack through my thumb. Into everything he is . . ." As he spoke a loud banging came from the workshop.

"Stop that banging, Sydney" Phil shouted. But the banging continued, and Phil had to shout again. That's how the conversation went.

We finished talking and I settled down to my own work. Before long Phil was on the phone again. He was almost hysterical.

"I don't know what to do" he exclaimed. "My wife's come and taken Sydney, but that banging he was doing . . . I just don't know what to do."

"It can't be that bad" I said, "tell me about it."

"The projection set" said Phil, "and that banging. It was Sydney. I'd left my tools and a large box of nails by the set. He's hammered a load of them into the set's polished top. It looks like an angry porcupine. What am I to do? I'm finished."

Fortunately Phil was a good handyman and his customer was the soul of reasonableness. Phil removed the nails, filled the holes, ironed on some matching veneer from the new do-it-yourself shop and then had it polished by Gilbert, one of my french-polisher customers. The set looked as good as new, and the customer was delighted. ■



Illustration Dave Bell

**The insurance salesman. How we bought our first electric till. Some TV faults, and a rather lively youngster. Donald Bullock's servicing commentary**

**M**y musings on the trade a couple of months back rang a few bells: I've been reminded of the days when I started out.

My first job was with a multiple, and I would park the firm's lettered van outside. This told the neighbours that I was a repairman, so when their sets failed they came and tapped at the door. Before long I was so busy I didn't have time to go to work.

It wasn't long before I started to work from a couple of rooms in a central back street, and had a lettered van of my own.

I can still remember how thrilled I was when my first caller came in. He wore a scruffy suit, needed a haircut, and padded in on splayed-out crepe-soled shoes. After pumping my arm, he looked at me soberly.

"Mr Bullock" he said, in a quiet and husky voice, "I can see you're going to do well, and you'll soon become accustomed to all the best. But there's one thing you ought to think about – think deeply about."

I looked at him. He was a picture of sincerity.

"Have you ever thought what would happen to your family if you . . . er . . . passed away? It happens, I'm afraid. And I have a policy here . . ."

# WHAT A LIFE

You're right. He was an insurance pest, the first of many, and he plagued me for ages. The last time he called he played his trump card.

"Mr Bullock", he said gravely . . . "If you passed away and I called on your family, I would naturally express my condolences. 'I'm awfully sorry', I would say, 'I wish I could be of help, but I can't.'"

He shook his head slowly and sadly, and I felt sorry for myself, lying there dead. But not for long. He was soon off again.

"Do you know, Mr Bullock, I've just called on Harry Westcott's young widow. He had this very policy, and after the funeral I was able to say to her 'I'm pleased to be able to tell you that your husband left you very well provided for.'" I handed her our cheque for a hundred thousand pounds.

"You couldn't slip me her address, could you?" I quipped, and off he went.

## Our first till

He was nearly as bad as the advertising reps, who called in their droves. Those who offered, at a price, a square on their football fixture charts, those representing obscure magazines, the Kelly's directory man, and the chap who offered us a space on a clock he was presenting to the local post office.

At times these pests were so numerous it was difficult to get on with our work. It took some time to learn how to handle them. Even then we fell for one or two of

the cleverer ones, like the casual man who called to sell us an electric till. Until then we'd been using a polished box with a drawer and a brass handle for our takings.

"Hello boys" he smiled as he came in, carrying the till. "To be quite frankly, I've come to sell you something. But it'll pay for itself within a few weeks." As he looked about for a space to settle the till, we looked at each other and smiled. "To be quite frankly" we echoed. He was obviously a prat.

"You can call me Eddie, to be quite frankly, boys" he said as he plugged the till in. Then, peppering his spiel with more 'quite franklies', he explained the advantages of the till and told us we could pay for it with four monthly payments.

"Of course, I'd have to have the first one now, if you want the till. But if you forget to send the next, who's to chase you up, eh? There's only me on the boss's payroll, so it would be my job. But, to be quite frankly, I'd never find the time, 'cos I make my money selling tills, not collecting payments."

"But surely, if we have the till we've got to make our four monthly payments" I said.

Eddie squared up. "Look, I get ten per cent every time I sell a till, and nothing when I collect an outstanding cheque. Right?"

I nodded.

"So next month, suppose the boss says to me 'Eh, Eddie, don't forget to call for

that instalment.' What do I do?"

"Tell us" I said.

"OK" I say to him, 'OK boss.' But do I bother? Do I hell! No, boys, I don't. Because if I call on you for a cheque I get nothing for myself. If, instead, I go out and sell a till I make my ten per cent. Now, what would you do? Be quite frankly with me. What would you do?"

He was disarming all right. A right comic. Couldn't speak his native tongue properly, and here he was telling us we could pay for a new till sometime-never. He was such a prat that I felt benevolent towards him.

"OK" I said, "we'll have the till, to be quite frankly." I thought we were being ever so clever.

He pulled out his forms and got our signatures, then raised his trilby and swept out.

For one reason or another we were a day or two late in making the third of our four payments. Then Eddie showed up.

"Hello Eddie" I smiled, "how are the tills going? You can be quite frankly."

It was a different Eddie this time. He opened his ledger.

"I've come for the third payment, Mr Bullock" he said, "and I'd like it now, please."

"So you found time to call for the cheque after all, Eddie" I commented.

He ignored this and gave me a straight look. He was no longer the prat who had sold us the till.

"Look, you signed a contract you didn't bother to read, and because you failed to make the third payment by the due date this till is legally mine again. I can take it and sell it at twice the profit I made out of you. So pay up, there's a good chap. I've a lot to do and no time to waste."

I paid him the lot to be rid of him. He was just another of the characters who came along to educate us in the ways of business. We gradually learned.

### Sam's Hitachi

Sam the Joker called in the other day with his 21in. Hitachi set, Model C2114T (G7PS chassis).

"Rustled when I switched 'im on, he did, then he went off" Sam said, "now he's stuck in standby."

As I reached for a job card he spoke again.

"Eard the one about the chap who went to 's doctor, Don?" he asked.

I shook my head, painfully. "But I'm going to, aren't I, Sam?"

"Says to his doctor 'Doctor, I feels insignificant.' The doctor looked straight through 'im and shouted 'Next!'"

I waved him out and wrote Sam the Joker on the card.

The basic fault with the set was field collapse, because the TA8427K field

output chip IC601 was short-circuit. We've learnt that when this IC in this series of sets fails it is important to fit the Hitachi version, even though it's several times the price of the other makes. Non-Hitachi chips have always failed within a couple of days. So I fitted a Hitachi chip and put the set on soak test.

A few hours later it failed again. Some checks I should have made before revealed the cause: the HT was high at 140V instead of 115V. I then found that R951 (39k $\Omega$ , 0.5W 5%) in the HT monitoring network had risen in value to 51k $\Omega$ . This had been the cause of the increased HT voltage. A new resistor and another Hitachi chip restored normal operation, and this time the set passed its soak test.

When Sam called for his set he stood there fingering his chin. I waited for another of his pearls, and it wasn't long coming.

"I dunno" he said, "I used to think I was indecisive, now I'm not so sure . . ."

### Elvis

I noticed that Mrs Balsam was approaching our door. She was carrying a video recorder. Her son Elvis was with her and was sucking at an outsize lollipop. He also had a stick, which he was stabbing towards passers by, as though he was a fencer. As the pair entered the shop he ran up to Steven and started to prance around him, stabbing the lollipop and stick at him as he did so.

"Careful with that lollipop, Elvis, or you'll get all hairs on it" Mrs Balsam bawled. Then, "look al 'm, Mr Bulger, 'e's just sin *The Mark of Zorro* on the telly an' thinks 'e's that Tire-on Power. Yessy he sin that rodeo film and wuz ridin' his dad round the 'ouse as though 'e was a rodeo hoss."

At this Elvis flung his stick and lollipop at Paul, grabbed the handles of the open door, and swung on it while head-butting it and banging his heels on the glass.

"Cut that out" shouted Mrs Balsam, "you'll hurt yourself else." Mrs Balsam laughed as he went on with renewed vigour. "Thinks 'e's that Butch Cassidy now, ridin' that big bull thing" she said, "'e oughta bin a bloody cowboy. Loves baked beans, don't you . . ."

As the boy stamped harder on the glass she blurted "half time, Elvis. 'Ere, come over and 'ave a look at all the plugs and things on this stand what goes round and round. Come on . . ."

Elvis ran over to the stand and spun it frantically until it crashed over.

"You silly little sod" bawled Mrs Balsam, "that coulda fell on you. Mr Butcher ain't screwed 'im to the floor like he should of."

As Paul took the recorder from her, Elvis hung on the counter by his hands

and chin and scuffed along it towards me, pulling faces. When he arrived I locked my pliers on to his ear and gave it a twist.

He threw his head back, bawled and fell on the floor, then contorted himself, stabbing his thumb at his ear. He kicked at his mother's legs until she fell on top of him.

As she got up, I gave her a warm smile. "He's certainly energy-packed today, isn't he? Like a firework, eh? I think he caught his ear on the counter."

"Serves 'im right" she said as she surveyed her damaged stockings. "I'm going to give 'im an 'ammering we gets 'ome."

We all smiled and nodded.

Her recorder was a Panasonic NVL20. When Paul tried it there was no colour, just a black-and-white picture that was zigzagging about and impossible to watch. He checked through the electrolytic capacitors on the tuner sub-panel and discovered that C48 (33 $\mu$ F, 16V) showed signs of leakage and was low in value.

A replacement cured the fault, but there was further trouble. In the E-E mode, and only in this mode, the sound was breaking up. The cause was again electrolytic capacitor failure, this time C7678 (10 $\mu$ F, 16V).

### Wilfie Wogan

A strange fellow called in with a 21in. Sony set. I didn't like the look of him. As I reached for a job card, he gave the name of Wilfie Wogan.

"Er, no relation to, er . . . ?" I asked.

"I've got no relations at all" he said. I felt relieved.

"And what's the trouble with the set?" I enquired.

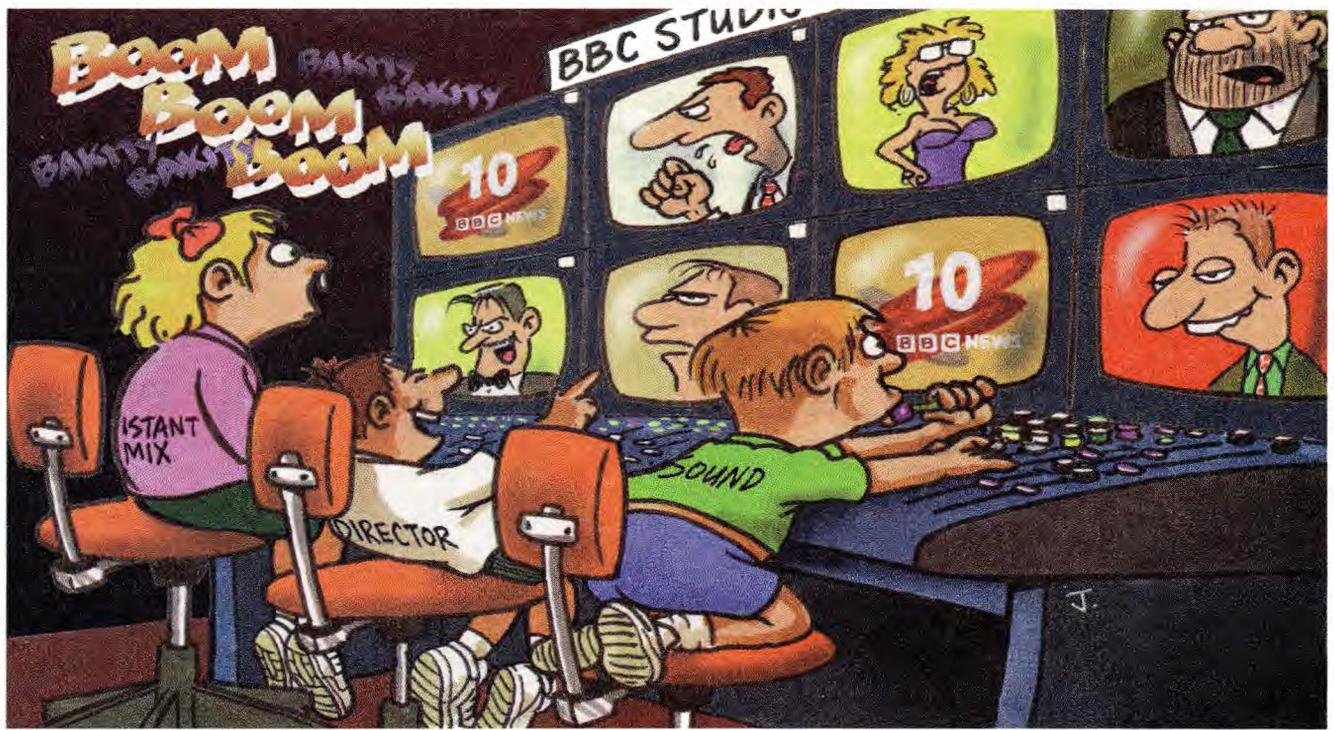
"The little light comes on but the set don't" he said.

So I wrote "stuck in standby" on the card. The set was a KVM2151U (BE2A chassis). I gave it to Steven to deal with.

The usual cause of this trouble is failure of the BU508AS2 line output transistor Q802 and the N15 (600mA) circuit protector PS801. This case was no exception, and the set came to life when replacements had been fitted. But that wasn't the end of the matter. The EHT was crackling and spitting, and the height was slightly reduced. We then noticed that the line output transistor's heatsink was very hot indeed.

Steven quickly disconnected the transistor and checked the HT voltage. It was very high - 185V instead of the correct 135V. "Should have checked that before" Steven commented.

This is another known fault, the cause usually being the STR54041 chopper chip IC601. Once a replacement had been fitted the HT was stable at precisely 135V.



**TV problems: strange customers and strange faults. Some moans, including modern audio equipment and current BBC programming. Donald Bullock's TV/video commentary**

I was first to get to the workshop the other morning, except for three odd-looking fellows who were waiting at the door. Two had television sets with them. They trooped in after me.

**Early birds**

"By the way, I was recommended to come here by Snoddy's - that tall, thin chap it was" said the long and greasy-haired fellow, who was untidily dressed in a black leather outfit and carried a Pye portable set.

"Oh dear" I muttered, as I gave him a quick glance up and down. "Er, unusual outfit, that."

"Ah, I'm a biker, see" he replied.

I looked about but couldn't see a motorcycle. "Where's your bike then?" I asked.

"Haven't got one yet, by the way" he replied. "Oh, and by the way, I'd like you to repair this telly."

I pulled up a job card. "Name, please?" I asked.

"Carruthers-Smythe" he replied.

Obviously immature I thought, noting the name down. Then I waved him out

# WHAT A LIFE

and looked at the next fellow.

He grinned and pointed to a van across the street. "I've brought our Mitsubishi TV for repair, so to speak" he said. "It's a big 'un, so to speak. Can you help me with it?"

I breathed in ten pints of air and followed him to the van. The set was a monster Mitsubishi job, with 29in. tube. I contemplated running away, but decided to face up to it.

As we waltzed it across the road and into the shop there was a chorus of tooting motor horns while a blue-haired woman hollered that we were a pair of louts who deserved the birch.

Having put the set down and recovered my breath, I drew up another job card and glanced up at him.

"Mainwaring-Chapman" he said, "and incidentally the picture's a mass of patterns, so to speak."

I nodded grimly and waved him out too. Mr. Loony I wrote on the card and tucked it into the back of the set. Then I turned to the other chap, who was sitting on the set he'd brought in.

"Before we go any further" I said, "could you tell me your name?"

"Mr Harmsworth-Jukes" he replied, "does that seem a good idea?"

"It fits" I said, "what's wrong with the set? Nervous breakdown?"

The chap doubled up and broke into a peculiar laugh. "Cyuk, cyuk, cyuk, harrrr

... cyuk, cyuk, cyuk, harrrr ... " Eventually he stopped and pulled himself together.

"It's a Philips set" he said. "Went dead yesterday, so I thought I'd better get it repaired. Does that seem a good idea?"

"As good as any I've heard so far today" I said.

As he left I wondered whether I should consult one of those counselling people, as the Reverende Goode did when an overhead pigeon chose him. But I decided to soldier on.

**A Philips GR1-AX**

The Pye set was a 37KV1242/05B 14in. portable, which uses the Philips GR1-AX chassis. Steven took it on. The pre-tuned pictures were hazy with severe flickering at the top of the screen. He tried tuning other programmes and found that the tuning bar skipped through each channel and stopped just after it.

We'd had this problem before with the chassis and had found that slightly retuning the AFC tank coil L5045, which is just to the left of the TDA8305 IF/time-base generator chip IC7020, did the trick. Steven found that the same action cured this set.

**The Monster Mitsubishi**

When we switched on the monster Mitsubishi set, which was fitted with the Euro 4 chassis, it displayed severe hori-

zontal patterning. This improved a bit as the set warmed up.

It seemed to me that the cause of the trouble was radiation from the chopper power supply, so we decided to check the electrolytics on the secondary side. We found three that were virtually open-circuit, two in the 5V supply and one in the 12V supply. The latter was C920 (470µF, 25V), which is the reservoir capacitor at the input to the 12V regulator IC901. The two in the 5V supply were at either side of the 5V regulator IC903 – C922 (100µF, 25V) and C923 (100µF, 10V). We decided to upgrade them to 105°C types.

Once the replacements had been fitted the set produced an excellent picture.

### A Philips AA5

The Philips set, which was fitted with the AA5 chassis, was dead and tripping. Paul was handling this one. He soon found that there was a short in the line output stage, and was relieved to find that the line output transistor had substantial base-to-collector leakage. A replacement made no difference however. After some further checking, he suspected the line output transformer. We had a new one in stock, so this was installed. Again there was no difference, and we found that the original one worked all right in a similar set. So it seemed a good idea to return it to Harmsworth-Jukes' set.

Paul continued with his checks and eventually alighted upon C2450 (680nF, 250V), which is the scan coupling/S-correction capacitor. When he took it out he noticed that there was a hairline crack around its case. It read dead short when checked.

A replacement cleared the fault, and we noticed that the set produced a particularly good picture. A number of similar Philips small-screen (14-20in.) chassis, such as the Anubis A, use a similar line scan circuit with a coupling capacitor of similar value – the value fitted depends on tube size and type.

### Flashing lines

"Mr Bullock, I have been on a wild duck hunt trying to find you. I am all at sixes and sevens, for I am in agony with my wife."

I gave Mr Kostonoski my full attention. His cap was almost two feet across: I decided not to take him up on that but concentrate on his misery.

"Now look. Together we can crack this, I'm sure" I said, "please tell me more."

"All the time flashing lines" he continued, "any more I cannot stand and I am taking the cow by the horns."

He spun round, ran to his old car and returned with a 20in. Ferguson set, Model T51F. It's fitted with the TX91

chassis. We pulled it on to a bench and switched it on. Sure enough the picture it produced was covered with flashing, horizontal lines. Mr Kostonoski began to jump about. "It's agony" he cried.

We told him it would probably be OK if he called later and then concentrated on the set itself. Steven suggested that we try it out with a signal fed in via a scart lead. When he plugged one in there was a perfect picture.

"We'll have a look at the IF circuitry" he said, "the BC858C surface-mounted transistors there can cause this sort of trouble – TH02, TH03 and TH04." It didn't take him long to replace them. He then plugged the aerial in again and switched on. A normal picture then appeared.

When Mr Kostonoski returned later that day he was all smiles. "How pleased to see it I am" he declared, "I am delightful."

### Moans and groans

My first moan this month is about a fairly expensive Aiwa audio system I took from England to Spain so that I could enjoy the high technical quality of the BBC's radio programmes via satellite and play my carefully remastered CD Bing and Bix records. The unit, which is full of irritating and superfluous gimmicks, is designated the "NSX999 System with CX-N999 Centre Unit and SX-N999 Speaker System". My main complaint is about the built-in reverberation circuit that distorts the sound. I can't adjust it out. The best results I have been able to manage are muzzy and lacking in HF response.

Son James tells me that in a recent television programme a similar modern Japanese product was compared and examined side by side with an older British sound system. The older system produced consistently high-quality sound and the programme's expert demonstrated that, while the modern system was capable of such quality, it took him a lengthy time, adjusting and manipulating the controls, to achieve it. Once the system was switched off, the high quality was lost – the lengthy adjustment procedure had to be repeated.

Since the remedy for the Aiwa's poor results completely eluded me, I put it aside and brought back into use the twelve-year old Sony system I'd previously decided to retire. Early in October I wrote to Aiwa asking for help. As yet there has been no reply.

### BBC TV

My second moan is about the deterioration of BBC television. We older fellahs always knew it would happen once commercial television was let loose in Britain, but few of us imagined how low it would sink. Today's programmes

don't compare with those of ten years ago, or even of five years ago. Anything regarded as being even faintly intellectual is pushed towards midnight or beyond. Normally when you switch on you are confronted with 'comedy' programmes that feature sub-standard bores, dirty-mouthed yobbos or both. Entertainment today just doesn't have the quality of Morcambe and Wise, Tommy Cooper and the Two Ronnies.

This is not the only trouble. The BBC's airwaves are now crammed with aggravating and time-consuming gimmicks and fake 'commercial' adverts, there presumably to lull some into thinking that they are actually watching ITV. More often than not previously straight programmes, such as the news, are accompanied by a curious and intrusively discordant pumping noise – something copied from Sky News. It's time that adults were once again put in the charge of BBC programming.

A while ago Greeneyes and I spent some hours at the Spanish home of Edmundo Ros and his wife. They are a charming couple. When we were told that a programme called the Edmundo Ros story was to be transmitted one evening we wanted to see it. An examination of the evening's programme list on digital television revealed no mention of Edmundo Ros however. So we switched about in the hope that the programme list was faulty and that we'd stumble across it. We did, though not until it was half over. And the reason we failed to find it in time was that it was entitled not the Edmundo Ros story but I sold my Cadillac to Diana Dors. It subsequently went out more than once on the BBC Knowledge channel – as The Edmundo Ros Story of course.

BBC Radio is now little better. The old Light Programme, now pushed as Radio Two, used to present each morning a programme of varied popular music aimed at housewives but enjoyed by all, with a new and well-known presenter each week. It's now a wearisome presentation with commentary that seems to go on for ever. The records played are excruciating. And if you should switch on in the afternoon, prepare to suffer the awful and continuous self-congratulatory nasal whining of an odd Australian.

I feel better now.

### The with-it Bullocks

Incidentally we now have a web site: [www.bullock-bros.com](http://www.bullock-bros.com)

We can also be reached by e-mail as follows.

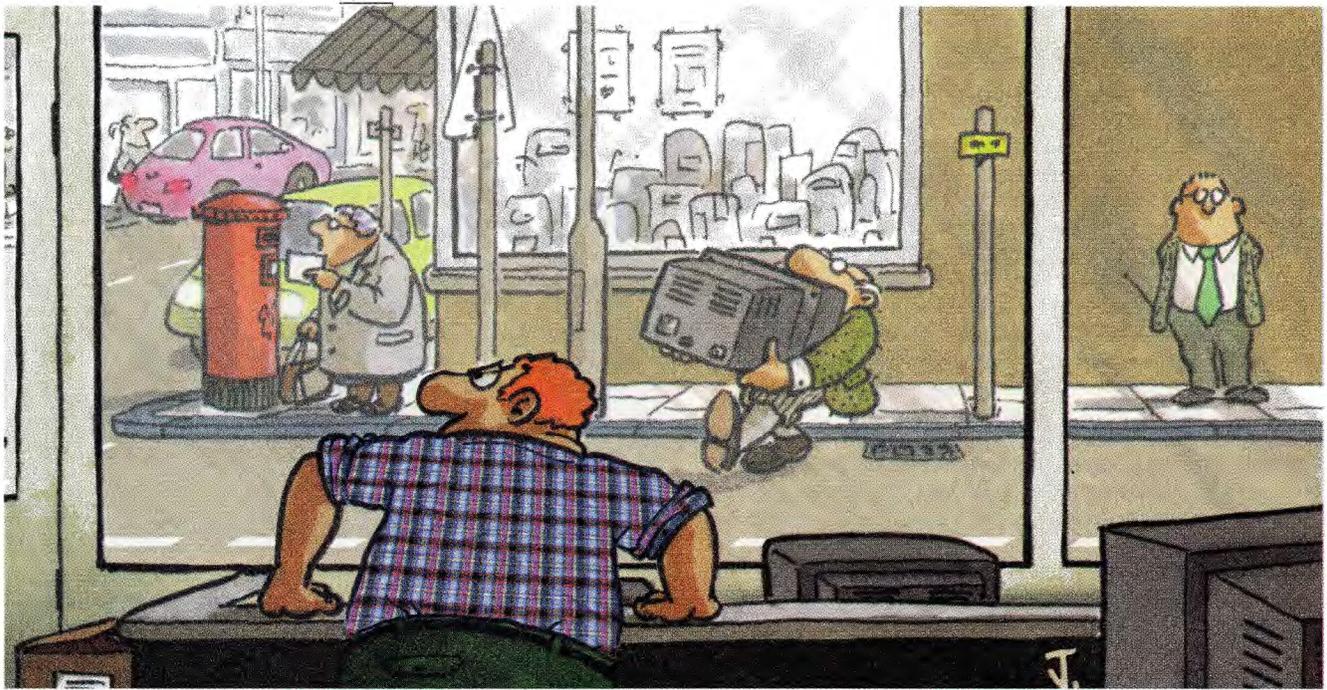
General enquires: [enquiries@bullock-bros.com](mailto:enquiries@bullock-bros.com)

Steven: [steven@bullock-bros.com](mailto:steven@bullock-bros.com)

Paul: [paulbullock@bullock-bros.com](mailto:paulbullock@bullock-bros.com)

And me: [donald@bullock-bros.com](mailto:donald@bullock-bros.com)

There now!



**Anniversary problems. A Matsui that kept blowing up and some other TV faults. The importance of logical fault-finding. Donald Bullock's servicing commentary**

# WHAT A LIFE

"Do you think you can look after everything today?" asked Stephen. "Paul and I want to go out and do a bit of shopping. It's Mum's birthday, as you know."

"Oh Lord!" I blurted out as I heard the reminder. Then, as he spun round, I waved at the air with both hands. "Damned wasp or something" I said.

"What, in January?" he queried.

"Global warming", I explained.

So there I was, tied up in the shop, while Greeneyes was eyeing the calendar, watching the clock and brewing up a bit of trouble. She hasn't forgiven me for the fact that I forgot our hundredth wedding anniversary last June or July, or whenever it was.

## A Matsui 21V1T

On top of all this I had a Matsui TV set, Model 21V1T, that kept blowing up. It's fitted with the Grundig CUC7303 chassis – how the trade has changed! – and had been brought in because there was brushing at the left-hand side of the screen. This had told me that there was a pulsing EHT discharge which coincided with the start of the efficiency-diode controlled part of the line scan. An easy one. The set's EHT lead is detachable and is held in the LOPT socket by a plastic grip nut. It was loose, and tightening was all that was required. I then put the set on soak test.

An hour later it blew up. I couldn't detect any short-circuits, so I resoldered a few joints here and there, checked the mains filter capacitor and the plug wiring, then put it back on soak test.

Now what about Greeneyes' birthday? I lifted the phone and rang Benitos, the new and highly-acclaimed Italian restaurant.

"Do you have a table for two tonight?" I asked.

"Yes sir. The price would be seventy pounds each."

I gasped and put the phone down. Then I rang the Restaurant Elite. It sounded a bit noisy. "What's the price of your menu?" I asked.

"Five pounds a head" I was told.

"Can you do a table for two tonight?" I asked.

A burst of hysterical laughter came from the phone. "Tonight? You must be joking. With Ireland playing a local team? The place is packed."

## Electrical matters

Then, as the Matsui blew up again, I spied Mrs Edham bounding towards the shop with her enormous daughter in tow.

"Hello Mr Brewer" she shrilled as she came through the door. "You seem to be very highly thought of around here. I wish my Hazel could find a chap like you." Hazel grinned sheepishly. "Yes, you've been recommended by that tall, thin chap

at Snoddies" she continued. She stretched herself as high as she could and grinned.

"Mr Bullock knows all about electric irons" he told me, "he's the chap to fit the spares I'm selling you."

She pulled a pink Happy Melody Economy iron from her bag and set it down on the counter, along with a length of thin mains lead, a set of papery washers and a strange thermostat.

"I've got the fitting destructions" she gushed as she handed me a bit of rice paper covered with squiggles.

I turned it over and found some English words. "Can this machine suffers will undo for shocking death with incompetent electric worker" they read, "only stop his water steams when they do not be on and squirt out. Made in China."

I looked up at Mrs Edham in time to see her pulling a jumble of wires and a thousand bits of toy railway track from her bag.

"The Snoddies man said you're good at mending these too" she smiled. "How proud you must feel, being so highly recommended. And by a competitor too."

Hazel smiled at me with a mouthful of brown and leaning tombstones. It took me ten minutes to get them and their rubbish out of the door.

## Back to the Matsui

I returned to the Matsui set. This time I

saw that one tag of the mains switch was blackened. I'd found the cause of the trouble at last! I cleaned and resoldered the switch, boxed the set up again then put it back on test.

I looked about. Things seemed to be quiet, so I took the phone off the hook and popped across the road for a big box of Black Magic chocolates for Greeneyes.

"None left, Don" I was told, "had a run on 'em over Christmas. All we've got left is this little box of candied peel. Bit shop-soiled I'm afraid."

### A Ferguson T14R

I ran back to the shop. As I put the phone back on the hook the Matsui failed again. Then Mr Sturton strode in with a 14in. Ferguson set. He banged it on the counter and turned to me.

"One more chance. That's all I'm giving this set. I'll get it mended this one time. If it fails again, out it goes. In the nearest skip."

"Er, right" I said. "What's up – er, what's the matter with it?"

"The matter with it?! Why, it doesn't go of course. D'you think I'd bring it here if it did?"

"Er, right" I said

Before settling down to it I had another look at the Matsui set and saw a neat dry-joint on the main smoothing block. Why hadn't I noticed it before? I resoldered it, boxed the set up and put it on soak test again.

Then I took a look at Sturton's set, which is fitted with the TX805 chassis. It was stuck in standby. Some checks in the power supply section showed that instead of 15V there was 0V across CP20. The associated 0.68Ω surge-limiter resistor RP68 was open-circuit. I checked for a short but couldn't detect one, so I fitted a new resistor and tried again. The resistor blew. Further checks showed that the 12V regulator transistor TP14 (BC337), which is fed from the 15V supply, was leaky collector-to-emitter. A replacement restored normal operation, with a good picture.

Well, perhaps things will now go all right I thought. There came a bang. The Matsui set had blown again. That did it. I flared up like a savage and paced the floor.

"Someone's got it in for me" I told the walls. "That's what it is. A fault has been put in that set, or it's being blown up by remote control, or something . . ." I went to the window and scanned the street for some furtive fellow with a mysterious box connected to an aerial.

### A podgy chap in tweeds

I couldn't see anyone except a podgy chap in tweeds and plus fours. He was trudging a 25in. Mitsubishi set towards the shop. A minute later he struggled in and placed it on the counter.

"Hello Mr Bullock" he sang, "I'm John Rowland."

I glowered at him. "What do you

want?" I said.

"Only this set repaired" he replied, "there's a picture all right, but it's got bowed sides and too much width."

"Rather like you" I muttered.

The man stopped. "Pardon, Mr Bullock?" he blinked.

"Oh, er – they sometimes do, er, ha ha" I replied.

### The Matsui sussed out at last

Once he'd departed I scowled at the lifeless Matsui set. Was I being set up? Where had it come from? Who was the customer? I looked at the job card, where it said 'name'. S. Miles. Ah! I knew it! S. Miles, Smiles, the laugh on me of course. Some rotter had bugged the set, put a joke name on it and brought it in to get me going. He knew I'd be on my own here. They're probably filming me from one of those big Candid Camera vans with the hole in the side. I scanned the street outside for big vans with holes in the side, but didn't see any.

I'd seen sets sabotaged before. I remember Walter, an engineer at Hoggetts. He'd spent days tracing the cause of an intermittent fault on a set, only to have his reasonable quote turned down by the customer. "I'll take it to Crubbs" he had said.

That made Walter very angry. So he carefully peeled back the coverings of the mains transformer and choke and painted the windings with battery acid. But things then went wrong. The customer changed his mind and accepted Walter's quote. Although Walter tried to undo his sabotage, the set blew up and bounced back on him time and time again . . .

But hang on, I thought. I'm a rational chap. A logical thinker. A TV engineer, no less. Of course the Matsui hadn't been sabotaged. It had a perfectly normal fault. All intermittent faults turn out to be simple once they've been rumbled. A bugged set? Never!

I opened up the Matsui once again. Now, which circuits give the most trouble in TV sets? Those subject to the highest voltages and current flows of course. Particularly where high frequencies are involved. That means the chopper and line output stages. Let's start again – logically. At the chopper circuit.

One minute later I found that C669 had no solder at one end. When I pulled the lead out I saw a tiny burn mark. I cleaned it off and resoldered it. Then I switched the set on and checked the HT voltage. All was well. I boxed the set up and put it back on soak test. It didn't fail again.

### The Mitsubishi CT25B3STX

Now for the 25in. Mitsubishi set, which was fitted with the Euro 12 chassis. I plugged it in and switched it on. Sure enough there was EW bowing and excessive width. EW correction is handled by a TEA2031A chip, IC551, in

this chassis. I fitted a replacement and tried again. A perfectly-proportioned picture appeared – for two minutes, then it went.

What hadn't I done? I had failed to check the HT voltage. I did so and found that it was normal. Time for a bit of cunning. I switched the set off, with the meter still connected, then switched it on again. The HT voltage rose to an excessive value, then settled down to the correct level.

I checked the chopper circuit and saw that C906 (47μF, 50V) and C909 (2.2μF, 50V) were both leaking. The former couples the drive to the chopper transistor, while the latter is a smoothing capacitor for feedback to the TEA2261 slave regulator chip. Replacements cured the HT aberration and, when I'd fitted another TEA2013A chip, there was a perfect picture.

### Birthday saved

But it was Greeneyes' birthday! I rang the Post Office. Perhaps it could supply a big box of chocolates, any make.

"Sorry, we've had a run on them."

The day was wearing on and I wasn't doing very well. I decided to phone my friend Fred and ask him to get me a box of chocolates.

"No can do, Don. I'm stuck here with the kids while the Missus is out shopping."

Well, I mused, I must get something settled. I'll have to grin and pay up at Benitos. So I phoned back.

"I'd like a table for two tonight, please."

"Sorry sir, we're now fully booked."

I slumped in the chair. What a terrible day! I reckoned that after phoning Mr Rowland about his Mitsubishi set I'd have to slip off to face Greeneyes for messing up yet another anniversary. I phoned the number Mr Rowland had given me.

"Rowland Court Hotel and Restaurant, John Rowland speaking" a voice said, against a background of melodious music. I told him his set was ready.

"Wonderful" he said, "and more than I'd hoped for. I could see that you were on your own and under pressure when I called."

"I still am" I said, "after forgetting our wedding anniversary I've now forgotten my wife's birthday chocolates and I've yet to book a table for two for this evening. You don't happen to have one?"

"I have just what you want, sir, a delightful one in the bay but not too close to our four-piece orchestra, and I can arrange for candle lighting if that would suit."

"It would" I said, "I'll book it."

"And by the way we have a chocolate stall here. Only the best makes, but only large boxes I'm afraid."

"Mr Rowland, you've saved my life" I replied. ■

"Are you Mr Bullock himself?" asked the rather dishevelled lady who had just slid through the door.

I nodded wearily.

"Well, Mr Brown, I've got a problem." She fished a Mitsubishi HSB12 VCR from one of the plastic bags she was carrying. "He goes like this" she said as she stretched and gyrated sideways, this way and that.

I reached for a job card and wrote "Mitsubishi recorder, picture pulling".

"By the way, I'm Mrs Hindle. My husband, Mr Hindle, is a surgeon."

I looked at her for a moment, before she departed, then wrote that down too.

When Paul came in I handed him the recorder and the card.

"Oh, this belong to Danny Hindle, the wild scruff who lops trees. His wife is as nutty as a fruitcake."

### Sandstorm and buzzing

As he settled to the VCR, a dry little woman came in with a 14in. Sharp colour set and a wiry little lad. It was a Model 37AM-23H (5BSA chassis).

"Hello, dear. This set ain't half misbehaving itself. Picture looks like a sandstorm and the sound buzzes like a hornet."

"Hornet, buzzing?" I said "maybe it's caught up in the sandstorm."

As I laughed at my brilliant joke she doubled up and hooted twice, like an impatient train. "Ooo that's clever. I must remember that one. Caught up in a hornet. Good!"

The boy looked up. "Er's bin on the rough again" he said, "an if'er don't stop, our dad'll give her another bashin'."

The woman stopped laughing and lent over to her boy. "You just shut your mouth, or I'll yank your 'ead off" she grated, "and 'ere's something to be going on with." She rammed her thumb into his ribs, then turned to me a smiled.

"Funny, isn't he? And so sweet. I'll pop in tomorrow for the telly."

### Repairs

When she'd gone Steven plugged her set in. The picture was grainy and the sound was buzzing madly. And it wouldn't go into the tuning mode via the menu.

"Another one" he said, "that makes about four this past month. It'll be the EPROM chip IC1002. I'll put the set in the service mode."

He held down the volume up, volume down and channel up buttons as he switched on, then tried to program it. Some of the functions failed to respond. The AGC was haywire too. A new EPROM cured the trouble, and I left him setting up the height and picture positioning.

Meanwhile Paul was attending to the Mitsubishi VCR. The playback picture was distorted and continued to pull about in the E-E mode. In addition the colour

# WHAT A LIFE

**Lots of TV sets – and their odd owners. Is the stock fault back with us? Keep the e-mails up! Donald Bullock's servicing commentary**

kept dropping out. After a while he discovered that C2X2 (10µF, 50V) in the tuner module was leaking electrolyte all over the board. Its value had fallen to 3µF. A clean up and a new electrolytic capacitor cured the fault.

### Farmer Willersey

As Paul was reassembling the VCR Farmer Willersey staggered in, carrying a 28in. Hitachi colour set. "This set's driving me to drink" he announced. "What with 'im, an' mad cow disease and my old sow, it's no wonder I settle in the cider barn and pull myself a few."

"What's up with the old sow?" I asked.

He straightened himself up and looked at me sternly. "You're talking about my wife" he replied.

So I changed tack and asked him about the set's troubles.

"I turns 'im on and sits down to see the vets or the funny-fellow cooks, right?"

"Don't you watch anything else?" I asked.

"There ain't nuthin' else, is there?" he scowled, "it's always the vets or the funny-fellow cooks on everywhere all the time, innit?"

I nodded glumly "Pretty well" I replied.

"So there I am, sat down, and what 'appens? Off he went. So I goes over an' smacks 'im one. On 'e comes. Sometimes 'e lasts two minutes, maybe three, never more. So I pastes him again, but he don't last no longer. After a while I gets tired of it and goes to bed. I didn't part with near six hunderd quid for a life like that" he said.

When he'd gone Steven took the back off the set, which was a 46TN series model, and went straight for R719. It's half hidden by the chassis cradle. Sure

enough there was a dry-joint at one end. Once it had been resoldered the set worked faultlessly. R719 is part of the protection system – it's in the network that monitors conditions in the line output stage.

### Visitors

Mrs Merryweather then came in with her sickening cat and its battery-operated mouse.

"Ah Steven" she cried, "how lucky to find you. My Tibbles is *so* unhappy today. His little mouse won't play. I can't stand seeing him so lost. 'Tibbles' I said 'we'll go and see that nice Steven, that's what we'll do. He'll soon have it right for us'."

As Steven applied himself to the mouse I struggled with the giant Hitachi set, to get it out of the way. Then Greeneyes brought in our tea, and Mr Flighty came in. He grinned at her.

"My, you look ravishing today." He looked over at me, bent double and snorting with the effort required to move the Hitachi set. "Good God, he's deteriorated. Can't he walk no better than that? You ought to get him looked at."

As Greeneyes smiled sweetly I straightened up and surveyed him coldly.

"I've got a little problem with this Goodmans 2580" he said, "no sound."

I made out a job card, waved him out and turned to Greeneyes.

"One of those flashy types" I commented.

Steven, now free of Mrs Merryweather, her cat and its mouse, opened the 2580. "Another common one" he said "it'll be the surface-mounted BC848B transistor in the sound mute stage, TS90." A replacement restored the sound.

"Charge him forty pounds" I said.

"That would be criminal" said Greeneyes.

"But sweet" I replied.

"We've had a lot of these recurring faults recently" Steven said. "When the Japs first flooded the market, stock faults seemed to be a thing of the past. We reckoned we'd have to work harder than ever for our money. Now stock faults seem to be common again. Maybe it's because the sets are coming from all over the place."

### Walter Wingnut

Old Walter Wingnut tottered in with a Sony KV21M3U colour set (BE4 chassis).

"Haven't seen you for a long time Walter" I breezed as I studied his protruding ears. "What's new?"

"I've taken to liking Horlicks" he said, "and, oh yes, the missus has run off with the milkman."

"Good God" I replied, "had you any idea that might happen?"

"None at all" he said, "I used to 'ave nothin' but cocoa every night."

"Your missus and the milkman" I persisted, "wasn't there any warning?"



“Oh, arr, I yeard 'is pony 'an trap clopping down the lane to the house.”

I looked at him. He was grinning contentedly. “Walter” I said, “what’s up with the Sony?”

“Picture went so dark I 'ad to put the light off to see it. Then he went into a line acrost an' that was that.”

I decided to take on Walter’s set. One fault or two I wondered? The sets that use this chassis tend to develop beam-limiter trouble. So I checked for shorts in this area and discovered that C823 (0.022µF, 250V) was leaky – the reading was 50Ω. A replacement restored the brightness and revealed field collapse. I headed for the field output chip IC501, but since Paul had just used the last one I decided to be a bit more scientific and reached for the meter. Checks showed that its supply was missing. The cause was traced to the fusible surge-limiter resistor in the 24V supply, R814 (0.47Ω, 0.25W). It does suffer in this set, and Sony has introduced an improved type, part no. 1-249-443-11. We did have some of these in stock: fitting one completed the repair.

### A Bavarian

Mrs Weiner came in nursing a shaggy little dog. As she approached me it nipped my hand.

“That voss naughty, Heinz” she said to the mutt. “You mustn’t bite Mr Bullock. He don’t like it.”

“You’re dead right” I muttered under my breath.

“My set is in ze car. It’s faulty, but I gut vun from my own country” she said.

Paul brought it in. It was a Grundig P37-070 (CUC7301 chassis).

“So you bought it in Germany?” I smiled.

*“Hello, dear. This set ain’t half misbehaving itself. Picture looks like a sandstorm and the sound buzzes like a hornet.”*

Her face hardened. She dropped the dog and stood bolt upright. “I come from Bavaria” she said, “not Germany.”

“Oh, right” I said.

She picked up the dog and it nipped my hand again.

“No more, Heinz. Mr Bullock vill get mad.”

Could be right I thought.

Steven tackled the set. The picture was pulled across to the right, and he noticed that the line output transformer was quite warm. A replacement made no difference and ran just as warm, so he carried out some checks in the line driver stage.

There was nothing wrong here either, and the TDA8362A multifunction chip IC150, which incorporates the timebase generators, appeared to be OK. The line drive signal appears at pin 37 and is passed to the driver stage via the surface-mounted BC858B transistor CT169, which was leaky collector-to-emitter. A replacement cured the trouble.

Mrs Weiner called to collect her set next day. “I’ve had a talk with Heinz” she confided, “he’s promised never to nip you again Mr Bullock.”

“Oh, I don’t really mind” I smiled, rocking my shoulders.

But as she turned round to fish in her bag Heinz nipped me again, under the chin. So I gave him an upper-cut, under

his chops. This sent him yelping and cavorting around the shop.

“Heinz, Heinz. Stop it you silly boy” she cried. “Mr Bullock won’t hurt you. He’s our friend.” Then, smiling apologetically, she turned to me. “He can be as silly as silly at times Mr Bullock. Anyone would think he’s been hurt. Now stop it Heinz, stop it.”

### E-mail

My January column brought a fine crop of e-mail messages. Most supported my grumble about the BBC’s falling standard of programmes in recent years. Tony Blakemore reckons that they regard our collective IQ as about 50 and fashion their programmes and presentations accordingly. Gerald Adams thanks God for the on-off switch. Bob Meade from Suffolk speaks of the “sad state of our programmes today”, and Steve Pendlebury agrees. David Else warms to the re-showing of the *Two Ronnies* recordings. Far better, he comments, than the “rubbish and foul language” we suffer these days.

My own view is that the BBC simply reflects our society today. It’s been dumbed-down and there are no standards. There are far too many empty-headed, shallow people about nowadays: the BBC has its full share. Lord Reith must be spinning in his grave.

My thanks to all who have sent e-mails. I’ll reply to each one as soon as my sons have shown me how to switch on the new computer! If you are thinking of sending me one (an e-mail, not a son), do tell me where you hail from and give me some background news. I’ve become quite nosy lately. Greeneyes reckons it’s part of the process of growing ancient.

The other morning Steven and Paul went to the wholesalers, so I was to open up. When I reached the shop I found this dapper chap sitting on the step stretching about. A practical-looking lady sat on a set by the window. The dapper chap sprang up when he saw me.

"Ah, Mr Butcher" he gasped, "me name's Ringstead, Ron Ringstead. Me set's in the car. Grundig. Can't depend on it. Comes on quick sometimes, takes ages others. Never came on at all last night. 'Well, I mean, this ain't on Madge' – Madge is the wife, see –" I said. 'First thing terrorrer, Madge, I'm getting this set to that Mr Bunter'."

Once he'd gone the lady brought her set in and bounced it on to the counter. "I'm Gertie" a deep male voice said. I turned around to look, but there was no one else about. "Gertie Gunwright" the lady said in that same voice. "This Daewoo of ours keeps playing up. All right sometimes, useless others. Like my ol' man, 'smatterafact. Har, har. Front controls work when they like. As to teletext, well! Turns to rubbish words, pops off, sometimes 'e can't get it at all."

I reached for a job card.

"Phone me when 'e's ready, dear" she said, "I works at the foundry. Chief welder there."

## Repairs

Ringstead's Grundig was a Model ST55-725 (CUC7350 chassis). When I plugged it in it came on straight away. So I tried it again a bit later. This time it didn't come to life. Last time I'd had this trouble the cause had been the UC3842N/AN chopper control chip IC60030, so I fitted a replacement. Silly move really. It made no difference. Best to check voltages first. There was a miserable 1.4V at the chip's supply pin 7. The reservoir capacitor for this supply, C60031 (100µF, 35V) was weeping and leaking. A replacement sorted out the starting problem.

Now for Gertie's Daewoo set, which was a Model T512 (CP330 chassis). It's not a chassis with which I'm familiar, but we had a circuit diagram. I had a look at it for clues. Could the cause of the trouble be the 27MHz clock crystal XT01, which is connected to pins 3 and 4 of the text chip IT01? It was worth a try. So I fitted a replacement. After that the set worked normally.

## An outside call

As regular readers will know, I don't like calling on customers one bit. I must have called on a hundred thousand or more by now. They trot out the same nonsense today as they did forty five years ago. Don't think I can take it any more.

"Can't see how you missed me yesterday and the day before. I only popped out for a paper, and to the Co-Op to buy Bonzo his tin of donkey. I love animals."

"I 'ope it won't cost anything much this

# WHAT A LIFE

**TV faults, outside calls and which were the strangest households visited? Donald Bullock's servicing commentary**

time. After all it's nearly new. Only five years old. My neighbour's never had any trouble with her set, and she's had it for ten years."

"My husband says it's the condenser. He says the part you put in last time has made it go."

"Now, for next time, which is the best make of set?"

"Stop nuzzling Mr Bullock, Rebel. Oh! He likes you dear . . ."

These thoughts came to me when Steven arrived and asked me nicely whether I could manage a call that had come in the day before but he hadn't managed to fit in. "It's in Chestnut Paddock" he added.

Chestnut Paddock! That was different. I like Chestnut Paddock, a peaceful oasis of rural beauty on the edge of the town. Like another world!

I recalled my last trip there a couple of years ago, to fix farmer Lobb's old Ekco valve wireless. Just rounding that bend and stopping the van there had been therapeutic. The patch of gorse-dotted scrubland with its greenfinches and linnets, the old Dutch barn and its swooping and chattering swallows, the old cowdrink with its bullrushes and moorhens. Those few grazing cows, and the old cockerel supervising his harem of roaming fowls. On the far side, beside the tall hawthorns with their big, round magpies' nests, that huddle of tumbling cottages, with blue wood smoke curling above against the red sky. The people, old countryfolk – couldn't find better.

Yes, it would be nice to slip from the concrete and go to Chestnut Paddock again. I smiled happily, took the job card and left. As I speeded along in the van life became good. I broke into song.

At last the bend in the road came into view. Now to enter paradise. I swung the van round it to the track beside the green.

Only there wasn't a green, or a track. Just a wide concrete road and several blocks of flats set in a car park of old bangers and plenty of litter. No scrubland, no Dutch barn, no linnets or swallows. No cottages with their wood smoke, no cows or fowls. Another bit of my world gone for ever. Another bit of my comfort.

Then I looked at the job card. Mrs Marris, Top Flat, Councillor Dawes House. I walked around the first building and found a few smears of paint that had once been numbers. As a cutting breeze fast chilled me I pushed a button and got a series of echoing noises and clicks, then a voice: "Whuh whuh hthp nuh". I pressed another and got a screaming child. A third brought me a pack of yelping bloodhounds.

As I walked to the next block to try again an old girl in curlers came along. "Wotja want, duck?" she asked.

"I'm looking for Mrs Marris. Wants her TV done" I said.

"Tha's me" she replied. "You'm too late. I asted yesterday and you never come. So I got Snoddys instead."

What a happy release. But I was frozen. A pack of dogs howled their goodbyes as I reached the van. So much for Chestnut Paddock.

## E-mails

Most of the many readers who have contacted me from England and the rest of the world since I gave my e-mail address have referred to my critical comments on the BBC's current programming. They all agree!

One thing which strikes me about e-mails is that, unless the writer mentions it, there is no indication where they are from. This seems to leave them somehow in limbo. Frank Martin, of Somewhere, comments on the many unusual characters I've encountered over the years. He asks which of them I would consider the most memorable half dozen? It's hard, very hard, to select the best – or is it the worst? I hope the following two will do for now.

## Mr Mbabwa

In my early days I worked for a medium-sized company as an outside engineer. My first call one day was to Mr Mbabwa's newish Regentone radiogram. The complaint was that it had never played records loudly enough, and was now silent.

When I arrived I knocked at the door several times. After an age, during which various muted sounds came from within the house, an upstairs window flew open and a man in an open-shirt looked down at me.

"What you want, man?" he asked. "I've called about the radiogram" I replied.

He bounded down to the door and, looking a bit sheepish, waved me up to a small room that was big enough for only a double bed and the huge radiogram.

"Dere it is. No sound at all" he declared.



I had to scramble across the bed to reach the radiogram, while taking care not to awake the young lady in it, who seemed to be fast asleep. The volume control rotated loosely and endlessly. I looked at the man's large hands.

It took the two of us an age to get the radiogram into the van. But we managed it, and I returned to the service department which was above the shop.

A couple of hours later the man came into the workshop with one of the salesmen.

"I want de lady's t'ings" he said.

As we watched, he opened the radiogram's lid and dived his hands into its huge record compartment. What he brought out made me blush – I was still a callow youth.

"Now she can get up" he said.

The trouble with the radiogram was that, on the assumption that the more the volume control was rotated the louder the sound would be, Mr Mbabwa had wrenched it free of its connecting wires.

### The Prowsters

Another call that stands out was to the Prowsters. They lived in a large house with a Bentley in the drive. A mob of barking dogs started up as I rang the bell. Mrs Prowster, dressed and made up like a Forties film star, invited me in and took me to the most untidy room I'd ever seen.

Thickly carpeted and musty, it was an Aladdin's cave of valuables, mostly new, which lay around everywhere. There was an electric organ and a huge projection TV set. They were cluttered with several outrageous hats, a fox fur, jewellery of all sorts, and the latest Pentax camera. The expensive armchairs and sofa were piled high with clothes, fishing rods, books, boxes of expensive chocolates and

**The noise was incredible. Five or six white poodles were yelping, and three young children bickered.**

children's toys and boxed games.

The noise was incredible. Five or six white poodles were yelping, and three young children bickered. Mrs Prowster walked up and down waving her arms about. She was engaged in a row via a huge portable telephone – the first I'd seen – with what turned out to be a dating agency.

"The man was hideous" she complained, "shock of thick black hair, staring eyes, teeth like fangs and a Charlie-thing on his back. What d'you think I am? What d'you mean by it? Where the devil did you find him, eh? Eh?"

When she'd finished she led me through to an even more untidy room where the faulty set resided. It was a huge Philips G6 model. I just wanted to run.

"Er, they can be a bit troublesome at times" I ventured.

She spun round. "Look, I pay what you ask. Right? No quibbling" she said. "But I expect good service. You come when I call, and if it isn't right you come again when I call. Fast. OK?"

I wished that she hadn't called but, since I was there, I decided to have a go at the set. I lowered the chassis and the single-stranded leads that snaked everywhere from the power supply began to break off, which was normal with a G6. As I was engrossed in the business of trying to find out where they'd originally been soldered to a slim, dark and immaculately-groomed man, dressed in a charcoal-grey suit,

came in with his briefcase.

"Come and play snakes and ladders with us Daddy" yelled the children. He crouched down with them and began to toss the dice. After a while a squabble broke out.

"You went up a snake Daddy. You can't do that. Only down. Up ladders, down snakes."

"Of course you can go up snakes" he screamed, "I can anyway."

He went on going up snakes and down ladders and won that game and all the others, until the children lost their tempers.

"You're just a cheat, like Mummy says. Clear off and leave us to play" one of them said. "You can't go up snakes and you know it."

Daddy jumped up off his haunches and waved his arms about. He screamed about his innocence in a voice so fast and shrill I couldn't believe I was listening to a grown up.

"Stop annoying me" he shouted. "You asked me to play, and now I'm winning you get nasty. Just stop it."

The game changed to a frantic shouting match. The children screamed and stamped and their father outdid them. They were out of control.

"Shut up" shouted Mrs Prowster.

"It's them" Mr Prowster said, pointing to the children.

"It isn't, it's him" they screamed back.

I got out. Later I learned that the family was loaded because the father was a senior partner in a large and eminent firm of accountants.

What a life it's been!

### Keep up the e-mails

Finally, do keep up those cheery e-mails. The address is [donald@bullock-bros.com](mailto:donald@bullock-bros.com)

**W**e ran into Mike Wort the other day. Originally from the Isle of Wight, he now lives here in Spain and earns a living from the satellite dishes that sprout up everywhere hereabouts. Said he'd been a reader of this column for years, so I asked him in for a glass of wine. It wasn't long, being the sort of person he is, before he asked to check our TV picture. Then he asked for a short ladder, so that he could adjust the dish.

As I went to get it I realised I was a bit stiff. It's the cheap but all too palatable Spanish wine that does it. He noticed and ran out. "I'll carry it for you" he said, "I daresay it's a bit heavy."

What was I to say? Couldn't very well tell him I was OK, it was only the wine. He'd think me a wine-o. And I didn't want to pass a comment on getting older. Sometimes it's best to say nothing.

Another recent visitor was Philip Dowding, who has a TV business in Malmesbury, Wiltshire. He has a rich store of anecdotes about the unusual customers he's come across. One of them was the well-healed widow of an army officer. Her husband's former batman lives in an annex attached to her house. He helps with the cleaning and cooking, and generally looks after her. When she wants something she summons him by ringing a hand-bell!

### **You called, ma'am?**

When Phil last called it was because her ancient dual-standard GEC set had broken down. Seeing its age and condition – and hers – he suggested that it might be time to invest in a new set.

"Why should I?" she asked.

"Well, for one thing it would have remote control" Phil said. "So you wouldn't have to get up to change channels."

"I don't now. Burrows sees to all that."

Just imagine it. Tinkle tinkle. "You called, ma'am?"

"BBC 2 Burrows, if you please."

"Certainly madam." Click!

Phil didn't make his sale!

### **Mr Bounty**

This reminded me of a customer who'd once called in, a Mr Bounty. He was a scruffy fellow but seemed reasonable enough. He'd come with his wife, and was asking about a rental set. While we were talking he sent his wife out to their car to get us a couple of new-laid goose eggs. A kindly man, I thought.

"By the way I've just bought nearly half of Cranham Woods" he said. "I intend to build a woodland mansion there."

My jaw sagged. Cranham Woods indeed! It's a vast area where even a small house costs a fortune.

"It'll be heaven for the kiddies" he continued, "I'm looking for builders and

# WHAT A LIFE

**A tale of ordinary folk?  
Donald Bullock on some  
of the characters he has  
encountered during his  
time in the TV servicing  
trade. All life is here!**

carpenters right now. If you know anyone suitable, let me know. Only the best though. I pay top rates for first-class work and dedication."

He chose a set and told us his address. "Woodman's Cottage, end of Black Lane. I negotiated eight-ten months free stay with the town clerk, while the new place goes up. Amazing how they lick your boots when they know there's money about. Mind you it's a bit small and ramshackle, but it'll do temporarily. Can't really complain, can I?"

Our van man delivered the set. When he returned he mentioned that the place was a bit of a dump to say the least. He hadn't been able to find anywhere to put the set, and had had to leave it on the floor.

"Where's his deposit?" I asked.

"Said he'd bring it along later today."

He didn't. Nor did he call the next day.

After a while I phoned old Mr Manderson, who ran our local Trade Protection Society.

"Oooh! Ha, ha! So he's had you too has he? Ha, ha. He doesn't have a bean you know. Nutty as they come, and a rogue with it. Lives in an imaginary world. You never phone us till it's too late, do you? You just don't learn. Hoo, hoo."

"We'll take the rental set back" I said.

"You'll be lucky. He usually sells any rental goods within ten minutes of getting 'em."

### **The Colonel**

Then there was The Colonel, who was a horse expert. He arrived in a huge, newish Land Rover that was loaded with bales of straw. His Hitachi colour set was on top of them. He was dressed in tweeds and brogues, his speech was slow and quiet, and he oozed quality of a restrained kind. A horse clopped by as he brought his set in. It seemed to send him into a quiet ecstasy.

"I love horses" he said. "They're my business and my pleasure. I keep a horse farm. How fortunate I am to make a living from something I love."

I filled in a job card. Colonel Sir Aubrey French, The Cotswold Corals, Trepington. Trepington! A lovely Cotswold villiage, miles from anywhere and trapped in a fertile valley.

"We keep about a hundred horses" he said. "Breed 'em, train 'em, look after their health. Got our own vet of course. Supply several Arab sheikhs . . ." He went on to say that he was writing an authoritative book on horses and everything to do with them.

"Don't like to boast, but the book's been commissioned by the country's top publisher. Couldn't really spare the time, but then I couldn't refuse the £250,000 advance – just for doing what I'm happiest at . . ."

Colonel French's set was a Model C2514T. The symptoms were lack of height, and it kept shutting down. I decided to check the HT voltage first. It should have been 150V but was high at 190V. As a result the line output stage derived 27V supply, which powers the TA8427K field output chip IC601, had been driven up to 35V. So IC601 was being severely overrun.

The cause of the trouble was in the circuit that monitors the HT voltage for regulation purposes. R951 (82kΩ, 0.5W), which is in series with the HT preset, on the chassis side, had risen in value to 115kΩ. A replacement restored normal operation and, to be on the safe side, I replaced he TA8427K chip as well.

Colonel French collected his set a day or two later, took the bill and promised to drop his cheque in the post. "A pleasure, Colonel."

It didn't arrive, and after three months and a few reminders I telephoned his house.

His wife answered. I tactfully suggested that the bill might have slipped her husband's mind as he was engrossed in writing his book.

"How much is it?" she asked.

"Twenty pounds" I replied.

She promised to bring the money in the morning, and did. She was a colourless and sad soul, with a pale, worried face and baggy eyes. She arrived on an ancient scooter, and paid with



some well used notes and silver coins.

I felt sorry for her as she counted out the money. She looked all in, as pale, ill and shaky as her husband was bonny, solid and fit. As she turned to go she stumbled.

"Is something wrong, Lady French?" I asked.

She blinked and shook her head. "There's no Lady French" she said. "Please don't take any more work from him. He's an unemployable nobody. Name's Roy Small. Done no end of time for fraud. He's inside right now. We've got nothing but debts. I've had to borrow this bit of money. He spends everything he gets on his silly countryman's clothes, and spends his time wandering around looking at horses. We live with my people. Otherwise I'd starve."

"But the book" I said, "that huge advance."

"All fantasy" she replied flatly. "And the Land Rover?"

"It belongs to my sister's husband. My husband nags and nags until he gets to borrow it. When it runs out of petrol he abandons it and cades a lift back. We often have to collect it from miles away."

### The bomb

Then there was Mrs Webster, the manager of a prestige hotel which she ran to her own strict standards. At the

**Suddenly she heard a faint ticking and, as the line moved on, she stopped, parted a bush and found herself falling down a deep well. She landed on a pile of soft hay and there, beside her, was the landmine, ticking away.**

end of the day however she would enjoy a specially-prepared meal in the hotel's dining room then adjourn to the bar, where she would gently punish the gin bottle. Mrs Webster, originally from Wales, had a store of wartime reminiscences. They became more entertaining as the gin flowed.

One evening, while I was fixing their Philips projection set, she invited me to join her at the bar. "I'll tell you about the bomb" she said, in her melodic Welsh dialect.

By the time I got there the gin was flowing well. The bomb – it was thought to be a landmine – had dropped somewhere in the Rhondda valley. But nobody knew quite where, which is how she'd become involved.

"I knew the area well" she said, "all the pit-workings, the mineshafts, everything. So it wasn't surprising that when Mr Churchill came to our village next morning he sought me out."

"This bomb will be ticking gently, Mrs Webster" he said, "and I want you to organise a group to find it. I have to tell you that it's a dangerous job. The bomb could go off at any time. But there could be a medal or two in it."

"I don't care about the danger or the medals, I'll do it" she replied.

So, Mrs Webster told us, she lined up two hundred people, side by side, and advanced them slowly across the valley, with their ears to the ground. Suddenly she heard a faint ticking and, as the line moved on, she stopped, parted a bush and found herself falling down a deep well. She landed on a pile of soft hay and there, beside her, was the landmine, ticking away.

"I called out, and everyone came back and helped me out" she continued, "and of course they made the bomb safe."

"Was it a deep well?" I asked her

"Forty eight feet, eight inches" she replied.

I looked at her. "How do you know it was forty eight feet, eight inches?" I asked.

"I counted the courses of bricks as I fell" she replied. "Four to the foot."

Then she reached for her gin again. ■

**R**uben's little lorry chugged up to the front of the shop. He's a cheerful Romany lad with a nice family. His scrap business just about keeps them going, but they seem to be happy enough. This time he had his cross-eyed neighbour with him, whom I'd not met before.

"This is Wilf" Ruben said as they approached me. He was carrying a portable TV set.

His neighbour grinned at me and put out his hand. "Hello Wilf" he said, "by the way that's my name too."

"No, I'm not Wilf" I replied, "you're Wilf."

He shut one of his eyes and looked at me. "I know I'm Wilf" he said, "always was. Pretty sure about that. But Ruben here said you're Wilf too."

"Perhaps it's my fault, Wilf" said Ruben, smiling at me. "This is Don."

"Oh, er, hello Don" I said, "that's my name as well."

"Then why do you call yourself Wilf?" he asked.

"We'll get back to that in a moment" I replied, patting him on the shoulder. Then I looked at Ruben. "That set of yours" I continued, pointing to his TV set, "trouble I presume?" It was a yellow Orion TV700YTX.

"Yes" he said, "shuts down when it feels like it and leaves a lot of strange symbols on the screen."

"Oh dear" I replied, "can you pop back tomorrow?"

"Will do" Ruben said, then departed with his friend, who had his ear.

"Funny chap, Rub. What's his real name?"

Later Steven had a go at the Orion. I don't know how he traced the cause of the fault, but he soon had it right. There was a dry-joint at the 78M08CT 8V regulator IC7016.

## **A Sharp portable**

Our next caller brought in a nice little 14in. Sharp portable, Model 37AM12H (5BSA chassis). He was a handsome fellow, sun-tanned and well built, with blue eyes and a shock of tussled black hair.

He put the set down and patted it. "I'm Rock Farley" he said in a voice that resembled Bing Crosby's, "this set of mine just lay down and died last night. Even the LED thing went out."

When he'd departed Steven again took over. He soon found that the main smoothing block still held a healthy charge. "Ouch!" he exclaimed, "that means it couldn't go anywhere. There must be an open-circuit some place."

"Suspect any pair of resistors over 82kΩ" I said cleverly.

He checked the 560kΩ, 0.5W start-up resistors R704 and R705 and found that they were both open-circuit. When he'd

# WHAT A LIFE

## **Some recent customers. Reflections on the trade then and now. An update on the antics problem. Don Bullock's servicing commentary**

fitted replacements and switched on again the set sprang to life.

Rock called in for it later, as Greeneyes came in with our tea.

"Lovely scenery around here . . ." he crooned in his deep voice, looking around.

"Handsome fellow" she said when he'd departed.

"Dunno" I said, "take away the healthy looks, the studied Bing voice and those eerie blue eyes and what have you got?"

"You" she said as she went off.

## **It would happen**

The evenings are getting lighter, so Steven decided to stay on and paint the shop's display shelf. He had to move our reconditioned sets off, so he put them on the floor, to one side of the door.

"Don't want anyone falling over them" he commented, "some of those who bring repairs in can't see much over the top of the set they're carrying."

Early next morning a stocky little chap drew up in his car. He made for the shop, with a large set in his hands. When he reached the door he tried to open it with his shoulder, but didn't have much success. As was turning himself around to have a try with the other shoulder I darted across and pulled the door open for him.

He didn't see me, which was unfortunate. The horsepower he'd developed sent him through the door and over to the left, where Steven had put the overhauled and polished TV sets. He ended up sitting amongst them, gazing at his own set which he'd managed to set down neatly, well clear of the rest.

"My fault" he said. "My glasses fell off while I was lifting the set out of the car. Thought I'd be OK without them, as

it's only a few feet."

He was all right, and so was his set. There was a bit of damage to one of our sets, but nothing we couldn't put right.

He went to get his glasses. "Must apologise" he said when he returned, "just tell me what I owe you for the damage."

"Not at all" I replied, "could have happened to anyone. But we've got an old shed out the back we want demolished some time. If we give you a call, will you slip off your glasses and carry an old set into it for us?"

## **Reflections**

I sometimes wonder whether I'm past my sell-by date, though I know that's nonsense! When I came into the trade there was only BBC television. No ITV. No tape recorders either. Gramophone records, as we called them, were made of shellac and were easily broken. I'd yet to see a transistor. Apart from monochrome television sets, all we were required to tackle were valve radios. Oh, and toasters and electric irons.

But what days they were! Television engineers were a rarity and were held in great esteem by the public, whose valve sets ran warm and often failed.

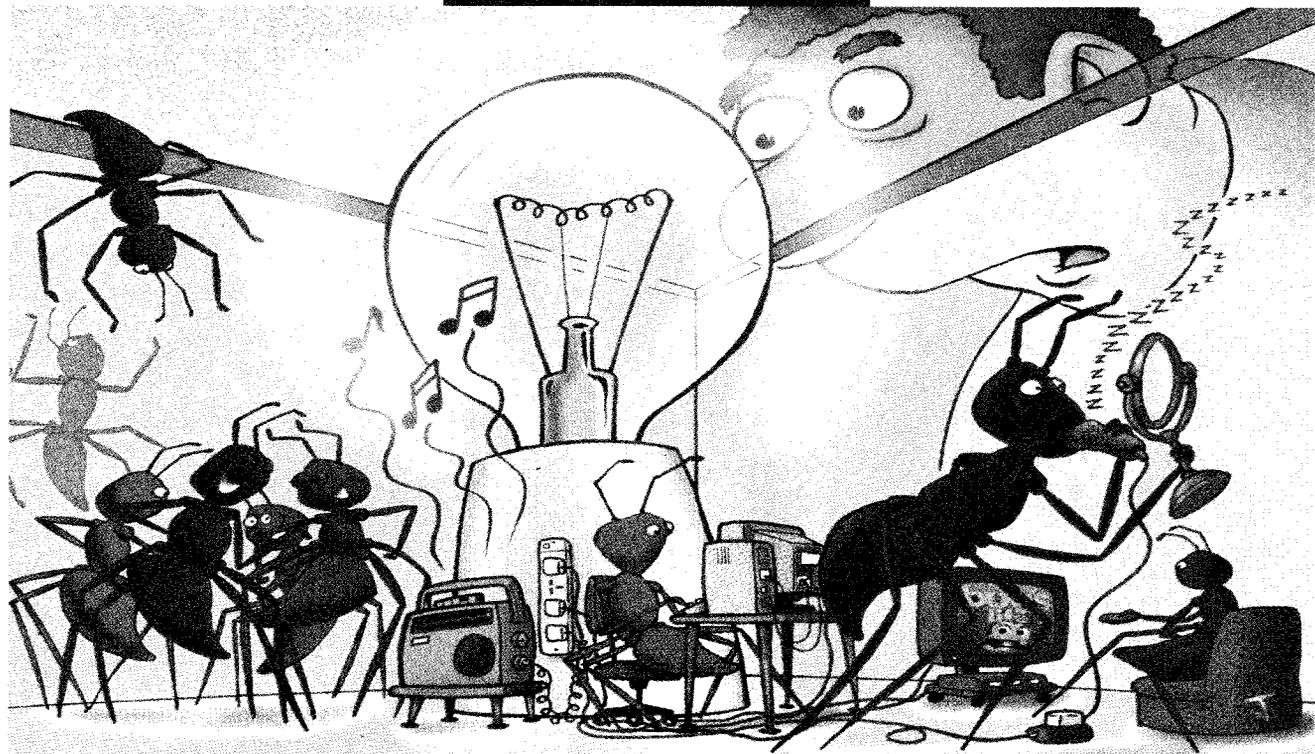
Before long I was being sent out on service calls. The idea was to complete repairs in the house wherever possible. A pocketful of valves and a can of carbon tetrachloride to wash out the valve bases worked wonders, as did a handful of five- and ten-watt wirewound resistors.

I'd spend a typical day out around the Forest of Dean, calling on remote cottages. It was common to find the customer waiting for me at the gate, eager to greet me. They were always happy to pay for the repair, and there was no lack of offers of cups of tea, cake and garden produce to take away with me.

One fellow engineer was given a bottle of homemade red wine. It exploded suddenly as he bounced along a bumpy country lane. He though his end had come. When he calmed down and surveyed the condition he was in, to say nothing of the inside of the van and the sets he was transporting, he almost wished he had.

I eventually opened up on my own. Work was plentiful, and my customers became loyal friends. When one of them wanted a new set I would get it from the wholesaler and sell it to him at its list price.

We were not allowed to sell some ranges. Their manufacturers, mindful of the good name they had established and the reputation of their sets, were fussy about whom they allowed to handle them. They would interview a few top dealers in a given town and, after examining their showrooms and workshops, choose perhaps just one to be the Appointed



Dealer for quite a sizeable town.

For his part the dealer had to agree to offer the manufacturer's full range of products, at their precise list prices. He had to be able to demonstrate and install sets correctly and, of paramount importance, provide a first-class after-sales service to customers and to any owner of the company's products who moved to the area. All this regardless of the profit made from particular sales. The dealer had to be as attentive about replacing a broken control knob as a tube or a line output transformer.

In return the manufacturer provided the dealer with live sales leads from its national advertising and first-class spares and service back-up. Its technical staff kept the dealer abreast of any faults or problems as they became apparent, and provided remedies and any components required.

Here's an example of what might be involved. I recall a few cases of patterning in a particular area when a local hospital began using some new equipment. The manufacturer investigated the complaint. Its technicians carried out tests and devised a modification. Dealers were provided with modification kits and instructions on how to go about the job. They were paid to do the work.

The results of this system were that the manufacturer could count on his carefully designed sets providing good, trouble-free value for those he set out to serve; the dealer was able to offer an excellent, dignified and profitable sales and service business; and the customer

***I've referred before  
to the strange  
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our retirement home.***

could rely on a first-class product with full technical back-up. Amongst the best-known manufacturers that ran the Appointed Dealer policy were Ekco, Murphy and Bush.

Other manufacturers had a foot in both camps: they had Appointed Dealers and a second brand that was distributed via wholesalers. Thus Philips also supplied Stella sets, Pye supplied Invicta models and HMV ran the parallel Marconiphone range.

We often took old sets in part-exchange, carefully overhauled the best of them, and offered these for sale again. New sets at the time I'm talking about cost about £65. We priced our reconditioned ones at about £35. Not bad, those days, when a wage of £9 a week was considered to be good. That's what we paid ourselves.

Consider the price of today's reconditioned sets. It's easy to buy a good monochrome one for far fewer pounds than we used to charge all those years ago, yet how many people have to

manage on a wage of £9? There's something cock-eyed somewhere.

Life is totally different today. Setmaking has become barely profitable – in fact manufacturers seem to run up losses most years, supporting themselves by other activities in the electronics manufacturing and software industries; the retail trade has become cut-throat, with little satisfaction for anyone; and the customer gets throw-away products. But that's the way of the modern world.

### **Antics**

I've referred before to the strange behaviour of the ant colonies in the bit of Spain where we have our retirement home. If I lay a live power cable along the drive it's not long before we see armies of ants running along it in both directions. When I switch off the mains supply they disperse.

I came across a further development of this behaviour recently. Greeneyes had asked me to clean the yellow glass in one of our lanterns, by the barbecue. While I was about it I decided to remove and clean off the bulb, which screws into a bulky and roomy porcelain holder.

When I removed the bulb I saw that the holder appeared to be full of what looked like tiny, shiny red-brown crystals. I poured them out and realised that they were the corpses of thousands of ants. After cleaning the lamp I switched it on to make sure that all was well. Almost at once a fresh colony of ants came racing up the cable and into the holder.

I can't think why they do it. ■

**A**s I was back home in Gloucestershire and it was a beautiful summer's day, I decided to take a few hours off. I settled in the hut in the garden to write my monthly article. Then I heard Greeneyes calling. She had a lovely tilt in her voice and was calling me "Donny darling", so I knew that I was in for the bite. But, being a chap of immense courage, I went into the house.

### Mrs Waterfield

The first thing I saw was a dog as big as a pony. I saw it because it floored me with a single bound. As I got up, I saw something else. A huge, tweedy woman with a big toothy grin.

"This is Mrs Waterfield" Greeneyes said, "she's staying next door while having an extension built on to her house at Longfield, and has just popped in to say hello. She has three lovely dogs, all like Bonzo here, so I know we are going to get on really well."

"Sure to" I replied, "how do you do, Mrs Waterfall?"

"Oh, and Mrs Waterfield brought her video recorder along" Greeneyes continued, "it needs tuning in to our local transmitter."

"Oh, er, right" I said "what make did you say it was, Mrs Waterhouse?"

She looked at me intently. "I didn't," she replied, "but it's an Hitachi. My hubby could do it of course - he's very clever - but I thought that since we're all going to be friends I might as well let you do it. It won't take you long, will it? I simply must record the *Weakest Link* programme in an hour's time. I do so admire that funny little Robinson woman, don't you?"

"Couldn't do without her, Mrs Millwater" I said, "even better than that whining chap who insists his name is Steve. Oh, and thank you for giving me something to do. I was rather kicking my heels."

Once she'd drunk three cups of tea and polished off the orange cakes I'd hoped to have with mine, she departed - along with her animal. The sooner I tuned her recorder, I figured, the sooner I could get back to what I wanted to do. So I pulled it over to our set and plugged it in.

### A tuning problem

It was a Model VTF540. All I could get from it was a blue screen. I set about tuning it, and all seemed to go well. It went through the motions of tuning and storing the channels as it found them, but when I'd finished I still couldn't select a channel or produce a picture. All I got was the same effect - a blue screen.

I called Greeneyes, who came clapping into the room. "Is it all done?" she asked.

"No it isn't" I replied, "but I do just want to thank you for encouraging that Mrs Backwater to pester me with her recorder.

# WHAT A LIFE

**A new neighbour causes problems with her unprofitable work and inability to grasp the situation. Reminiscences from the Broadmead days. Donald Bullock's servicing commentary**

She wants it in time to see that daft Robinson programme you watch. It's on in half an hour and the recorder's got a nasty fault on it. And she's scoffed all those orange cakes. I didn't see one of 'em."

"I'm going out in a minute" she said, "so I'll get some more, specially for you. But do get that recorder tuned, won't you? I told her you were ever so clever, and I love her dog."

She clopped off out and I rang Steven at the shop.

"Ah, I know that fault" he said, "I've had it twice recently with the VTF540. Both times it was CQ602. It's a 2-2µF, 50V electrolytic capacitor inside the tuner. I'll be passing in a couple of minutes and will bring one along."

He did, and by the time Greeneyes clopped back home with a new box of orange cakes the machine was fixed and working.

"We'd better charge her a few quid, neighbour or not" I said to Greeneyes. "My Epson printer is out of ink, and the price is an unbelievable twenty five quid for what amounts to a five bob bottle. And I didn't want to do repairs today. I wanted to write my column and prepare my book, *Hovels and Haydust*, for the printers. I need a bit of time to myself. I've been trying to finish the book for twenty years. Now I don't know whether I'm coming or going. I don't feel right at all."

Just then the phone rang. I picked it up. "Don Waterbed speaking" I said, "er... Don."

"Hello Donald" a friendly voice cut in, "this is John. We'd like your column as soon as possible. Can you e-mail it through to T?"

"Almost done" I replied, "won't be

long now. I hope, anyway!"

"Yoo-hoo!" called a loud, gushing voice from the front door.

"Grr whuff whuff" barked a dog.

"Oh my God!" I whined, and rushed back out as our new and bulky neighbour sailed in.

I sat in the hut and started to write my piece for *Television*.

"As I was back home in Gloucestershire and it was a beautiful summer's day, I decided to take a few hours off. I settled in the hut in the garden to write my monthly article . . ." On and on I wrote, for over an hour, like Mickey Spillane up against a deadline. Then I heard Greeneyes calling me again.

"Donny darling, can you pop up for a minute?"

I jumped up, kicked my chair across the hut and went to the house. As I opened the door the cat walked out. I tried to kick it but it shot off.

Not without our new neighbour noticing. She stiffened, dropped her orange cake, then stared at me intently.

"Oh, hello Mrs Waterpump" I said, "gosh I nearly tripped over our lovely cat."

"Thank you so, ah, much Mr Bullock for tuning the recorder" she replied, "and for absolutely refusing to charge me. I've been talking to your wife. It must be awful for you, twiddling your thumbs and not knowing what to do now that your lads do all the work. But don't worry, I've another little job for you. Our little Alba bedroom set. There's nothing on it. I expect it just wants tuning in, like the recorder."

"Mrs Millstream" I began, "I'm just a bit tied up at the moment. Thing is, I've got this article to do."

"Indeed! Aren't you lucky?!" she gurgled, "it'll all help to ease the boredom, I'm sure. For the church magazine, is it? I should get on with it as soon as you've finished my little set."

I grabbed the set, ran off to my hut, smacked it down and started tapping again at my keyboard. But the Alba set kept nagging at me. It was a CTV842, a model I know well, so I decided to have a go to get it off my mind. Then, I reckoned, I could write in peace.

### The Alba problem

I took it to the workshop, plugged it in and found that it was dead. There were outputs from the power supply, but there was no line timebase operation. I touched my little hand scope's probe on the output transistor's base connection. No drive. I suspected a problem with the driver transformer, as its leadout wires sometimes oxidise. This is caused by the action of the glue beneath it on the board. So I whipped it out, cleaned and remade the connections, then resoldered it back in. When I tried the set again a good picture came up. Just as Greeneyes appeared.

"I've managed to do Mrs Millfield's set" I said. "Now, I know that she has a nice cuddly dog, and I know that you like nice cuddly dogs – and nasty dogs, come to that – but we must charge her something towards the ink I need."

"It's difficult" she replied, "she's such a nice neighbour."

I went back to the hut and continued with my writing. After a while, when I'd got most of the article done, I returned to the house. In time to see my neighbour about to leave, with the Alba set in her arms. When she saw me she stopped.

### A few more jobs

"Ah, Mr Bullock" she trilled, "thank you ever so much for tuning in this little set. I'm glad it wasn't much. I was just saying, you'll be getting a toaster and an iron to do when I tell my friend Beatrice how clever and quick you are. She's taken them to every shop in town, and some of the dealers have been quite rude to her. Especially that tall, thin chap at Snoddy's. Asked her if she took him for a mug, and even suggested that she had no father. If you ask me, I think we're lucky to have gentlemen like you to bring our work to."

"Mrs Drinkwater, I've not repaired an iron or a toaster for years" I cried, "not for years."

"Well fancy that" she burst out, "and now, because you've been so kind, you'll be getting one of each! Beatrice will be pleased. She hasn't got much money, you see."

As she departed she turned to Greeneyes. "What a nice man your husband is, my dear" she said, "come on Bonzo, let's go."

"Did you charge her?" I asked after she'd left.

Greeneyes looked at me and shook her head. "She's letting me have Bonzo here tomorrow while she's out for the day. How can we charge a woman like that?"

I slumped into an armchair. "Don't let's quarrel over it" I said – I can be magnanimous at times. "Let's have a cup of tea and an orange cake or two, then I'll go finish my article and get my book ready for the printers."

"Oh dear" said Greeneyes, "we don't seem to have any orange cakes left."

"None left?" I echoed.

She shook her head.

"Mrs Waterspout again, I suppose?"

"She seems to like them."

I got up, lurched back to the hut and settled down to finish this article.

### At Broadmead's

Many of you have asked for more trade reminiscences. One that occurs to me goes back to the time when I was an outside engineer at a branch in the Broadmead chain. It was common practice for us to deliver a set and leave it on demonstration for a few days. The policy worked. The viewer invariably got used to the set and bought it.

One day a well-dressed chap, Mr

***The first thing I saw was a dog as big as a pony. I saw it because it floored me with a single bound. As I got up, I saw something else. A huge, tweedy woman with a big toothy grin.***

Denby Vaughan, called at the shop and insisted on being dealt with by the manager. He explained that he had just bought the big house at the corner of Imperial Terrace, and asked for an aerial to be installed. Then he chose a large Philips TV set, and asked for it to be demonstrated once the aerial had been fitted.

This was all done. Mr Vaughan seemed to be impressed with the pictures, and it was arranged that he would call in at the shop the following Saturday morning to settle for the aerial and, almost certainly, agree to have the set as well.

That Saturday the sales staff had a busy time. When Mr Vaughan hadn't shown up by late afternoon, the manager asked me to go round to the house to check that all was well.

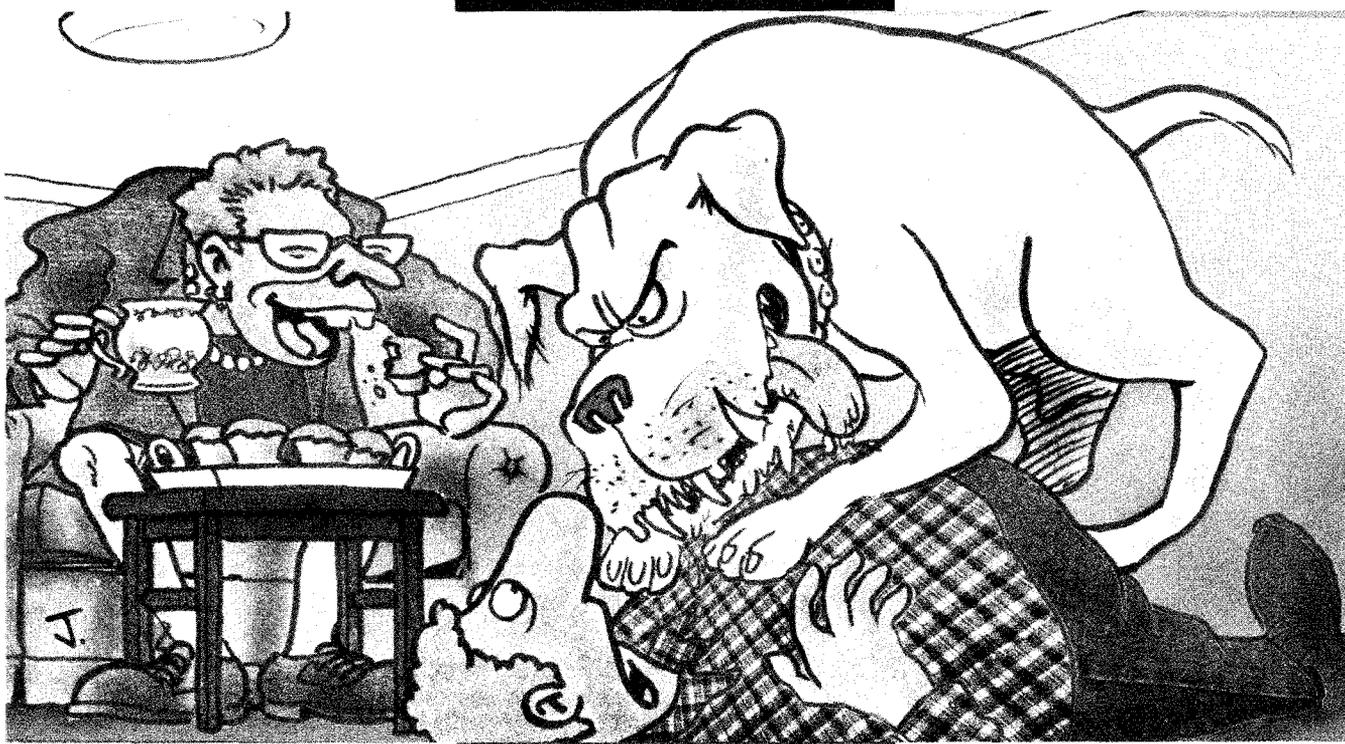
"I'm sure it will be" he said, "because he's clearly a gentleman of good breeding. But we must check."

When I arrived at the house a note pinned to the door referred callers to a nearby address. I popped round there. The door was opened by a lady who looked past me at my customised van.

"I take it you've come for Mr Vaughan?" she said.

"Yes" I replied, "how did you know?"

"Because most of the TV and appliance shops in town are after him. Anyway, he's gone. Said he was preparing to open a high street shop, and rented the whole house for two weeks. I now know that he had TV sets, tape recorders, washing machines and fridges delivered throughout every day. He took them all away in a big van every night. Then he disappeared, without paying me any rent. He seemed such a well-bred gentleman too." ■





**The secret of an unrepairable set that landed on Paul's bench is eventually revealed. Meanwhile I had all the easy ones. Servicing commentary by Donald Bullock**

# WHAT A LIFE

I could tell that the chap who was approaching our shop wasn't quite the ticket. He was wearing a white apron and was pushing a supermarket trolley that was covered with a shawl. When he came in he bowed and gave me a grin.

"Please do you lepair television sets?" he asked, "I'm the take-away. It's in my trolley."

I gave him a big smile. "Noted for it" I replied, "we lepair any make - or tly to."

He went outside and brought the trolley in. The set it contained was a little Matsui model. "We've been lobbed of our ploglammes" he said. "I'm Mistelee."

I couldn't figure out exactly what he meant, so I nodded understandingly, wrote Charlie Chan on a job card, and put the set on Paul's bench. It was still warm. Then I turned to the set I'd been about to look at.

## An 11AK19E3 chassis

It was a Seg, model Zurich, and the chassis said 11AK19E3. Oh for the days when they were all Ekco, or Bush, or Philips, or even Pye, Cossor, or English Electric I thought. Then I recalled those tiny high-value Philips resistors that used to lie half hidden and wide open, the Perspex Ekco line output transformer shrouds that used to conduct themselves to oblivion, the Cossor sets that required a contortionist to change the tuner valves, and the

English Electric sets with the EY51 EHT rectifier at the bottom of a pit of wax well down under the tube. I turned my thoughts to happier things.

I had opened the shop that morning because Paul had been to a get together the previous evening and Steven had to go to the dentist.

When Paul arrived, a bit jaded, he eyed the Matsui set. It was a 1408R.

"What's up with this one?" he asked.

"It's been lobbed of its ploglammes" I replied, "Mister Chan is vely distressed."

He gave me a funny look and plugged the set in.

I settled to the Seg. It was tripping, sorry tripping, and the standby LED was flashing. Grinning cleverly, I homed in on the line output transistor and tested it. It read perfectly. Grinning a little less cleverly, I checked the HT voltage. It was also correct. So I suspected a load on the line output transformer, and started by disconnecting the tube's anode cap. No luck. I looked at the chassis, then out of the window. It was a lovely morning, with such a pleasant light. I wished myself at Baker's Pool, after a few tench. Then back to reality.

"Have we got a circuit for this Seg thing?" I asked Paul.

He started to laugh. So I thought awhile then tried another angle.

"Any idea why it's dead?" I said. "I mean, do they have any stock faults? It's

tripping."

"Is the LED flashing as well?" Paul asked.

I nodded eagerly.

"Dunno" he said, "unless the feed to the regulator is missing. If it is, replace the safety resistor. It's R867, 0-33Ω."

I looked at him, but he had returned to the clouds with the Matsui. So I checked the resistor, which was open-circuit. I replaced it and carried out a resistance check between the supply and chassis. Everything was OK. Before switching on I spoke to Paul again.

"Er, any idea why the resistor failed?"

He shrugged. "Dunno" he replied, "they seem to go for no reason."

So I switched the set on. Up came a good picture.

"Can't make head nor tail of this set" Paul continued. "None of it makes any sense. Refuses to work, but I can't find any fault."

"Try the, er rectifier" I volunteered.

He eyed me coldly and returned to his misery.

## A Samsung

Just then Victor Smallpiece called in with a big Samsung colour set. He's a thin-faced fellow, a bit timid, from the Land of the Leek.

"Good morning, Mr Bullock, don't they?" he smiled

I'm not too fond of him, so I just gave

him a friendly grin.

"We don't watch the telly much" he continued, "but when they go we can't seem to get on without them, haven't they?"

I looked at his set, which was a 21in. Samsung Model CI5322. It's fitted with the P68SC chassis. "What's up with it?" I asked.

He grimaced and shook his head violently. "When I tried to get a picture it screamed it's head off. Terrible. Even the wife's dog got out. And Effie Philips started to hammer on the wall."

"Who's Effie Philips?" I asked, trying to show interest.

"Our next door neighbour, Mr Boater. Awful woman, doesn't she? D'you know, Mr Bullrush, she's had seven husbands, and . . ."

"OK Vic" I cut in, I'll give you a ring."

As he left, I got the set on to the bench and switched it on. It squealed all right, but I couldn't see why Effie should have kicked up so much fuss. Still I didn't know Effie.

"I can't mend this set" announced Paul. "My mate Joady earns three hundred and fifty quid a week driving a little bulldozer thing. And he can only count up to seven."

I conjured up a mental picture of Joady, standing bolt upright and strumming the floor with his knuckles. Then I got back to the Samsung set and dived at the 2SD1651 line output transistor. It was short-circuit.

"Found the trouble with my set" I said, as I fitted a replacement. Then I switched on. Nothing happened. I measured the resistance between the transistor's collector and chassis. It seemed to be all right, so I checked the HT feed. It was missing. Why hadn't I done this first? I soon found that the 10Ω, 7W feed resistor was open-circuit. I replaced it, checked carefully for any other damage, then switched on. The set gave a clunk, issued a wisp of smoke and started to bawl at me.

"This set's driving me mad" Paul said. "You ought to see Joady's car. One of those Silver Sphinxes. Cost him twenty thousand quid, but what's that to him? His house is like a mansion. Earns nearly four hundred quid a week, and no worries . . ."

Blow Joady I thought. What about this Samsung? I checked the new 2SD1651 transistor, which was short-circuit. And the new HT feed resistor had gone to heaven. Why? I checked for other shorts in the line output stage, but couldn't find any. Then I looked for dry-joints around the line output transformer. Everything seemed to be OK. At last I slipped my brain into gear, fitted a 100W bulb as a dummy load in place of the line output transistor, and measured the HT voltage. It was 165V instead of 125V.

"Ha, the Samsung's HT is high" I said,

"thought so."

"But not before you blew up a line output transistor and power resistor" said Paul.

I looked at him. "Look, I can't help it if you can't mend that Matsui" I said.

"I've always been able to manage 'em. Get the old grey matter working instead of thinking of bloody Joady and his bulldozer. Why, when I was your age . . ."

I turned back to the Samsung set and probed around in the power supply to see why the HT was so high. I eventually discovered that C852, a 470μF, 16V electrolytic, was low in value at 200μF. It's in the error-voltage sensing circuit. It seemed reasonable to assume that this was the cause of the trouble. So I fitted a replacement, a new 2SD1651 line output transistor and power resistor. Then I held my breath and switched on. Instead of the screaming noise an excellent picture came up, and when I measured the HT voltage it was spot on at 125V.

### Scales

Just then John Berryman, the most unlikely undertaker I've ever come across, plodded in. He's tall, bulky, red-faced and bluff. In fact he'd pass for a fruit farmer around here. And he doesn't mince his words.

"How be yuh, Don?" he bawled.

"Never mind the trade enquiries, John" I replied. "How is trade, anyway?"

"Pretty good, Don, an' just as well too. If they don't keep on dyin' we can't go on livin'. Here, mend these will you?"

At that he put a set of bathroom scales on the counter. Bathroom scales! When he'd breezed off I looked at them. The platform was solid. I removed a baby's teething ring that was jammed beneath it, then jumped on to test them out. I saw my weight and whistled. Good God!

### The major

A pair of scruffy men came in with a 28in. JVC set, Model AV28VM1EK. They were followed by Major Hagger.

"Morning Mr Bullock" he rasped, "on the bench is it?"

I nodded.

"Put it there you chaps, and wait by the car" he barked." The men made their exit.

"Sound but no picture, don't you know" he said. "Do whatever's necessary and give us a ring, there's a good fellow." And off he strode.

I switched the set on. Paul heard the rustle of EHT and looked over.

"If you turn up the first anode control you'll find you've got field collapse" he said. "That's another easy one you've got."

I took the back off, marked the first anode potentiometer's setting, and wound it up. A very reduced red raster appeared. When I homed in on the field output chip IC401 I found that it looked a bit baked

and was very warm. So I fitted a replacement, returned the first anode potentiometer to its original position, and switched on. An excellent picture appeared, just as Steven came in.

### The Matsui's problem

Paul looked over at Steven. "Dad's had nothing but easy ones today" he said; "while I've been lumbered with this Matsui set. Hey, do you know Joady, my mate? He earns over four hundred and fifty quid a week just for sitting about on a bulldozer thing. Bought his bird a gold ring last week, with a diamond as big as an egg. No worries at all."

Steven fingered his face. "Trouble with a Matsui?" he asked.

"Sure have" said Paul. "It won't work and I've spent all morning looking for a fault. Everything I check turns out to be perfect. But it still won't work!"

Steven looked at the set, tried it, then sniffed at it.

"The customer's Chinese" he declared.

"How did you know that?" I asked.

"The set smells like a takeaway. I know him. Name's Lee, not Chan."

I nodded.

### PIN code installation

"I reckon he forgot his PIN code again" said Steven. "fed it in wrongly a few times and disabled the set. Like he did last summer when you and Paul were in Spain. Gave me the runaround, I can tell you. Had to reset it with another number in the end."

"How does it work?" Paul asked.

"You have to switch the set off for at least an hour and a half, then switch it on. You are then allowed three attempts to enter the correct code. If you make a mistake each time, you have to switch off again, wait and try again. I think we'd better install a new number – an easy one that even he won't forget. Say 1 2 3 4."

"How?" I enquired.

"Enter the wrong code three times.

The set will be disabled. Switch it on and press the volume down button on the set while pressing 7 on the remote control unit. Hold both buttons down for a few seconds until OK appears on the screen. The set will then function and you can install a new code."

"What a life!" I said. "It's like everything else electronic. Full of time-wasting and confusing gimmicks, not because anyone wants them but because the technology is there and manufacturers are scared stiff not to use it. When I came into this trade fifty years ago I knew it would be difficult. Now, because of man-made complications, it's becoming impossible."

"My mate Joady doesn't have these problems" said Paul. "He gets nearly five hundred quid a week just for lolling about in a little bulldozer thing. Makes you think!"

# WHAT A LIFE

**The joys of tench fishing. An early start then a mixed bag of TV faults – and a camcorder problem. Donald Bullock's servicing commentary**

I suppose I brought it on myself. There's no fishing like tench fishing, and I've sung its praises so often to Paul and Steven that they are now hooked on it. That's why I sometimes have to open and look after the shop on my own. At times it can be a bit much for one person.

## Arrival

Three people were waiting outside when I arrived the other morning. I knew them all. There was Quiet Norman Glutton, who was sitting on a huge Ferguson TV set eating a pasty. The others were a regular oriental customer, Mr Bakwa Ng, and the domineering Mrs Runner with her son Clarence. If they hadn't all seen me drawing up I think I'd have fled past and hammered on the door of the Red Lion to ask for a large brandy.

"Hi Don" said Quiet Norman as I got out of the car. "Take the old girl's set in, will you? While I pop along to Crubbs Foodstore to see what they've got to eat. I'm famished."

The telephone rang as we entered the shop. "Joo do calls the same day" a voice said.

"We do our best" I replied, "where are you?"

"Baker's Way" the voice continued.

"Sorry" I said, "where's that?"

"First left at New Zealand, just past Australia" said the voice. There was frenzied laughter, then he hung up.

I looked at the phone, then hung up too.

"Good morning, Donald, I am being glad to see you" said Mr Ng with a smile.

"There's a loose wire in my set. It's giving me only a line."

He presented me with a Goodmans Compact 110, and I wrote 'field collapse' on the card as he departed. I looked at Mrs Runner.

"Tell Mr Bullock about our telly, Clarence" she ordered.

Clarence looked up and made to speak.

"It's gone wonky, ain't it Clarence?" she cut in. "Tell Mr Bullock what was on 'im when 'e went".

Clarence opened his mouth but wasn't quick enough.

"It was that fat woman, that Whimpey Opera, wasn't it, Clarence? Now tell Mr Bullock."

Clarence made another attempt.

"Cat's got 'is tongue I think" she continued, "it's our Bush, Mr Bullock. Dead. Now Clarence, shut up and get the set outa the car for Mr Bullock."

## Norman's Fergie

As they left Quiet Norman returned, paring at a pie with his pen-knife.

"Ain't bad pies" he announced. "The Fergie belongs to my new girlfriend. Dopey and loaded, 'er is. I likes 'em that way."

"What's wrong with it?" I asked him, "Nuthin', 'er's all right" he replied. I leaned forward. "The set, Norman, the set."

"Aw. Silly picture."

I wrote 'silly picture' on a job card as he departed, still busy with his pie.

The set was a Ferguson D68N, which means the ICC9 chassis. When I got it on the bench and switched it on I found that the sides of the picture were bowed. I've had EW trouble before with these sets, and it didn't take me long to home in on the BD675 EW diode modulator driver transistor TL40. It was warm – and short-circuit.

Starting the day with an easy repair is always cheering. I fitted a replacement transistor and switched on again. But what's this? Still a silly picture!

I applied a fingertip to the new transistor, which was warm. It was also short-circuit. What had blown it? My gaze settled on CL42 (4.7 $\mu$ F, 160V), which generates the collector supply for TL40. When I removed and tested it I found it was dead short. Once a new capacitor and transistor had been installed there was a sensible picture.

## No zoom

As I struggled to get the Fergie TV off the bench, ready for collection, the lovely Cassandra Grant came in with her Panasonic camcorder and W.D., her dim boyfriend.

"It won't zoom, Mr Bullock" she purred. "It was all right until W.D. used it, wasn't it, dear?"

"Huh?" said W.D.

"What did you do to it?" I asked, turning to W.D.

"Nuthin', I dunno, just nuthin'."

The camcorder was a Panasonic NVG2. Its lens had zoomed in but was reluctant to zoom out. As Cassandra and her boyfriend had ambled off, I began dismantling the camcorder to get to its lens assembly. The zoom motor has an attached reduction gearbox, to give a slow and smooth zoom action. This had seized up, and I couldn't free it. SEME supply the motor and gearbox as a single unit, part no. VEM0408. I ordered one and put the camcorder aside.

## Only a line

I decided to tackle Mr Ng's little set next. Field collapse, eh? When I tried the set the fault was nothing of the sort. It was line collapse. So I followed the line scan coil wires from the yoke and came to the coupling capacitor CH01 (4.7 $\mu$ F). It was a bit of a gooey mess, and proved to be open-circuit when I removed and tested it.

I cleaned around the area and fitted a replacement. This did the trick, restoring the line scan action.

Then the phone rang. I answered it.

"Is that the television shop?" an anxious voice asked. "Here, the top of your roof's ablaze. I've just driven past in my car."

I dropped the phone, ran out and looked up at the roof. No sign of any fire. I ran back in and picked up the phone. Frenzied laughter.

"Who's that?" I yelled, but the line was dead.

The last time I'd had some silly phone calls it had been Ribby Ellis, the self-styled practical joker. Was he back in town I wondered?

## The dead Bush

Ah well, time to have a go at Mrs Runner's set. It was a Bush 2169, and was indeed dead. I took the back off and checked for DC voltages. Nothing. So I moved back to the chopper circuit. No voltage anywhere, not even AC.

I then saw that the mains fuse had died a violent death. The P3NA990 chopper transistor Q1 could well have been the cause, and a check showed that it was dead short. Did it just die or was there a cause? I peered about in the area and saw some pappy high-value resistors. I don't trust high-value resistors, so I unsoldered and checked the ones here. Sure enough, two had gone high in value. R5 had risen from 680k $\Omega$  to 830k $\Omega$  while R4, which should have been 270k $\Omega$ , was virtually open-circuit.

I replaced the P3NA990 and the two resistors, gritted my teeth and switched the set on. To my relief an excellent picture appeared.

Once I'd boxed the set up and got it on to the floor I peered out of the window. It was a gentle, sunny day, just right for tench fishing. I looked at my watch. Time the boys were back. Why should I be slaving here while they were lolling about the banks? Then their car drew up and in they came.

"Had a nice time?" asked Steven.

"Not one bit" I replied, "and I think I'm



going mental. I've had over thirty idiots in and four crazy telephone calls. How many tench did you get?"

"Didn't get one bite" came the reply.

### A huge Sony

Just then Mr Macquater came in. He doesn't see straight. He looked at Paul with one eye and Steve with the other.

"Hello Don" he said, "it's a big 'un, I'm telling you."

"Never mind" I replied, "let's take a look at it."

Steven and Paul went out to his car and returned with a huge 29in. Sony set, Model KV29F1. It's fitted with the BE3D chassis.

"Picture's all right at first" said Macquater, "then goes like this." He pulled himself into an arc.

Steven took the set on. "It'll probably be dry-joints" he commented, looking around the line output section. He found some around the 2SC4793 EW modulator driver transistor Q801. Once they had been resoldered the set was OK.

### Church Hall set

An enormous old car bounced to a stop outside. The rotund Reverend Goode eased himself out at one side while his curate, Deacon Blande, alighted from the other. They came in.

"Ah Donald" sang the Reverend, "I trust you are well. Now then, I have this massive television set in the boot. It's from the Church Hall. Been frightening the old folks it has. Ticking, or something, they say."

We all went outside to get the TV, which was a 29in. Daewoo GB2898ST (CP775 chassis). The reverend gentlemen then went on their way as we struggled to get the set in and on to the bench.

*"The Reverend Goode" he said. "Very upset. Seems his curate tried to phone us to see if they'd left their remote control unit. Got a wrong number and suffered terrible abuse. He fainted. Whoever would have done such a thing?"*

It was tripping. Paul took the back off and started to look around inside. A check on the 2SD1880 line output transistor Q401 revealed that it was short-circuit. So was the BY228 diode D403 in the EW modulator circuit. After replacing them, Paul switched the set on again. A picture came up, but there was severe EW distortion.

He decided that D403's demise could well have damaged the 2SB546 EW driver transistor Q403, and was right. He also checked the associated 6.8μF, 50V bipolar electrolytic C302, which was also short-circuit. But replacements failed to cure the fault.

Q403, a pnp transistor, had no voltage at its emitter. What else was there around here? A series resistor, R406 (4.7Ω, 0.5W fusible). But where was it? After some searching it was discovered in a hideaway position, behind a heatsink close to C302. It was open-circuit, presumably the result of Q403's failure. Replacement of this item completed the repair. The set then produced a picture with normal scanning – and excellent quality.

### A Roberts Radio

Our next visitor was old Stan, who was

carrying an ancient Roberts portable. Steven gave him a smile.

"This wireless o' mine's stopped working" he croaked. "I reckon there's someone in there."

"Shouldn't think so" Steven said, "but I'll take a look for you."

It was the battery of course. Once a replacement had been fitted the set sprang to life.

"Wonderful" said old Stan, "only I thought there was someone in there."

### Confusion

Steven slipped next door for some cigarettes. Then the telephone rang. I answered it, expecting more jokery.

"Nyahhy wah, nyn wouh trol" said the earpiece. Just what I'd been waiting for. I'd give him a piece of my mind.

"Just get off the phone and stay off it" I said calmly. "A Godless oaf whose idea is to mess busy people about needs his mind seeing to. To hell with you, and that's final." Then I slammed the phone down and sauntered out the back to put the kettle on.

"I sure told him" I said to Paul.

The phone rang again as Steven returned with his cigarettes. He answered it.

"Why, hello Reverend. What? Good gracious, how terrible. Yes, I agree, too awful. Yes, it is here. It was left on the counter. See you later, Reverend."

As he hung up he had a puzzled expression. "The Reverend Goode" he said. "Very upset. Seems his curate tried to phone us to see if they'd left their remote control unit. Got a wrong number and suffered terrible abuse. He fainted. Whoever would have done such a thing? And I wonder what he said." ■

# WHAT A LIFE

**Some TV and VCR faults, a moan about the state of TV programs and presentation, and a spoilt radio-cassette recorder design. Donald Bullock's servicing commentary**

**W**hen I arrived at the workshop one morning Steven had a massive 32in. Fidelity set on the bench. The complaints were field collapse and EW-correction trouble. He had a look at the EW circuit and found the TDA8145 chip faulty, with its 3.3 $\Omega$  (safety type) feed resistor R711 open-circuit. Some checks in the field output section revealed that C620 (0.47 $\mu$ F, 250V) was short-circuit. Replacements restored correct scanning, but he needed help returning the heavy set and asked me to give him a hand.

"It belongs to a nice old couple. I know their son Glen" Steven said, "he's been abroad these last six months."

We took the set back and installed it. Then the old, rather frail, couple settled back to watch it. Steven noticed a photograph of Glen on the sideboard. "Oh look" he said to me, "there's Glen."

"What?" cried the old couple as they stumbled up out of their chairs and looked out of the windows, first one then the other. "Can't see him. Where is he?"

Steven had to explain and calm them down.

## **A Goodmans 1410**

When we got back Mrs Daymoore was waiting with her son Billy. "Hello Mr Bullet" she said, "tell Mr Bullet about it, Billy."

"E's all wonky" the boy said without paying much attention.

I decided to try to get him to be a bit more explicit and interested. "How wonky?" I asked, "slightly wonky, very wonky, wonky in what way?"

"Wonky as hell" he replied.

"Billy!" Mrs Daymoore cried, "be quiet now and put the set on Mr Bullet's counter."

Billy lifted a Goodmans 1410 from the floor and placed it on the counter.

"Now explain what the trouble is to Mr Bullet" she continued.

Billy looked at me defiantly. "Blank screen an' lots o' sound" he hissed.

"That's better" Mrs Daymoore said, "Mr Bullet will wonder wherever you was brung up."

I said goodbye to them as Paul took the back off the set. Fortunately it uses the Ferguson TX805 chassis, so we didn't

expect much trouble. When Paul advanced the setting of the first anode control a raster appeared, with no vision.

Steven looked over. "Had one like that last week" he said, "it was the M52038SP jungle chip IL01. But we don't have one left."

"Might as well make a few checks before we order one" Paul said. He decided to carry out some meter checks on the CRT base panel and soon found that the 12V base bias for the RGB output transistors was missing. The cause was easy enough to find. RT40 (68k $\Omega$ , 0.5W) was open-circuit. A replacement restored the picture.

## **Capacitor trouble**

"Ugh, oh dear, phew!" Mr Milton struggled in with a 25in. GoldStar set. He was carrying it the wrong way of course - screen forwards.

"It's my neighbour's set" he explained when he'd got his breath back, "just helping out." It was a CF25C22F (PC33J chassis) and was another blank screen case.

Steven took the back off and upped the setting of the first anode control. "Notice I didn't mark it before altering the setting" he said.

"Why not?" I asked.

"Cleverness" he replied, brushing his nails on his lapel.

I nodded understandingly. I also noticed that there was field collapse, and that C405 (0.22 $\mu$ F, 400V) in the line scan circuit had exploded.

"It'll be C405" I said.

Steven spun round. "How did you know that?" he asked.

"Genius" I replied.

A replacement capacitor restored normal operation.

## **Bouncing and rolling**

Meanwhile Paul was battling with an Hitachi C2119T (G7PS chassis). It seemed to have a good picture, and the sound was all right. But occasionally the picture would begin to bounce and roll.

"I've replaced the field timebase chip and a few other field timebase components" he said. "once or twice I thought I'd cured the fault, but it's still the same."

After a while Steven joined in, but the nasty intermittent fault persisted. I wondered whether it was a sync fault, but the line synchronisation seemed to be stable enough. Then I noticed a sideways twitch and, at the same time, slight video degradation. So the brief fault involved the field and line sync and video quality.

"There's intermittent IF instability" I said.

Steven tapped the IF cans until he found the one that produced the fault condition. It wasn't earthed securely. Once that had been put right the fault had gone.

## **More picture trouble**

At the time I had a Toshiba VCR on the bench, Model V219B. This was another case of an intermittently poor picture. I discovered that the symptom could be controlled to some extent by pressing the deck down here and there. In fact the deck sits on a copper earthing plate, which is at the back of the machine behind the drum: it wasn't making reliable contact.

Cleaning and flexing the plate cleared the trouble, but it's something to bear in mind. Next time I get a problem of this sort I'll install a thick, flexible bonding strip.

## **A moan**

Just why are we inflicted with such terrible television? I've been a bit restricted recently by damage to an ankle, and have found myself spending more time than I usually do stuck in front of the TV set. Since the last figures were announced, programme makers have been expressing concern about the decline in the number of viewers. But I find it hard to believe that they are seriously worried. If they were, surely they would do something about it? And I don't mean just about the poor programmes, but the awful presentation as well.

The programmes mostly seem to assume that viewers have no or very little intelligence. The characters have a limited vocabulary, and engage in a lot of swearing. Now I don't mind the odd well-chosen expletive where the context calls for it, or maybe to emphasise a point. In fact I was brought up in the

literary company of Deadwood Dick and Eskimo Nell. Even today, when the fish are slow-biting or I'm endlessly waiting for Greeneyes to emerge from a clothes shop, recalled passages from their saga together set me off laughing – often to the alarm of those passing by. But surely contemporary conversations don't consist mainly of swearing? Then there's the endless, mind-numbing triviality of it all.

There seems to be a view amongst the broadcasters that shoddy material can be made interesting by the use of 'lively' presentation. In fact it makes matters worse. Even the BBC News headlines are made hard to understand by the accompanying noise, urgently and discordantly pumping away.

There are good programmes. BBC Knowledge for example is very good indeed, but even these aren't safe from the audio whiz-kids. And excellent period plays can be marred and made hard to tolerate by the jangling and pumping noises that often accompany, and sometimes drown, the dialogue.

Why this conviction that the only way to hold interest is to inflict a constant attack on the senses? I know a better way. Here's how.

Get rid of the synthetic-sound and coloured-lights equipment, all the zooming and hovering and wandering cameras, all the cascading split-second takes and all the yobbos. Substitute good,

properly-presented programmes with conventional people using meaningful language. It can be done. The Forsyth Saga went on for months: while it was running there were empty streets and near-empty pubs.

### **An unfortunate purchase**

While I'm in a complaining mood, let me tell you about an unfortunate purchase I made recently. I had been working on a factual book called *The Legend of Clapham* and, while out taking notes, I came across an old boy who had lived through it all. He asked me into his home and I soon found that though he was a font of knowledge his enthusiasm kept running away with him. My pen simply couldn't keep up. So I stopped him and popped out to buy a small recorder.

I couldn't find one locally and had to settle for a radio-cassette recorder. It wasn't that small but was an attractive piece of equipment and the LW/MW/VHF radio side worked well. It had a built-in microphone. I also bought a couple of branded tapes. Then I went back to the old boy

He seemed a bit peeved. "It's getting on and I have to get down to my local afore long" he said.

I nodded understandingly, set everything up, made a test recording then played it back. The results were disastrous. He sounded as if he was

talking from inside a waterfall. So I called a halt, went back to the shop and changed the machine.

On my return I had to start all over again. But the replacement was no different. I took out my pad and prepared to take notes.

At this the old boy became testy. Told me that he was worth being recorded, that it had all made him extra thirsty, that he wanted a pint and was fed up with me and my tricks. He then threw me out.

I took the radio-cassette recorder to the workshop and gave it another try. Its recordings had a louder noise level than the audio content. When a prerecorded tape or a piece of unrecorded tape was played however the noise level was acceptable.

On investigation I found that the machine has a little block of permanent magnet that serves as the erase head. When I used a small rubber band to hold the magnet clear of the tape the recordings were excellent.

I then gave the rest of the radio-cassette recorder a once-over. It was really well made, and would have been excellent value had the makers spent a few extra pence and fitted a conventional erase head. Paring down costs is essential to produce competitive products, but in this case the result was that an otherwise successful model had been made useless. I took it back. ■

# WHAT A LIFE

It was going to be one of *those* days . . . Some of our nuttier customers came along with their sets, including the little mono portable whose owner says it provides surveillance

**M**any moons ago, forty-five years to be exact, I used to work with a manic-depressive fellow. He'd been all right before he came into the servicing trade mind, but that's another story. His name had better be Syd.

Some mornings Syd would get out of bed on the wrong side and stomp into work with his face all screwed up and a huge bank of black, swirling storm-cloud over his head. Within minutes something would go wrong for him. Perhaps a thrush would sing a few notes through the window, or a customer would smile at him. "Oh it's going to be another of *those* days, I can see it" he'd declare. "Oh, ah I can just see it . . ."

And he was always right.

Well, I had one of *those* days yesterday. I was on my own in the shop again. Paul was out having fun at the dentist's, and Steven had gone to see the accountant for a few laughs. I ought to have known that the enemy would strike, but I hadn't anticipated a battalion.

## Early comers

It began at about a minute past nine. That's when I saw Hubert Tubbel fighting with his car door from the inside before he tumbled out and bowled towards the shop. He barged through the door and glowered at me.

"Great Big Goodmans!" he declared.

I turned around. No one there, so I faced him again.

"Great Big Goodmans. Yes or no. Just say it, yes or no?"

"Great Big Goodmans?" I countered, "Great Big Goodmans? . . ."

He wedged his knuckles on his ample hips and scowled. "Why do I have to say everything twice? All I'm asking is, joo mend Goodmans tellies?"

"Oh, er, yes. We try."

"That's all I wonnid to know" he said as he went back to his car. He came back with a huge 25in. Goodmans set.

"Absolute snowstorm" he said thickly, sweeping his unruly hair back. "Absolute snowstorm. No other word for it!"

I looked past him, through the window, but it was sunny outside. He saw me and leaned forward.

"On the set, I mean" he said quietly.

I smiled politely, pulling my mouth

askew to show him the best of my teeth. It seemed a bit early to me for fisticuffs.

## Under observation

As he departed Peter Nuttence came in. He's a nice enough countryman from Woodbury, but worries about his neighbours. When I first encountered him a few years ago he was convinced that they had him under surveillance. He'd grown a huge, wide wall of thick evergreen around his smallholding to ward off their influence.

"Haven't heard from you lately, Peter" I said.

"They've been leaving me alone a bit, Don" he replied, "but now they're back at it. They've erected a giant dish to monitor my movements. It points straight at my place. When they think I'm out they come poking about in my hedge. But what they don't know is that this old Sanyo telly of mine picks 'em up, as always. Worth its weight in gold. It's seen them again all right, and I've reported them."

"Er, what can I do for you Peter?" I asked.

"Well the Interference People are involved. They want to be sure that the set's all right, and not sort of making up their images. So perhaps you could satisfy yourself that it's all right then sign this form I've been given. Then they'll get to work – probably cart the villains in."

He put the little Sanyo set, a Model 12T280, down and left.

## The untidy and the timid

As he left I saw this thin, gangling fellow across the road, carrying what looked like a Sharp TV set. Then I realised it was Mr Moggie, another character I'd not seen for a long time. He came in and I noticed that his hair was as long and tangled as ever. He had a silly grin on his face.

"Hello there Mr Bullock" he piped, "put on a bit of weight I see." His voice sounded like a catfight in the early hours.

I looked him over. Untidy wretch, I thought. Dirty teeth and sleepy stuff in his eyes. Horrible. I gave him a friendly grin.

"It's no bigger than this, Mr Bullock, even after half an hour" he grated,

holding his hands three inches apart, one above the other.

"I don't suppose it is" I replied, increasing the friendliness of my smile. "But why are we blessed with your presence on this fine day?"

He put the set on the counter. It was a Sharp Model DV5131H (S3B chassis). "I want you to mend my set, Mr Bullock. It's got such a narrow picture you see."

"Leave it with us" I said, "we'll soon have it sorted out."

Our next caller was Ernie Twopp, a timid, thin-faced Welshman who always looks as if he's just been crossed in love. He had a Sanyo colour set with him, Model CTP3131 (80P-B14 chassis). I know it well.

He looked at me, stood back, then spoke.

"Twopp" he said, "Twopp."

"Suppose it must be" I replied, then reflected for a moment. This is getting too much, I thought. It would be nice to be a traffic warden. Lots of scope to get really nasty and wind people up – and make them pay for it! Wonder how much I'd get a week?

But Mr Twopp was on again. "Now tell me, please, Mr Bullock, would it be possible to mend this set?" he asked. "I mean, Gumboils can't. They kept it for four months, then said it wasn't worthwhile. Tried to sell me a sixty-five inch Chinybunk with two Christmas hampers and a tea set thrown in as a deal. Finally recommended you when I got a bit testy."

"Outrageous of them" I said, "but what's wrong with it?"

"Dead" he replied.

## Tea

I smiled and waved him out. Then Greeneyes came in with two mugs of tea.

"One wound have been enough" I said.

"Don't be funny – one of them's mine" she said. "Now, they've got this lovely two-piece suit at Marks. Lime green. Only a hundred and fifty. It'll go really well with those nice pink shoes at Olivers. Oh, and that white frilly top I saw in Debenhams . . ."

As she spoke the door opened and a quiet, elderly man came in. Surely it must

be Eli Roberts, who lives in the cottage by Walker's Pool? I hadn't seen him for years. I looked at Greeneyes, who nodded. She'd recognised him too.

## An Hitachi VCR

He placed an Hitachi video recorder on the counter, Model VT530E. "After it's been on for half an hour the picture starts to freeze every few seconds" he explained.

"All right" I replied, pulling over a job card. "How are you keeping Eli? You look well."

He stared at me. "E what" he echoed, "I'm no Eli anybody. Name's Charlie Hudson. From Worcester Street."

"Oh, er, sorry" I said. "Strange, you look just like Eli Roberts, an old fellow we know."

"I'm old either, Mr Bullock." Then he smiled. "Do you know" he croaked, "this is the third time this week I've been mistaken for somebody else. The last fellow was really rude and persistent about it. 'No, I'm not Fred Weaver' I told him, 'I'm Charlie Hudson.' Then he'd looked at me and said 'You're bloody not Charlie Hudson, I know you. You're Fred Weaver!'"

"Only one answer" I said, "leave the district."

"I'm beginning to think it might be a good idea" he replied.

## A busy workshop

As he left Paul and Steven came in. Paul decided to have a look at the VCR. It worked perfectly at first, so he left it running while he popped down to the Red Lion to see why their JVC AV21F1EK TV had no display. He was away for some time. When he came back the VCR was playing up exactly as Charlie Hudson had said it would. The picture froze for a second every few seconds.

"What was the trouble at the Red Lion?" I asked.

"A pint of bitter" he said.

"No, the JVC set" I persisted.

"Oh. The same old fault I've had with ever so many like it. No display, no teletext. Cause was dry-joints at the L7805ABV 5V regulator IC522."

Paul returned to the VCR. When he opened it up the fault symptom cleared. So the cause was heat-dependent. He put a blanket over the VCR and it resumed its tricks. Then, by accident, he found that the capstan motor was running hot. As he observed the motor he noticed that it was stopping in sympathy with the picture freezing. A new motor cleared the trouble.

Meanwhile Steven had been looking at the Sharp DV5131H colour receiver with the narrow picture. When the set was switched on the picture was only about an inch high: it gradually increased to about three inches. After checking around in the field output stage he went to the power

supply and soon found that C712 (100µF, 35V), the reservoir capacitor for the 24V supply, was low in value. A replacement cured the fault.

The Goodmans set, Model 256NS, was fitted with the Philips L6.2 chassis. Its display consisted of snow and a strange line striation down the middle. There was no remote-control operation, and no front-button operation either. Paul checked the voltages around the microcontroller chip, then moved to the power supply where the 5V output was low at only 2V. The cause turned out to be the BC337/25 transistor TR7505, which was leaky emitter-to-base. A new transistor restored the supply and a good display.

"Anything else?" he asked.

## The Sanyos

"Yeah" I said. "There's a Sanyo mono portable, Model 12T280, that picks up the pair of spies that are pestering one of our valued clients, old Mr Nuttence of Woodbury. They've tuned on to him with a big dish, and he doesn't like it."

He looked at me for a minute, then plugged the set in.

"Seems to work all right" he said. "No spies or anything. Only that strange *Weakest Link* woman. Where do they get them? I'd prefer the spies."

Then he picked up Mr Twopp's dead set, the Sanyo CTP3131. The BUT11A chopper transistor Q304 often fails. It was short-circuit, and had taken with it R313 (2.7Ω) – the two are connected in series. He replaced these items, then switched on. The set started up, made a choking sound and died. "Must have forgotten

something" he said, "ah, yes, the 390kΩ start-up resistor R302." Once this had been replaced the set worked well.

But Mr Nuttence's Sanyo was playing up, if only intermittently. The loudspeaker produced choking noises, and the picture gave way to shimmering and shadowy grey shapes. There was also a faint hum on the sound.

"There you are" I said, "spies, just like the man said."

Paul found that turning the rotary tuning knob very slightly affected the distortion. This happens with a set that uses the old type of mechanical tuner – when the tuner's earthing springs become green and gooey. He opened the set, found the electrolytic capacitors he'd replaced in the power supply a few years ago, and set about checking them. C705 (2,200µF, 25V) and C617 (6.8µF non-polarised) were both low in value. Once replacements had been fitted the hum had gone, but the choking and strange shapes remained.

Paul eventually tried heating the mains bridge rectifiers. A three-legged back-to-back pair had originally been fitted: we had replaced them with four BY127s, one of which had become leaky. Paul changed the lot, after which there was no further trouble.

"I think we've chased the spies away" we told Nuttence when he called to pick up the set. He went out slowly and headed for his car, eyeing everything about him suspiciously. A sad case.

**Postscript:** We've since had three or four of those Hitachi VCRs with the same fault. ■

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# WHAT A LIFE

**Some audio equipment, VCR deck and monitor problems. A wet TV set. Failure of the keyless chuck in Bosch electric drills. Don Bullock's servicing commentary**

It was as black as night, well almost, when we opened the shop the other morning. The sky was dark, and the breeze was giving way to a gale.

Our first customer was Warder Phil. He's a quiet fellow who seems to spend a lot of his time giving practical advice to those incarcerated in the local goal – the bad, the mad and the sad as he puts it.

"Seems we're in for a wet and windy day" he said. He'd brought with him some Technics audio equipment – an SLDH501 mini system and an SLPG480A CD player. "This one's mine" he said, pointing to the mini system. Plays CDs perfectly for a while then stops. Nothing we do makes any difference."

"Sounds like Don" came the comment, in a silvery voice, from the back room. Greeneyes feeling clever again.

I thought for a second about a suitable reply, then heard the chink of tea cups. I decided against it. "What about the CD player Phil?" I asked.

"Only plays the first track" he said. "Belongs to one of the inmates. Unlucky chap. Shouldn't really be inside. Name's Walter Doolan if you want to put something on the job sheet."

As Phil left Greeneyes came in with a tray of tea and some chocolate biscuits. "Good" I exclaimed, "I like those biscuits."

"Not for you" she said, "they're for Paul. You know you're on a diet."

"Am I?" I queried.

"Well, just look at you."

I picked up my mug and suffered alone.

## Mr Flighty

"Har, har, slacking again" broke in a loud and too-confident voice, "not another tea break. Don't know how you tolerate it, my dear."

I looked up. It was Mr Flighty showing off in front of Greeneyes. She was grinning as though she found him funny. Silly girl.

"What brought you here?" I enquired.

"Me legs!" he bellowed, "har, har. Never a dull moment. Hear that?" he said to Greeneyes, who smiled happily.

He placed a GoldStar PW904I video recorder on the counter and started to sing.

"My eyes are dim I cannot see, I have not brought my specks with me . . ."

I waited patiently for him to stop.

"Did you get it, Donny boy?" he asked. "Dim, see. The display is dim."

I wrote 'Mr Prat, dim' on the job card and bade him good day.

As he departed there was a flash of lightning, a clap of thunder and a down-pour. He was getting soaked. Serve him right.

## Workshop expertise

Meanwhile Paul had been taking a look at the Technics audio equipment. The SLHD501 mini system played for about five minutes then died. He decided to carry out some checks on the various supplies and found that the output from the 7.8V regulator transistor Q405 was slightly low. The cause turned out to be R443, which with a zener diode provides the base bias. It had risen in value from 6.8Ω to 17Ω. There was no more trouble once a replacement had been fitted. It's a safety component rated at 0.25W.

The SLPG480A CD player also had a power supply fault. C11 (2,200μF, 16V), the reservoir capacitor for the +10V supply, had gone low in value. A replacement restored normal operation.

I took a look at Flighty's GoldStar VCR, whose display was indeed dim. It seemed to me that I'd had this fault before. Hadn't the cause been a capacitor in the power supply? I checked with the notes we keep on our workshop PC. Yes, there it was: C25 (100μF, 10V). A replacement restored the display's brightness.

## The Red Lion

The phone rang. It was Len, the landlord of the Red Lion. "Is that Steven?" he asked.

"No, this is Paul. Steven is at home, finishing his new conservatory roof. Can I help?"

"Hope so" Len replied, "old Boney Twait has brought a computer in and has pretty well sold it to me. But as I was

handing him the loot the monitor died. Is it something you can deal with?"

We decided to go together. The bar was crowded. Paul who, like his brothers, is about six inches taller than me peered about for Len. A girl in an apron, on our side of the bar, looked his way and called over.

"Is your's a pint?" she said.

"Of course" Paul replied, "and one for my Dad here."

The girl stopped and looked at him. "I'm not talking you" she said, "I'm talking to my husband, right behind you."

We looked round and saw a big, bearded fellow, about six feet square. Fortunately he looked peaceful.

Then we managed to catch Len's eye, and looked at the monitor. It was a Mitsubishi Diamond and was dead all right. We decided to take it back to the workshop, where Paul carried out some checks in the power supply. He discovered that the zener diode D904 was short-circuit. It was also dry-jointed. He replaced it and switched on. Fortunately the monitor sprang to life. Paul decided to take it back to the Red Lion.

## The Major and the wet set

As he departed Major Hagger drew up outside in his Jaguar. A second later he was at the counter, holding a Sony KV21FV1U combi unit as if it was a giant stink bomb.

"A present to my darling daughter from her specimen of a boyfriend, Captain Pimm-Browne" he barked. "Started off full of life then fizzled out. Course they do, these Military College fellows. Paps. No substance. He bought the set from that tall thin chap at Snoddies, but he's no match for their antics. In my day I would pray for shifty rogues like that to show up before me, so that I could straighten them out. But enough of Pimm-Browne and his problems. This set. Worked all right, then started stoppin'. Not good enough. Fix it then ring me. Right?" At that he was gone.

As he left Steven squelched in. He was carrying a soaking wet TV set. "Spent all morning sealing my new

roof" he said, "then this cloudburst flooded through it and soaked the television set. It wasn't switched on of course."

"Get it on to the bench and I'll save its life" I said. "Meanwhile there's a job for you to do. The Major's Sony combi unit."

"What's up with it?" he asked.

I drew myself up as best I could.

"Keeps stoppin'. Not good enough. Fix it. Ring him. Right?" I said.

Steven's Hitachi set, a Model C2546TN, was thoroughly wet.

Greeneyes got me a roll of kitchen paper which I used to remove all the moisture I could see, paying special attention to the line output and chopper transformers and to all cans and components that could harbour moisture. Then I propped up the chassis in the cabinet and placed the bench hairdryer underneath it, switched on at the lowest heat setting. I slipped the set under the bench for a long, warm snooze.

### Deck problems

Steven had got the Major's Sony KV21FV1U combi unit up on his bench. Sure enough the tape mechanism was intermittent. But after an hour's checking he was no further forward.

Then the delightful Tamara Lee swayed in, carrying a Sony video recorder – an SLVE280. "Oh Mistel Booyock, this machine, it's so unkind to me. Filst, he do what I want, then he stop. It makes me so upset."

I assured her that we would be able to fix it, and she left. As I stood looking at her recorder Steven shot across and snatched it. He pushed the Major's dismantled combi unit along to Paul's part of the bench and started to work on Tamara's recorder.

"I know these well enough" he said, "you get a fair bit of trouble in the power supply. Let's see now."

Meanwhile Paul had returned. "Huh, that's great!" he exclaimed, looking at his bench. "Someone's pulled a Sony combi unit apart and dumped all the bits on my bench. I'm scared to death of them even when they are intact and untouched."

"They're quite easy really" Steven said, "I've only put it aside because this job is more urgent."

Paul settled to the combi. After a few minutes he started to box it up. Seeing this, Steven spun round.

"What was it then?" he asked.

"The take-up spool's optocoupler, PH452" Paul replied. "Thought it would be. How are you doing with the Sony video?"

"Well, I've found the voltage I want, but it disappears before it gets to where I want it. I wish I had a circuit diagram."

"Try the 1A circuit protector PR512"

Paul suggested. "They're always giving trouble in these machines. Sony uprated it to 2A a while back. That's what I usually fit."

"Ah, yes, that's what I was thinking"

Steven said as he moved to the circuit protector, which was open-circuit. A replacement restored normal operation.

"Tamara will be pleased" he said.

"Don't forget the Credits" Paul added.

### Problem with an electric drill

Is anyone out there the proud owner of a Bosch PSB500RE electric drill with keyless chuck? If so, the best of luck! I bought one a while ago because I was fed up with losing the chuck key of my old Black and Decker, and snagging my fingers on an ill-fitting one I always seemed to find instead.

The Bosch, with its keyless chuck, was wonderful to use – though I did wonder why the chuck, the business end of a power tool, was skirted with a soft black plastic skin. Then, after the first week or two, the chuck jammed open as I was replacing a drill. I tried tightening it but couldn't. So sprayed its inside with WD42 and tried again. As it remained jammed I took it back to the dealer.

"Bosch wouldn't regard this as an in-

guarantee fault" he said, "the chuck is slightly marked. They'd claim misuse. I daren't send it."

"How much is a new keyless chuck?" I asked.

"Sixteen pounds" he replied, "and we'd have to get one."

I put the useless Bosch in the shed and returned to using the Black and Decker one. After all it's a perfectly good drill. I'd only retired it because I wanted the keyless chuck the Bosch boasted.

After a week or two I so missed the keyless chuck that, although it went against the grain, I went back and paid up for a new one. Once again the drill was a joy to use. Greeneyes also liked using it, in the garden, to drill little holes for hooking up her shrub branches on the walls. But the new chuck jammed open on her too.

This time I sent it back to Bosch with an explanatory letter. It was away for a month, but eventually came back at no charge. I was delighted – until I opened the package. The keyless chuck had been replaced with a conventional one. And, for good measure, there was no key.

Not that I wanted one. The Bosch is back in the shed, and I'm using the Black and Decker again. I wonder what the problem is with the keyless chucks? ■

## Book review

**Digital Television by K.F. Ibrahim, published by Pearson Education Limited, Edinburgh Gate, Harlow, Essex CM20 2JE at £19.99. Paperback (card covers), 197 pages.**

It is surprising how much information Mr Ibrahim has managed to pack into this modest-sized book. It means, amongst other things, that you don't have to wade through masses of largely irrelevant information to get to what, as a practising technician, you need to know. Too many textbooks get bogged down in arcane theory before they get to practical matters – in this case the signals and waveforms, coding/decoding processes and so on. It also means that Mr Ibrahim has been precise and to the point in his treatment of the many matters covered in the book.

While digital TV has been with us for some time there has, to date, been little need for most service engineers to get involved. This has been because of the 'free' digiboxes and the way in the broadcasters have been involved right up, almost, to the TV screen. But this situation is likely to change. As things develop, digital TV equipment will leave the in-guarantee period and require attention from general service practitioners. You will then need to be clued up about the various systems in use, satellite and terrestrial, and how they function. This is the ideal book to use, both as an introduction and a handy reference.

The book covers pretty well all aspects of digital TV technology as this stands at present. It takes you through the basics, without making life too hard. For example the account of the discrete cosine transform, which is basic to MPEG signal compression, is the clearest I've come across. Once the basics have been dealt with there are practical descriptions of receiver systems, with plenty of diagrams, waveforms and some circuits. This is followed by sections on interactive TV techniques, power supplies and receiver system testing. The book is well organised, well illustrated and has a very helpful index. I'd have no hesitation about recommending it. **J.A.R.**

# WHAT A LIFE

**A capstan motor repair then the story of Donnie, a contrast between two trades. Don Bullock's servicing commentary**

**A** couple of months ago I mentioned a problem that you can get with certain Hitachi VCRs, e.g. Model VT530E. The symptom was picture freezing every few seconds when the machine has been on for half an hour or so, the cause being the capstan motor. Ron Mitchell in Aberdeenshire recently contacted me about the fault – he trades as Newtonhill Electronics. Paul and Steve have replaced several of these motors.

## **A capstan motor repair**

According to Ron the trouble is that grit gets past the shaft seal and causes friction. The motor then draws excessive current via its drive chip, which runs hot. Being servo-controlled, the motor's speed remains constant – apart from the brief stopping – until the chip's heat-induced demise. Ron used to replace the complete motor but has now adopted the following procedure.

Dismantle the motor, remove the bearing, and clean it with WD40 before polishing it with Duraglit. Apply a light coating of oil to the bearing, then reassemble the motor. Ron says he has carried out many of these repairs with no bounces, even after more than a year. He adds "I'm glad it works so well, as many people balk at paying any more than £30 for parts and labour for a VCR repair these days".

My thanks to Ron, for his e-mail and our subsequent conversation. It recalled to my mind the following story of a chap I used to know.

## **Donnie and the nasty car**

Are you sitting comfortably? Then I'll begin.

Once upon a time there was a bright little schoolboy called Donnie, who was *very interested* in resistors and condensers and crystals and bits of wire. He spent all his time trying to make clever things, and one day succeeded in making a crystal set that *really worked*.

"What a *wise and clever* boy!" said all the grown-ups who knew him. "He'll go a *long way* and make a *lot of money*."

In the fullness of time Donnie grew up, and *so many* people sought him out to do their *electronic repairs* that he could give up his 'proper' job. It wasn't long before he thought it would be nice to change his bicycle for a car, so that he could give a faster service. So he bought himself an old car, and cleaned and polished it *every day*.

But the car turned *nasty* on him. It took to cutting out as he was negotiating *very busy*

roundabouts. This made him late for his service calls, and one day one of his customers stamped his foot and called him a nasty name. So he took his car to an *expert* at the local garage.

"It probably needs a good service" the expert said. And Donnie believed him. He could tell by his face that he was *very clever*.

"Call when you've a hundred and ten pounds to pay for the service" the expert said.

Now Donnie didn't have *anything like* that much money. So he *worked and worked* at his repairs until he did. Then he called on the *clever expert*, paid him all his money and collected his car.

But two days later the car did *exactly the same thing* at the same roundabout. So he took it back to the expert, who just about managed enough interest to talk about it.

"Can't be the plugs" said the expert, "cos we replaced 'em last time. Must be the spark leads or the distributor cap. Call for it when you've earned another thirty pounds."

Donnie *worked and worked* some more, paid the expert another thirty pounds, and collected his car.

Two days later it did exactly the same thing again at the same roundabout, and Donnie took it back to the expert.

"Hm . . ." said the expert, "the ignition sometimes gives trouble with these cars. So does the coil. We'd better change the lot. Call for it when you've another hundred and twenty pounds."

Donnie *worked and worked*, and eventually had enough to pay the expert another hundred and twenty pounds. He collected his car once more and departed.

But the trouble still hadn't been cured. Two days later the car did the same thing at the same roundabout.

This time the expert serviced the carburettor, cleaned out the fuel pump and flushed out the fuel tank and pipes. "Come and collect it when you've another sixty pounds" he said.

Donnie *worked and worked* until he was able to pay the sixty pounds. Then he jumped into his car to drive away. But instead of *moving it cut out* again.

"Hm . . ." said the expert, "perhaps a *valve* is cracked or seating badly. Leave it with me."

Well Donnie couldn't do much else. So he left the car there and walked home. Later on he phoned the expert, who said he was stumped, wanted another thirty pounds for his time, and advised Donnie to take his car

to the *Main Agent*.

"We shall want two hundred pounds to replace some more parts" said the Main Agent. "But we can't *guarantee* this will cure the trouble, because it's so *intermittent*."

At this Donnie lost his *presence of mind*. There was a *very pretty* car for sale on the Main Agent's forecourt. He traded in his *nasty* car and quite a lot of money for the new one.

"How nice to have a car that works" he thought as he drove to his workshop to try to *make up* some of the money he'd spent.

## **The Roughneck's TV**

As he started, Mr Roughneck came in. He was a huge bear of a man with a *heavy* gold neck chain and an *even heavier* gold wristwatch. He carried a 26in. Ferguson TX100 set as though it was an *empty box*.

"I'm *mentally challenged*" he bawled, "so I works on an off-shore oil rig. Two weeks on and two weeks off. They pay me thirty eight thousand a year." Then he pointed to the TV set. "This set kips losing its colour. There's lots of *electronics wizards* on our rig. They reckons it's the *tube*."

"I doubt that" said Donnie, "more like a *decoder problem*, I'd say."

"The wizards on board would know better" said Mr Roughneck, "them's *whizkids* with *university degrees*." And off he prowled.

When Donnie switched the set on he found that the picture was noisy and watery, but it improved as time went on.

He took out the chassis, looked at it, and saw lots of dry-joints in the chopper and line output stages. He decided to resolder every single one. Then he looked for the cause of the watery picture, and found that some of the electrolytics in the power supply had fallen in value. So he fitted replacements.

But he had to run the set for two full days before the colour dropped out, for just one second. He used a magnifying glass to find some tiny dry-joints at the pins of the colour decoder chip and some of its peripheral components. Then he noticed that the joints around the field output chip looked dry and dusky, so he resoldered them as well.

He boxed the set up and tested it for two days before he phoned Mr Roughneck.

"It wasn't too much of a problem" he said, "just some dry-joints in the colour circuitry. For good measure I've resoldered some dry-joints in the power stages as well, and replaced some electrolytic capacitors to

cure the watery picture when you first switched on."

"Watery picture?" bawled Mr Roughneck. "I never noticed no watery picture. Any'ow, 'ow much is it?"

"Twenty one pounds" said Donnie, feeling apprehensive.

Later on Mr Roughneck came to collect the set. "So there wasn't much wrong, eh?" he growled, "what did you do, swap one of the boards?"

"No" said Donnie, "there's only one main board in this set."

"No wonder it was easy to mend" said Mr Roughneck, "there's dozens of boards in the equipment on our rig. That's why our boys get the mega-bucks, see. They golla be really clever. *Really clever!* In a different class to the likes of you."

As he left, Donnie *wished and wished* that instead of being a TV engineer he'd been a traffic warden, a pop song shouter or a counsellor of sappy prats.

## Follow up

One evening, about a week later, Mr Roughneck phoned again. "This telly's still going to black and white" he shouted, "you sure you *did anything* to it?"

"Bring it in tomorrow, Mr Roughneck" said Donnie, "we open at nine."

But Mr Roughneck brought it along at seven. Donnie was still in his pyjamas, shaving.

"Give us a hand to get it outta the car" bawled Mr Roughneck, "I can't hang about. On my way to the *football match*, and I wants to beat the rush-hour traffic."

Donnie, half shaved and lathery-faced, went out to Mr Roughneck's car. It was parked half way up the road. As soon as Donnie had the set in his arms Mr Roughneck sped off, leaving Donnie to carry it back himself.

He soak tested the set for two days, after which the colour dropped out – for half a second. Donnie spent hours and hours with a meter, a scope, a can of freezer and a hairdryer, monitoring waveforms and applying freezer and heat to the chroma circuitry to make the colour drop out again. But it wouldn't. It remained in glorious colour throughout.

He decided to fit a new decoder chip, a new crystal and various other components. Then he soak tested the set for a full week before phoning Mr Roughneck to tell him it was OK.

"Have you done the job *properly* this time?" Mr Roughneck growled when he called. "I'm getting *tired* of this you know." He carried the set off to his car without even asking whether there was anything more to pay.

A week passed, then the phone rang again. "This is Mrs Roughneck, and I een't very 'appy. The telly's still going to black and white. I phoned my husband on the rig last night and he's hopping mad with you. Said

you needs a good hiding. Either you fix it properly, he said, or he'll give you what for *and* 'ave his money back. And this time *you* come and fetch it."

So Donnie did, and after hours of work with perfect waveforms the colour dropped out long enough for him to see that when the fault was present the sandcastle pulses were distorted. Replacing the sync and timebase generator chip, which produces the sandcastle pulses, made no difference. He eventually traced the cause of the trouble to the SAW filter – a fault he'd never encountered before or since.

When Mrs Roughneck called she just told Donnie to carry the set to her car, which she'd parked even farther away than Mr Roughneck. There was again no mention of payment.

## Four months later

Four months went by and Donnie had almost forgotten about the Roughnecks and their troublesome set. Then the phone rang and it was Mr Roughneck.

"This telly's now even worse" he ranted, "no colour, no picture, no sound. Just a squeaking noise from the back. Your name's muck on our rig. You don't know *nothin'* about tellys. They said to tell you it's the valve or the transformer. I'd do it myself if I 'ad one of those meter things. But I ain't, and I'm on my way in with 'im."

He duly barged in and dropped the set on the counter. "You must 'av left something unplugged or disconnected" he said as he

stormed off, "now look, this time I wants 'im right, or else. I bin very patient with you, but when I gets mad I gets mad."

Donnie found that the line output transformer had failed. He phoned Mr Roughneck to tell him, and explained that as this was in no way connected with the colour fault it would be chargeable.

"But the set ain't bin right since you first done 'im" Mr Roughneck bawled, "how can the transformer have failed? You completely overhauled the set yourself only a couple of weeks ago. Nobody's touched 'im since. Explain that!"

Donnie finally exploded. "I'm a TV engineer, not a clairvoyant" he shouted back. "And if you're too thick to understand what I'm talking about, take your set to the flaming whizkids. Or throw it into the sea. Or find another mug, because I've had enough. Just take it away."

## A vacuum cleaner query

Finally, a query from Greeneyes. She's delighted with her new Dyson DC03 upright vacuum cleaner. It cleans the carpets very well indeed, but doesn't seem to be very good at picking things up off our tiled floor. Things like dead flies and the tiny berries that track into the house from the garden path. The machine converts to cylinder-type action, but this is a bit of a business. Who knows their Dysons? Should it, as an upright cleaner, pick up things like flies in its stride? Or is it so sweet and gentle as to be above such chores? ■

# Valve Radio and Audio Repair Handbook

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# WHAT A LIFE

## A new neighbour moves in. Gunter turns out to be a very clever TV engineer, but has difficulties with the locals. He manages to sort out some of Donald Bullock's problems however

Women are like that. Especially Greeneyes. They notice things then tell you about them, in detail. Often things you don't want to know about. It happened to me the other day, while we were in Spain. "Some new people have moved into the empty house across the way" she told me. "They seem to be German. He's fitting a huge dish. Heard him telling his neighbour that before he moved here he had the biggest television shop in Hamburg."

"Filthy swine" I said.

A bit later our gate swung open and our new neighbour walked up the drive, stiffly. Unlike me, he's a slim and uptight cove. His rimless glasses make him look intelligent. That didn't appeal to me either.

He greeted me with a smile, clicked his heels and wagged his finger at me. "Ah, you are in. I haf found you out" he said in a rich, deep voice.

"I am and you have?" I said, looking about me and pinching myself to make sure I was not out.

"I am Gunter Gullet, a ferry gud telefission mechanic unt aerial man from der Fazzerland" he boomed. "I lof my verk. It's in my blod. Although I haf moved here I vant to carry on, starting mit aerial verk. I vant to do lots of jobs and vill make plenty of money, yes, but vot drives me is lof of my verk. I sink you are like me, yes?"

"No, I am noddings like you" I said. "I don't vant to mend anyzing. I haf mended hondrets and sounsands of zings in ze past. Now I vant a life zat is quiet and no prats. Unt anodder sing. People here don't like paying for aerial verk. Der zun counts more zan televisions here."

He chuckled merrily at me and made to go. "I vill keep in toch" he said.

### A huge Panasonic

As he left a tall, thin wretch struggled up the path with a huge 25in. Panasonic TV set. He was gasping and pink-faced with the effort. First Gullet, now this one I mused.

"Fot you vant?" I growled. Realising that I had overstepped the mark, I tried to hide it

with a coughing attack. "Er, can I help you?" I continued.

"You are being Dan Butcher who is mending television sets?" he asked in a soft voice. "This set, he is speaking and showing me little writings on the screen but nothing else."

I looked at him carefully. Clearly another foreigner, but from which country? "Ver - er - where you from?" I asked.

"I am being from number seventy six, down the street" he replied, smiling.

I figured that it would be quicker to mend his set than get too involved, so I asked him to bring it in.

It was a TX25MD3, which is a Euro-2 chassis set. Sure enough there was sound but no picture. There was an on-screen display however, which ruled out field collapse with the usual blanked-out screen. Then I noticed that the sound was a bit scratchy, so I started to check the signals circuitry. As I did so there was a tap on the door. It was Gullet.

Seeing the set and observing the symptoms he beamed knowingly. "Ha, so you haf a dry-joint on L4707 in the IF strip" he boomed, "but zer, I talk too much, yes? You would know this fault."

"Er, yes, actually" I replied. "Now let me think, ver is, er, L4707?"

As I started to peer about he tapped L4707, at the far side of the chassis, with his finger. There was a dry-joint there all right,

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**"Yah, yah" he cried, bouncing up and down. "I told her I voz very clever unt she said 'climb up unt ment my aerial zen, unt do it at vunce'."**

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and resoldering it cured the fault immediately.

When I finished the resoldering I noticed that he had sat down and was looking a bit thoughtful.

"Do you know Mrs Creaser at number sixty six?" he asked, "der voman mit der giant Rottviler dog zat slobbers all over your clothes?"

"Der cross-eyed vun mit der big mouth?" I asked.

"Yah, yah" he cried, bouncing up and down. "I told her I voz very clever unt she said 'climb up unt ment my aerial zen, unt do it at vunce'. So I vent home and collected by ladders unt climbed up. It voz hard unt hot verk, but I mended her aerial mit a lot of care. Zen, ven her picture vas gut, I charged her. Only the price of a schnapps. 'You charge too much' she says, 'you voz on ze roof only vun minute. Sat is fifty sounsand a day.' I say to her 'madam, ve don't haf to quarrel, I vill unrepair it for you.' 'Go away' she says, 'or I vill set my Rottviler on you'."

I nodded understandingly, and off he went.

### Another giant Panasonic

"Yoo-hoo" came a cry from the gate, "I'm Bert Springer. Are you Mr Bullfight?"

"Could be" I replied, "what's your trouble?"

"Set's in the car there. Green picture with sloping lines across. Yesterday the picture kept going to a white line and disappearing. Today the set suddenly smelt of burning then died. My neighbour says it's the condenser, but the gas man says it's the valve. When my insurance man called he reckoned it was the transformer. My Daphne's young man blames the tube. He's very clever, you know. Going to build his own house and make himself a watch and a car. Said he'd mend the set if he had one of those oscoscope things."

It took three of us to get the 29in. monster in. The set turned out to be a Model TX29AD1DP - another one with the Euro-2 chassis. As I took the back off Gullet came back, looking pained.

"Again I haf trobbel. I explain my cleverness unt fit a giant dish at number ninety vun for a huge Portugoose man zat stinks of garlic, zen I tune der set to every programme in ze sky. Ven I finish he say 'I am vanting channel sesent fees as well'. 'Channel sesent fees?' I ask, 'fot is channel sesent fees?' 'Channel sesent fees, you must know!' he says. Zees foreigners are difficult to understand, no?"

"Doesn't mean anything to me" I said.

"So vot could I do? Noddings, zat is fot I could do. So he don't pay me also."

Then he looked at the Panasonic set on the bench. "Ah, zis set I know, like you. Gets trobbel mit der resistors on der tube base."

"Too true" I said, darting my eyes at the tube base. R3388 (3-3kΩ, 0.5W) in the feed to the green gun had burnt away, leaving only its legs, and so had R3386 (560Ω, 0.25W) which feeds Q3384 in the green output stage.

"I daresay zer are dry-joints on der field output chip too."

"Oh sure to be" I said, "they're common enough with this one, aren't they?"

He set off down the path, and as soon as I heard the gate click I examined the field output chip. It was heavily dry-jointed. Once I'd resoldered it and attended to the tube base resistors the set worked perfectly.

### A Sharp ES set

Some time later another customer arrived. Strange little fellow. "Sharp" he said.

"Not very" I replied, "used to be when I was younger."

"Sharp telly, in the car" he continued. "Picture went short and shut down."

I collected the set, put it on the bench and suggested he called back next day. It was a 66ES03H. I didn't know it and didn't have a circuit diagram. So I started to look around on the main board. As I was doing this Gunter turned up again. He had a plaster on his chin.

"Vy you keep coming to see me?" I asked.

He opened his eyes wide, pulled himself

up and clicked his heels. "It's ze only place I don't get trobbel!" he said, "I am ferry gut television man, but no one here appreciates me. Now I hav more agony."

"Vy?" I asked, "er, why?"

"Der fat voman at der big house on der hill. 'Ah, Gunter, I have noddings on my set' she say. 'Ah', I say, 'it vill be der LNB, I zink.' But I do not hav vun with me, so I go home to borrow ours from our dish to try zere. My wife vas vatching Esther Poltergeist unt Terry Vogan and she scream and shout very much indeed."

I nodded understandingly.

"But I am borrowing der LNB for only a vile" I tell my wife. "Zat is ven she threw the vase at me. Ven I take it to ze big house – ze LNB, not ze vase, ze voman is swimming in der pool. 'Oh' she say, 'so zat is der LNB. Let me see zis LNB', and ven I hand it to her she drops it in zee pool'.

Then he noticed the Sharp set on the bench.

"Ah, vun of zese!" he cried. "Ze picture collapsed, zen it shut down, yes?"

I looked at him steadily. "You're reading my mind" I said.

"Fell, you know vat zis vill be, same as me" he said. I smiled and nodded and turned my ear his way while I craned forward.

"Of course, it vill be der surface-mount IRFR9120 transistor Q701, on der copper

side of der board" he said, "unt ze 1-5A circuit protector zat feeds it. But you vill know zat."

"Naturally!" I said. "Funny how we both think the same. I expect you're going now, to tell your wife that the LNB is a little damp."

When he'd gone I replaced Q701 and the circuit protector. Up came a perfect picture.

### The next Sharp

"Hellaye there, are you Mr Blooper hisselt?" called a voice. I looked towards the gate and saw an enormous man coming up the path. He was about twice the size of Cyril Smith. I began to wonder whether I was getting all the nutters today or only my share, but he interrupted me.

"Sharp" he said.

"We've done that one" I replied, "now I'm sure you have a problem. Tell me about it."

"It's me telly. Sharp C66CSD8H. Takes several minutes to come on. It's in the car outside.

I collected it and put it on the bench. Then I plugged it in, switched it on, looked at my watch and waited. After about ten minutes it struggled to life. As I took the back off I willed Gunter Gullet to appear. Sure enough he was soon back again.

"Zer is no justice in zis vorld" he complained. "Every way I turn I am hafing

trobbel unt problems. I am bitterly disappointed. Zere seems to be a conspiracy against me."

"I understand the feeling exactly, but tell me more" I said, purposely drawing his attention to the Sharp set.

"Ziz man says 'haf a look at zis set I haf just bought for nearly noddings at Solara's food store. Do you know how to tune it to every station zer is?' I tell him 'of course I do. I am very clever'. And I unpack der set and tune in every station zer is and some zere isn't. Ze pictures are vunderful. Ven I finish he say 'now go away unt I will see how it settles down'."

"People are treating you terribly" I said, nudging the Sharp even closer and stabbing my finger at it. "Er, ha, ha, slow to come on, you know" I added.

He looked down at it. "It vill be der usual, I daresay" he said, "ze sousand microfarad, 10V reservoir electrolytic C714. On ze secondary side of ze power supply. Don't you zink?"

"Sure to be" I replied, dragging over my box of electrolytics. "Absolutely sure to be, Gunt . . ."

He narrowed his eyes and looked at me. "Fot you call me?" he asked.

"Gunt, short for Gunter, naturally."

He relaxed and smiled. "Of course, yah, Gunt, zat is me! Zat is kind of you to say to me." ■

# WHAT A LIFE

## A mixed batch of faults and an even more mixed batch of odd customers. Don Bullock's servicing commentary

"Do you mind looking after my few bags and things, Mr Bullock, while I pop into the Doctor's?" asked this scruffy little fellow who had poked his head round the door. "I mean, you can't really cart all your junk into the doctor's place, can you?"

I gave him a watery grin, popped his bags under the counter, and off he went. A few days later I noticed that they were still there. So I peered inside and found that they were full of rubbish. A few chipped mugs, a bunch of dusty dried flowers, a celluloid collar, a broken cap gun, a ball of dirty string – that sort of thing. As I was lugging them off to the rubbish bin Steven breezed in. Late, but full of bounce.

"We get some odd folk in here, don't we?" I commented.

"Oh, I don't know" he replied. "They're all normal enough in their own way. Perhaps you're a bit too sensitive."

"Could be, I suppose" I said as he popped off again. No sooner had he left than Mrs Taff drove up in front and nipped in.

"Mornin' Mr Bully" she trilled, "it's my telly why I'm 'ere. In the car and on the blink, see. You'll mend it for me, hasn't it?"

I looked at her. Her smile was as honest as an August cornfield. And she held the door open as I struggled back in with her set.

"Mind your knuckles on the door, Mr Boiler: skinned knuckles hurt, haven't they?" she commented, then left.

### No red

The set was a Sharp C66CSD8H. When I switched it on I saw that there was no red output at all. The tube's base panel is a horrible two-sided one, with tracks on both sides, but I noticed that the RGB output transistors Q870, Q871 and Q872 were so dry-jointed I could almost lift them off the board. Some resoldering cured the trouble, and when Mrs Taff called back she was delighted. I think so, anyway.

"Oh, that's wonderful, can't it?" she said.

### A giant Fidelity

The next caller was Eddie Slowcombe, who keeps a riverside farm. He always calls on his way to market and collects the set, if it's done, on his way back home. I saw him manhandle a set from amongst the hay bales and muzzled sows in the back of his wagon. He was shouting at it as he struggled in through the door.

"Come on there. Over a bit. Now through tha' door. That's it. Didn't want to, didja?"

He deposited the huge 32in. Fidelity set, Model CTV3228, on the counter. "I wants 'un beller than he be" he said.

"What's the trouble?" I asked.

"Ain't good enough, I wants 'un beller" he replied.

I nodded. I wasn't going to learn more by persisting.

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"Donald" he said soberly, looking at me eye-to-eye, "you're a good man. You've shown kindness to a stricken soul."

"Ah yes" I found myself saying, "do have this little repair on me, of course."

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As he drove off I tried the set. The fault was field collapse. We've had it before with this model, and there's a fault pattern. So I replaced the usual components: the TDA8145 EW/field generator chip IC600, the 3.3Ω safety resistor R711 in its supply and C720 (0.47μF, 250V).

Then I congratulated myself. Another job successfully done I thought, life can be quite good at times. But when I switched the set on there was severe EW bowing.

I checked the width and EW adjustment potentiometers, which were OK. A further series of tests got me nowhere and wasted quite a bit of time. I was feeling rather weary when I got to L679 in the EW driver stage. At last! It had several shorted turns, baked together. A new coil completed the repair.

"It's OK now" I said when Eddie returned, "I've replaced . . ."

"Don't wanna know what you'd do to, an' no paper either. Just wanna know

whether 'un bella'n when I brought 'un in."

"Much beller, er better" I replied.

Eddie dug into his pocket and produced a wad of notes. "How many you want?" he asked.

A few minutes later he was shouting at the set as he took it back to his wagon.

### A Goodmans/Philips

I hadn't seen the Reverend Goode for a while. Then he turned up in his ancient motor car, open-topped with running boards.

"Hello Donald. What a glorious day. The heavens are smiling upon us" he boomed. "Marshall the Bullock boys. I've got old Mrs Dadd's set in the car. She needs it badly. Very sad. Her husband was called last week. Awful shock. Good man. Leaves a gap, you know."

We got the set in and the reverend departed. It turned out to be a Goodmans 256NS, a 25in. model fitted with the Philips L6.2 chassis. The fault was the same as with the Fidelity one I'd just done – EW bowing. I concentrated on the line output section and started checking components there. It wasn't long before I found that C2913 (390nF, 250V) was short-circuit. A replacement cured the trouble.

I reassembled the set and gave the reverend a quick call. He was soon back.

"Donald" he said soberly, looking at me eye-to-eye, "you're a good man. You've shown kindness to a stricken soul."

"Ah yes" I found myself saying, "do have this little repair on me, of course."

"God be with you" the reverend said quietly, as he reached for the gear stick. Then he chugged off in a cloud of blue smoke.

### Audio trouble

As the cloud cleared I saw Oscar Gunge and his mother heading for the shop. Oscar was carrying a Sony hi-fi system.

"Tell Mr Bolshie the trouble" Mrs Gunge said loudly when they came in.

Oscar raised his head and breathed in, but his mother was too quick. "We can't hardly hear the sound, Mr Bolshie" she said, "tell him the rest, Oscar."

Oscar raised his chin and tried again, but his mother beat him to it. "And what sound we do get comes and goes" she continued. "Don't just stand there like a dummy" she said to Oscar, "Mr Bolshie needs to know it all."

Oscar made another attempt, but was too slow.

"It's the same whallever the volume control's set at, Mr Bolshie" she continued, "can't make it out." Then she turned to Oscar.

"Joo know, you get more mealy-mouthed with every day that passes. Just like your father. He can't say boo to a goose. What counts today is mouth. And you ain't got none. What'll happen when your old ma is gone?"

When they'd departed Paul put the unit on his bench. It was an HCD-RX70. He suspected the STK4152 chip IC801, fitted a replacement, and tried the unit out. The new IC had done the trick.

## Ribby Ellis

The phone rang and a voice at the other end seemed excited. "There's smoke pouring from the top of your roof - oh - and some flames. I can see it all from across the street."

I threw down the telephone and rushed out. But when I looked up at the roof there was nothing to be seen. Then I noticed a grinning fellow sliding out of the phone box opposite. It was Ribby Ellis. He had a TV set with him.

"Har, har. Had you that time Don. You gotta keep on your toes when old Ribby's about" he said.

"Thanks Ribby" I replied, "what can we do for you? Make some emigration

arrangements maybe?"

"Nah. Look here. I've got this new girlfriend, see. Ruby. Quite something."

"Er, what's this got to do with us?" I asked.

"Well, her mother's telly grunted a bit the other night and I said it was the audio coil and I was good with tellys. Said I'd take her set home and fix it for her. Trying to impress her mum, like. Anyway I took it back and now it won't tune it."

"And you want us to fix it double quick I suppose?" I asked.

"Yea, but the cost's down to me, because the fault happened after I took the set away. And I can't afford much."

"You'll have to leave it with us" I said.

The set was a 20in. Daewoo GB20A5T. I passed it to Steven to look at. When he tested it he found that the set carried out search tuning but didn't recognise the stations. He swapped the tuner, just to eliminate it. Then, after checking hopefully for silly faults like dry-joints, he decided to replace the 56-pin TDA8374A chip. That cleared the fault and, after I'd reassembled the set for him, I called Ribby.

"Set's done Ribby" I told him, "but bad news about the cost. We've had to replace the two pi active filters, the phase-check loop and fit a new control subpanel."

There was a strangled gasp, then "how much, how much. Remember it's me who's paying, it's gotta be me, like I said."

"Just a hundred and fifty to you" I replied, "and that's cheap. Come and get it before the boys work out the right price with the new catalogues."

He looked half-slaughtered when he arrived. "A hundred and fifty pounds" he croaked, "every cent I'd saved to take Ruby to see Terry Wogan."

"Well, I still don't know how we managed to get it right so cheaply" I remarked. "Here, I'll demonstrate it for you." Then I switched it on.

He looked at the set and stabbed it to a few other channels. It worked perfectly, and he started to count out from a wad of money.

When he'd finished we pushed the notes back to him. "This time you've enjoyed one of our hilarious jokes" said Steven. "Twenty quid will cover the repair, since it's for you."

He looked puzzled but soon recovered. "How can I thank you all?" he said.

I pointed to a building just down the road. "The Red Lion should have just opened" I said.

"Be my guests" Ribby replied.

"Another time. Cheers for now" I said. ■

# WHAT A LIFE

## A mixed bag of faulty VCRs and TV sets. The current state of TV broadcasting - rubbish TV. Donald Bullock's servicing commentary

Seven has been spending a few days walking on Exmoor with his wife and dog, so Paul and I have been guarding the fort. Paul is far more patient than me, even with the silliest customers. When I arrived the other day he was talking to Mr Shiner, who had brought in his Mitsubishi HSB82 VCR.

### A troublesome VCR

"I know 'e's old, Paul, but I'm sorta attached to 'm like" Mr Shiner said, "you understands now, don't you?"

"Sure do" Paul replied, "and you're going to tell me he's not well, aren't you?"

"Yes, 'e's poorly" Mr Shiner continued, "produces awful pictures and keeps drifting off tune."

"Leave him with me" Paul said.

When Mr Shiner had departed he set about testing the machine. "Tuning drifts all right" he commented, "and there's a sort of red shadow to the left of images."

"To the left?" I queried. "You don't mean to the right, do you? After all the scanning beams move from left to right, so most picture disturbances are to the right of the object."

"Definitely to the left" Paul replied, "but I'd better attend to the drifting first."

Several electrolytics were leaking their electrolyte - C210 (47µF, 16V), C232 (10µF, 16V), C203 and C208 (both 470µF, 10V). Replacements cured the drifting, but the red shadow was still present. Paul hunted around for more faulty electrolytics and found five, C221, C6001, C6E5, C116 and C3D1, all 470µF, 10V. Once they'd been replaced the red shadow had gone. But that wasn't the end of the story. There was also slight field bouncing. Paul tapped around the tuner and IF cans and found that this affected the bouncing. Close examination revealed that they were dry-jointed to the board. Once they had been resoldered the results were excellent.

### A big Philips TV

Our next caller was Mr Weedler. We've suffered from him for years. Won't lift a finger if he can get some mug to wait on him, and doesn't like paying for anything.

"Here Don" he simpered, "help me with this telly, will you? It's a big 'un, see, a 28in. Philips, and my back's bad. I'm parked just outside."

He was parked outside all right. About eighty yards up the road, on the other side, and the traffic was building up nicely. When we got to the car he supervised as I struggled to get the set out from the back seat. Then he trotted off back to the shop while I followed as best I could. When I arrived he was sitting down. Paul helped me get the set on to the counter.

"I 'spect he was heavy, eh?" said Weedler. "I'll leave it to you."

The set was a Model 28ML8800, which

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Just then we heard a slight crack and the picture quivered. Paul prodded about on the tube's base panel, then the line output transformer, but everything there seemed to be all right. Then we heard the crack again, and saw a spark jump from one of the legs of the line driver transformer to the board.

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is fitted with the FL1.6 chassis. When I plugged it in a good picture appeared. But the on-screen display and teletext were too dark, and the standby LED was flashing. I noticed that Paul was studying the screen too.

"Ah, you're good at these, aren't you?" I said. He looked surprised. "So I'll hand it over to you then."

Just then we heard a slight crack and the picture quivered. Paul prodded about on the tube's base panel, then the line output transformer, but everything there seemed to be all right. Then we heard the crack again, and saw a spark jump from one of the legs of the line driver transformer to the board. It was dry-jointed. Paul resoldered it, switched on again and studied the screen carefully before he spoke.

"I reckon the EEPROM chip's been damaged and corrupted by that sparking. It's a 24C04B1, IC7137, and has to be programmed for this particular model. The arcing must have changed its data.

We'll have to fit a replacement and program it.

He fitted a new chip then briefly shorted pins S23 and S24 together. From the service menu that appeared on the screen he selected A, Options Alignment, then B, and adjusted Option 2 to 103, using the remote-control unit's plus and minus buttons. Finally he pressed Menu to revert to the original screen, then D to store. Now that the receiver was set up it worked normally. With the similar Model 25ML8300, fitted with the FL1.7 chassis, you follow the same routine but set Option 2 to 39.

"Very clever, Paul" I said, "I'd better go and make the tea."

When Mr Weedler came back for his set he didn't like the size of his bill. Nor the long and lonely walk to his car with the set.

### The Goodmans 1405R

When I returned with the tea Paul was tuning a Goodmans 1405R TV set. He carried out a search and locked to a station, producing a good picture, but after a few seconds the tuning drifted off.

Paul decided to replace the 33V tuning supply stabiliser IC104, which can be the cause of this symptom. But the fault persisted. He went on to check various other components in the tuning voltage circuitry. After spending an hour he'd found nothing amiss.

"Can't understand it" he said then, a minute or so later, added "I seem to recall reading somewhere about this. The setting of the tuneable AFC tank coil connected to pin 47 of the TA8690AN jungle chip IC201 is supposed to be very critical."

When he checked the coil he found that the core was waxed in, though it looked as if someone had disturbed the wax slightly. He went through the routine of retuning the set while rocking the core to and fro very slightly. After a while he found a position where the tuning remained stable. A lengthy soak test confirmed that the set was now satisfactory.

### Mrs Phillips' VCR

Then Mrs Phillips arrived with a Sanyo VCR, Model VHR789E. She's a decent type who runs, and lives over, a little general store. Amongst other things the store features a rack of delicate china ornaments.

"Can you mend this for me, boys" she asked, "it's gone dead. And when you've

done that could you nip back and take a look at my telly? I can't manage the two together."

I opened up the VCR and carried out some checks in the power supply. There was HT from the mains bridge rectifier but no chopper circuit start-up voltage. My eyes settled on a pair of 560k $\Omega$  resistors, R5002/3. Both proved to be open-circuit. The machine worked normally once replacements had been fitted.

When I'd reassembled the VCR Paul offered to take it back to Mrs Phillips and have a look at her TV set. He had the set with him when he returned, and was grinning.

"What's the joke?" I asked.

"No joke" he replied, "only when I got to Mrs Phillips she was having trouble with one of her customers. One of ours too, Mr Weedler. She has a prominent notice on her rack of china ornaments. It reads 'You touch, you break, you pay.'"

"Well?" I asked.

"Well, old Weedler had touched all right. And broken one. He didn't want to pay. Boy, did she straighten him out."

### ... and her TV set

Mrs Phillips' TV set was a JVC C14ET1EK, the one fitted with an Onwa

chassis. Apparently it worked well enough for about a quarter of an hour, then the colour would drop out. She reckoned that as the evening wore on after that the picture changed to a sepia tone. We connected it up, threw a blanket over it, and watched. It did exactly as she said.

Paul made for the AN5601K colour decoder/timebase generator chip IC301. As we didn't have one in stock, he checked a few suspicious-looking peripheral components. This didn't bring to light anything obviously wrong. The next step was to carry out some voltage checks.

Pin 12, which is connected to the chroma signal processing section of the chip, should be at about 5V. The feed to this pin comes from the line output stage derived 12V line via a 2.2M $\Omega$  resistor, R337. Paul obtained a voltage reading of just 1.4V at pin 12. When he checked the value of R337 he found that it had risen to about 4M $\Omega$ . A replacement cured the trouble, and Mrs Phillips was delighted.

### Today's rubbish TV

In a recent questionnaire fifty per cent of viewers said that TV programmes have worsened of late. I'll say they have. What surprises me is that so many of us continue to allow TV sets to take up house room.

Never before has so much rubbish gone out on so many television channels. There's barely enough decent TV programming to justify a single channel.

Take comedy, if you can find any. There have been lots of fine programmes in the past, such as Steptoe and Son, Are you Being Served?, Hancock's Half Hour, Fawlty Towers, The Two Ronnies and Dad's Army. There's nothing to compare with them today. What comedians do we have to replace the likes of Les Dawson, Max Wall and Bernard Manning? And where are there programmes in the same class as the Forsythe Saga, Upstairs Downstairs and All Creatures Great and Small? Gone, that's where. It seems that we shall never see their like again, except as occasional repeats.

The trouble doesn't stop with today's terrible so-called 'stars'. There are also the gabbling and insulting programme presentations. And the BBC has succumbed to copying the advertisements in the commercial channels, punctuating the spaces between its programmes with ever more childish 'advertisements' of its own.

A final thought. Where do the TV broadcasters find their armies of brash, shrill young female announcers? On second thoughts, don't tell me. ■

# WHAT A LIFE!

**Various TV faults, a spot of bother with a camcorder and a note on domestic appliances. Donald Bullock's servicing commentary**

**donald@bullock-bros.com**

"Can't stand it any longer, Mr Bellows" said the chap with the dewdrop noise who'd just come into the shop. "It's up all the time. Driving me crazy it is." Then he paused.

"Must be awful!" I said, "er, ah is there something you think we can do to help?"

"I should 'ope so" he continued. "You comes 'ighly recommended to me. Wife's brother has a set like it. When he came to you with the same trouble you 'ad it fixed in no time."

I then noticed the 20in. Ferguson set he'd put on the counter before starting off on his moan. "What's up with the set?" I asked.

"Sound won't turn down, like I said" he replied. "Up all the time. It's not so funny, you know, when the likes of Esther Ramsden comes on."

I filled in a card and told him we'd get in touch. Steven took the job on. It was a T49F (TX91 chassis) and, sure enough, the audio gain was at maximum and couldn't be adjusted.

"Think we've had this one before" Steven said. "It was TV02 then. A little surface-mounted transistor in the sound strip. It's a BC858, mounted on the print side of the panel. I fitted a BC858C which is probably a bit more rugged."

It didn't take him long to do the same with the present set, again curing the trouble.

## **A dead Mitsubishi**

Meanwhile Mr Mellows had come in. He was laughing, as if he had just heard a cracking good joke.

"It was as sprightly as anybody's, Mr Bumkin" he gurgled, "then it died. Just died. Me telly, I mean. It's in the car."

Paul and Steven went out to collect it. When they brought it in we noticed that it was a 29in. Mitsubishi set, Model CT29B2STX. Paul pulled it over and switched it on. The sound came up, followed by the rustle of EHT.

This suggested field collapse, which is common with these sets. When Paul turned the tube's first anode voltage up a horizontal line appeared. It didn't take him long to establish that the field output chip IC451 had failed. The problem is that it's a TDA8178S: the S indicates a Mitsubishi special, which is no longer available. There's a kit, specially for this model, part no. H27PO14010. It includes a different chip, type STV9379, and a few other bits and pieces. Fortunately we had one in stock.

Field scanning was normal once the parts in the kit had been fitted, but the picture displayed severe NS bowing. These sets have a small correction board that's mounted vertically at the right of the main PCB. It's common for the small electrolytic capacitors on this board to leak. In this case C4014 was faulty, and had damaged the 2SA950 transistor Q4009. Once these two components had been replaced the geometry was perfect.

## **Another dead set**

Our next caller was Paddy Afron. He must weigh twenty stone: his roomy old clothes look like part of a building site, and he has a voice like a concrete mixer. He was carrying a 21in. Matsui set as though it was made of paper.

"Hello boys" he started off, "I've been in a fine pub, the Five Bells. Good beer. Must have knocked back fifteen pints at lunch time." Then he steadied himself.

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**"E's dead as a dodo, my Hitachi telly. I hope you can get 'im right, otherwise we'll 'ave to 'ave a funeral! Ha ha!"**

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"This set's dead" he continued, placing it on the counter. "But don't let's discuss it, 'cause I've an awful thirst coming on. Just give me a call at the Five Bells. OK?"

His set was a 2107NS Mark 2. I decided to take a look at it and found that there was some 300V across the mains bridge rectifier's reservoir capacitor but little else. So I concentrated on the chopper circuit and found an open-circuit 1M $\Omega$  resistor. It was presumably part of the start-up system, and a replacement got the set working again.

I tried phoning him to give him the good news, but the noise was too great for me to make myself clear. So we put the set aside to wait for a personal visit from Paddy.

## **An Hitachi camcorder**

We then saw a scruffy young man mincing along the pavement as though he was riding an invisible bike. It was Albert Crust, who was carrying a plastic bag. He came in and held the bag aloft.

"This 'un don't take pictures of nobody" he announced.

"Not many plastic bags do, Al" I pointed out.

"Nah, nah, it's me girlfriend's camcorder thing" he replied. "Told 'er I was going to mend it meself" he confided, breaking into a strange laugh.

As he left I took the camcorder and passed it to Steven. It was an Hitachi VME330E.

Steven tested it and found that it stopped intermittently in play and record. When he opened it he discovered that the take-up spool was faltering. As a result the sensor would shut the camera down.

When he investigated further he found that there was mechanical trouble in the take-up spool itself. The spool incorporates a clutch to allow a certain amount of slipping in the play and record modes, to avoid forcing the tape through the pinch roller. Because the felt pad in the clutch was worn, the slippage was excessive. A replacement cured the problem.

"Fancy him telling his lovely girlfriend – what she sees in him is beyond me – that he was going to mend it himself" I said to Steven, "we'll charge him forty quid."

A little later Albert's girlfriend Marina came along. "Did Albert bring that camcorder of mine along?" she asked, "said he was going to mend it himself. Silly boy. Don't s'pose you've been able to find out what was wrong with it?"

It was waiting on the shelf. Steven and Paul made a lurch for it but got tangled up. So I picked it up and presented it to her. "Mended it myself" I said.

"That's kind of you" she replied, "how much are you going to charge for being so clever?"

"Er, twenty pounds" I said.

## **An oldie**

Wally Wingnut brought along a rather old Hitachi TV set. That's not his real name. I call him that because he has ears like wingnuts.

"E's dead as a dodo, my Hitachi telly. I hope you can get 'im right, otherwise we'll 'ave to 'ave a funeral! Ha ha!"

It was an Hitachi CPT2476 (G6P chassis). Steven pulled it over, connected it up and switched it on. "Might be dead, but I can hear a quiet singing sound coming from the innards" he said, "maybe it's gone to heaven. Let's take a look."

The singing sound came from the series chopper circuit, and a check on the HT volt-

age showed that it was very low at only about 20V. Steven disconnected the feed to the line output transformer, but this made no difference. Then he began to check the diodes in the chopper circuit. The ES1A efficiency diode D902 proved to be the cause of the trouble, with a high forward resistance. A replacement got the set working again.

### **Mr Moorside**

I don't know what Mr Moorside's business is, but he seems to have been successful. He's put on more weight than is good for him, and his cigars can't help his health either. He drew up in his new S-type Jaguar. Its back seat was occupied by an oldish TV set and Mrs Downe, his girlfriend.

"Bring the set in, boys" he ordered as he came in, reaching for his card. "Fix it and give me a ring, if you would" he said, then departed.

It was a Samsung W124W6VN. A picture appeared when Paul switched it on. After a few minutes the picture faded to darkness, then became brighter again. This variation continued. Paul checked the voltages on the CRT's base panel and found that the first anode supply was varying wildly. The first anode potentiometer is part of the line output transformer. When he turned it to maximum there was a stable picture, but it was

too bright of course. The potentiometer was at fault, which meant a new line output transformer.

Paul ordered one and subsequently fitted it. The brightness level was then stable. He phoned Mr Moorside.

This time Mr Moorside brought his girlfriend in with him when he called. "It's costing me over forty pounds my dear" he told her, "but never mind. What would you do without me, eh?"

### **Domestic appliances**

I've been trying my hand lately at a bit of vacuum cleaning, because Greeneyes claims to have twisted her ankle, and have been using her fairly new Dyson DC103. The DC103 certainly emits very clean air. Much better than the cleaner we had before – that one used to fill the air with something resembling snuff, which made me wheeze.

But, having used the Dyson quite a lot now and marvelling at the dust it takes out of a carpet that already looks clean to me, I still feel it could be improved. Perhaps it's too gentle. It is a bit unwilling to pick up things from our marble floor, and tends to push tiny bits of debris – like the little berries and leaves that fall from Greeneyes' forest of houseplants – along rather than sucking them up. The remedy is to lift the cleaner up and place it over them, but I've had to

devise a little scraper on a long stick to move away the bits I've pushed up against the wall. And another thing. The long and gentle revolving brush at the front of the cleaner tends to be rather easily disabled by the long, fine strands of hair that Rebecca sheds about the place, while its bearings often seem to be dry and jammed. Over to you, Alan.

While on the subject of domestic appliances, the two-year old Morphy Richards jug-kettle that we keep in Spain recently blew a hole through the casing under the element. The Spanish don't drink tea of course, and buying a kettle of any sort isn't easy there. So we asked a friend to buy and bring over for us on her next visit any jug-kettle that took her eye.

She went to Argos and chose one I'd never heard of, a two-litre Cookworks Model K8396. It's much like the rest, perhaps a little more rugged than some, and I notice that it has a metal plate between its element and the plastic base. But what surprised us was the price, an astonishingly low £8.95

Now I'm as much as anyone against the tendency of our trade's products to become ever cheaper, with minimal profit unless you sell on a mass scale, but I have to hand it to this British company for making available a first-class product that sells at so much less than the competition. I wonder how they do it?

# WHAT A LIFE

## **A radio problem, then a load of faulty TVs. There's plenty of work for those of us who managed to survived the storm. Donald Bullock's servicing commentary**

**W**hen the postman called the other morning he brought a friendly letter from an absent friend, a bulky Jiffybag that contained a hard-to-get spare part for my wordprocessor, and a couple of cheques for stuff I'd written twenty years ago and recently sent off on spec. So I was a happy soul when I arrived at the workshop. Not for long.

### **Walham trouble**

A large, scruffy fellow with a bulky radio was waiting. "McGoggle" he said, "I'm having trouble with this radio. Walham trouble. Not enough to start with, then none at all".

"Er, Walham trouble" I said. "Not sure about that. Could you explain?"

He gave me a withering look. "Walham trouble is walham trouble" he replied.

"Oh, ah, yes, of course" I said, fingering my chin. Must be getting past it I thought. Perhaps the boys will know. I got the job pad out. "What name did you say?"

"Walham trouble" he said, then departed.

The radio set was a BVC M1188. It had a big label saying "Made in the EC", which I suppose means almost anywhere. When I plugged the set in it worked all right. I listened to Radio 4 until John Peel came on, then switched to Radio 2. This gave me Terry Wogan, so I hurriedly switched back to Peel.

The set worked all day and the next day too. When McGoggle came back I pointed this out. He looked at the set, ran his eye along its mains lead to the wall socket, and shook his head.

"There's no electric where I come from" he said, "so I don't plug the wireless into it. All I do is to turn this knob marked Walham."

I looked. The word wasn't walham, it was volume. When I disconnected the mains plug Peel's voice croaked into Wogan's for about fifteen seconds then mercifully died away. I then noticed that the set had a well-hidden battery compartment. I opened it and found four U2 batteries covered in green slime. So I

asked McGoggle to call back later.

It took me an hour to dismantle the set and clean everything up. What staggered me was that the radio had worked as well as it did with battery operation. I was feeling rather nasty when old Mr and Mrs Hopplestone bumbled in.

### **We're pensioners, see**

"Well, what do you want?" I asked.

"A few more pounds on our pensions" he said.

"We'm old age pensioners, see" she said.

"And now our telly's gone dead" he continued, "it's a crying shame."

I attempted a grin and said "oh, I dunno. Where is it anyway?"

He pointed to a gleaming new Jaguar a hundred yards up the street.

I went to get it and found a widescreen Ferguson set, Model W7023U (ICC17 chassis). By the time I had tottered back to the shop I was knackered.

"Wh, what's up with it?" I struggled to say.

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"On the counter with it" she ordered. Then, facing me, "it's dead Mr Billhook. If you asks me, 'e done it. Polishes it too hard when he does the 'ouse."

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"Just stands there flashing" Hopplestone said.

"Gracious me" I managed, "you'd best leave it with us."

Shortly afterwards Steven came in.

"Nice morning" he breezed.

"No it's not!" I exclaimed, "and anyway you might care to take a look at this Ferguson set. It's stuck in standby and flashing. Five flashes, a pause then two flashes."

"Line or field trouble or both" he pronounced.

I looked at him. Too smart I thought, as he took the back off. He soon discovered that the line output transformer had shorted turns.

"Getting to be a common fault" he commented, "we've got a spare one here. It comes with a modification kit. You have to change two coils, some capacitors and surface-mounted resistors. Their values depend on chassis version - to suit the tube."

When he'd finished the repair he switched the set on. "Now to see whether the tube has suffered" he said, "they sometimes do with these sets."

It was OK. In fact the picture was

excellent. It wasn't long before the Hopplestones were back.

"Did you have to make a charge, Mr Bullock?" he said to Steven.

Steven gave them the bill and they studied it.

"Could you knock a few quid off, Mr Bullock?" she asked.

Steven amended the bill a bit then carried the set to their car.

When he returned he was gibbering. "Did you see their brand new Jag?" he asked, "do you know they're nearly thirty thousand?"

### **An Alba portable**

A bright know-it-all came in with an Alba 14in. portable. "I want this mended only if it's going to be cheap" he said, "I see new ones everywhere I go, and they are getting cheaper by the day. I want you to find out what's wrong, then I'll tell you yes or no."

"No can do" said Steven. "Pay us £8 and we'll mend it if the cost is no more than £25. If it's going to be more and you say no we keep the £8."

The set was left with us. It was fitted with an Onwa chassis and was stuck in standby. Some quick checks showed that there was HT at the collector of the 2SD1554 line output transistor but no line drive. The supply to the line driver stage was missing because R417 (2kΩ, 5W) was open-circuit. A replacement put that right, and we ended up with a happy customer.

### **A dead Bush, Part 1**

Mrs Graveny is not the gentlest of creatures, particularly with her husband Tom. She barged in with Tom following behind her. He was carrying a giant Bush 28in. set.

"On the counter with it" she ordered. Then, facing me, "it's dead Mr Billhook. If you asks me, 'e done it. Polishes it too hard when he does the 'ouse."

She patted her pocket and found she'd no cigarettes. "Over the road, Tom, at the double, and get me some fags" she commanded.

Once they'd gone Paul took a look at the set, which was a Model 2863NTXA. He found a stack of trouble in the power supply. The chopper FET was short-circuit, all four mains bridge rectifier diodes had failed, also the chopper control chip IC802. The latter was a TDA4605-3. Some sets fitted with this chassis use different chips in the 4605 series, and there may be an A or an N after the number. The replacement chip has to be of identical type to the original, or the set won't start up. Paul decided to get stuck in replacing these items.

## Another Bush

It seemed to be our day for Bush sets. The next customer brought in a 25in. 2571NTX. This one produced a bright green picture with flyback lines.

Steven began to remove the back.

"Could you pass me a TDA6108JF chip?" he asked.

"But you haven't got the back off yet" I protested.

He turned out to be right of course. After he'd fitted the replacement chip the set worked perfectly. "It's become a common fault with these sets" he commented, "IC901 on the tube's base panel. I ordered half a dozen the other day."

## The dead Bush Part 2

Meanwhile Paul had found more trouble in the 28in. Bush set's power supply. The optocoupler was short-circuit, and two resistors were open-circuit, R825 (2-2M $\Omega$ ) and R817 (2-2 $\Omega$ , 5W ceramic).

Once these had been replaced there was HT, but the set was still dead.

## A Crown portable

The door opened and a gorgeous young lady entered. The air became full of blossoms, an unseen orchestra played, and the light took on a golden glow.

"What, er, can I do for you?" I croaked

in a newly husky voice.

"It's my Crown portable" she sang, "seems to work only when it wants to. I do hope you can repair it for me."

"No trouble at all" I replied, "I'll give you a ring when it's ready."

As she left Greeneyes clopped in.

"What awful cheap scent" she commented. "Horrible little madam, wasn't she?"

"Certainly was, dear" I replied.

The Crown portable was a Model CRP14. When we tried it we found that it worked all right from cold but cut out when warm. A little work with the freezer proved that the cause of the trouble was the 2SC1573A line output transistor. It worked and measured correctly when cold, but developed a severe base-to-collector leak when it was gently heated.

I replaced it ever so carefully, then dialled the number Miss Dream had left. "Donnie here" I breathed when the phone was lifted.

"Whatnie?" a deep masculine voice blared.

"Ah, er, this is the TV repair shop" I continued.

"Oh, our set. Good. I'll come down and collect it."

He arrived in an Aston Martin.

## Another dead set

It was certainly proving to be a busy day. Yet another dead set was brought in, this time a Goodmans W288NS. This is a 28in. widescreen model and was yet another case of a leaky line output transistor, this time type S2055N. It had failed because of a dry-joint at one side of the line output stage tuning capacitor C134 (11nF, 1-6kV). Once we'd resoldered the joint and fitted a replacement transistor the set produced a very high-quality picture.

## The dead Bush Part 3

Paul was still struggling with Mrs Graveny's 28in. Bush set. It remained dead though the power supply was now working. The BU2508AF line output transistor Q605 turned out to be leaky. Once it had been replaced the set showed some signs of life but was pulsing. After more searching Paul found the cause.

The set uses a scan-coil plug and socket, with the socket's pins on the main chassis. They were corroded where arcing had occurred because of a loose fit. Cleaning and retensioning the contacts cured the trouble. It had taken a lot of time, but the set finally produced a good picture. ■

# WHAT A LIFE!



**Donald requires some help while minding the business on his own. Enter Oscar, who turns out to be adept at fault-finding. Donald Bullock's servicing commentary**

I came back from Spain last week to find that Paul was off for a few days, having managed to buckle his knee when he fell over his beloved cat. Steven announced that he would have to be away for most of the day attending to various accountancy and tax matters. "So it looks as if you'll have to run the lot on your own" he said, "do you think you're up to it?"

"Can't wait" I replied, pulling a manic smile on to my stony face. "Mind you it wouldn't be so bad if we had a trainee lad or something. Just someone to mind the shop so that I can pop out to make the odd call."

## Enter Oscar

Just then Mrs Grunge popped in, followed by her son Oscar. He managed to trip over a vacuum cleaner that the previous customer had left on the floor by the counter.

"Stop prancing about, Oscar" Mrs Grunge ordered, "you really are a block-head. No wonder Snoddies didn't give you that job."

"Job?" I asked.

"Yes, they wanted someone to help out

during the holidays. Just suit my Oscar I thought – he's so keen on 'lectronics. But that tall, thin chap there chose a lah-di-dah type instead. 'Course Oscar can be a bit of a prat, but so could his father."

"Yes I'm sure" I said, then turned to Oscar.

"We could do with a hand over the next day or two" I told him. "Could you make yourself useful here? Make the tea and look after the shop when I have to go out?"

Oscar's face lit up. He raised his arm and breathed in to reply.

"Of course he could" Mrs Grunge cut in. "Now speak up, Oscar! He's a very bright boy, Mr Bullock. So intelligent – and sharp as a razor! He's got his own soldering thing and a screwdriver that lights up, and made our wireless talk in French the other day."

So, once Mrs Grunge had picked up the repair Steven had done for her, Oscar stayed behind to help out.

## A Pye Video

Our first caller after that was a delightful young lady who brought in a Pye video, Model DV105. "The 'lectric just went off" she said "after that it was dead".

Sure enough when I tried the machine it was dead. I don't like mending Pye recorders, but I had to delve in. "Look Oscar" I said, "dead after a power cut. This won't take a minute. You can bet your life that C2361, the 47 $\mu$ F, 50V electrolytic in the start-up circuit has failed. They always do. I'll check it just to make sure."

"Isn't it more likely to be the chopper-control chip, Mr Bullock?" Oscar asked.

"Oh no, no, Oscar" I replied, "it's always this fellah."

So I checked it, and it was perfectly all right.

"Oh, ah, well" I said, "we'll have to check some of the associated components."

Twenty minutes later the young lady had long since departed and I was still checking.

"Wouldn't it be an idea to check the voltages around the chopper-control chip?" Oscar asked.

"I was wondering how long it would

take you to suggest that" I said. The chip, IC7354, is an MC44603P. I soon found that most of its pins were at 4V. A replacement brought the machine back to life.

Oscar pursed his lips and blinked a few times. As I was reassembling the machine Mrs Bishop arrived.

## A TV/VCR combi

"Ah, Mr Bolter" she said "problem is with my combi. It's in the car."

Oscar fetched it and I saw that it was a Proline TV/VCR unit, Model TVC140. I don't like mending these either, but what could I do? I plugged the unit in and up came a bright screen laced with flyback lines. Then the unit suddenly died.

"It's never done that before!" Mrs Bishop exclaimed.

I smiled at her and said "we'll give you a ring when it's ready."

When she had departed I turned to Oscar. "Talking twaddle, she was" I said, "the unit obviously shut down because of the over-bright screen. The problem's excessive beam current. If we switch the unit off for a few minutes then switch it on again the same thing will happen."

We did, but it didn't.

"Might she have been right, Mr Bullock?" Oscar asked.

I nodded grimly, opened the unit up and saw a burnt-out 27 $\Omega$  resistor on the main chassis. It was R996, which is in the 200V supply. Bearing in mind the original symptoms of excessive beam current, I turned to the CRT's base panel. This incorporates a TDA6107 RGB output chip that's powered by the 200V line. I reckoned that if it had gone short-circuit this would explain the trouble. When I replaced it, along with the resistor, and switched on again there was a good picture.

## Tics

Our next customer was a tall chap who danced in. He didn't say anything for a moment but I noticed that he had a tic.

"Some form of trouble?" I asked, to encourage him.

"Ah, I've got a tic" he replied.

"Sorry about that I said. How can we help?"

"It's on the TV" he continued.

Strewh I thought. I know they're scraping the bottom of the barrel nowadays, but what next? "Which channel?" I asked.

"All channels" he replied. "Telly's in the car. Can the lad help me with it?"

They struggled in with a monster 28in. Black Diamond set, which turned out to be fitted with the 11AK19B chassis. I plugged it in and switched it on. Instead of a picture all it did was to produce a rhythmic ticking noise.

"That's all I get, a tick" he said.

When I'd taken his details he departed. I called Oscar over.

"Will it be a spark arcing across somewhere?" he asked.

"No, no, Oscar" I smiled, "that ticking tells us that there's a short-circuit in the set."

I took the back off and looked at the chassis. A tiny spark jumped about at one side of a wire link in the line output stage. I looked at Oscar, who smiled politely.

"Just testing you, Oscar" I said. The link was dry-jointed. Resoldering it stopped the arcing, but the set remained dead. So I checked the BU2508AF line output transistor Q605, which was short-circuit base-to-collector. Once a replacement had been fitted a picture appeared, but it kept going red. This could be instigated by disturbing the RGB lead between the main chassis and the CRT's base panel. When I looked more carefully I saw that there was no solder whatsoever on the blue and green pins at the chassis end. Properly resoldering these connections cured the trouble.

## Smoking set

As I finished I thought I saw someone clutching a huge 25in. TV set while riding a bicycle towards our door. But it wasn't that. It was Chris Butterhome, who walks like that, bringing us a TV for attention.

The set turned out to be a Goodmans

Model 255NS, which is fitted with the Daewoo CP775 chassis. The symptoms were sound but no raster. "It was smoking last night Mr Bullock," Chris said.

"Bad for its health" I replied, "har, har."

He looked perplexed, so I opened up the set and saw that C416 (680pF, 2kV) was cracked and burnt. It's connected to the collector of the line output transistor Q401, forming part of an AC tap to provide feedback pulses for the line timebase generator in the TDA8375A jungle chip I501 and other circuits. Tracing along this path I discovered that R409 (4.7k $\Omega$ ) and R503 (10k $\Omega$ ) were both open-circuit. But after replacing these items I was no further forward.

"Is the line drive present?" Oscar asked.

It wasn't, but it took some time to discover why. The surface-mounted resistor RC527 (10 $\Omega$ ) in the same pulse feedback path was open-circuit. A replacement restored normal operation.

## A cricket enthusiast

The phone rang and I asked Oscar to answer it. He took the name and address of the caller and showed me the card.

"Graham Pike" it said. The address was a large house on the outskirts of town.

"Says he's a cricket enthusiast and must be able to see the matches" Oscar reported. "The set's an NEI NE5155NT (11AK10 chassis). Apparently the players are normal-looking to start with, but become squat and deformed as the match goes on..."

"I expect it's those silly coloured outfits they wear these days" I said, "and the birdcages they wedge over their heads and the thick white lipstick they plaster on their faces. It screws them up."

Anyway I felt like a break, and reckoned I might know the cause of the trouble. So, grabbing a capacitor from the drawer, I left Oscar to answer the phone, drove to the Pike residence and rang the bell.

There was a loud thump, then the door was opened, revealing a tall gentleman in

a full white cricketing outfit, including kneepads, heavy gloves and a cap with a huge peak. He was swinging a cricket bat. "Just knocked a six!" he announced, then leapt around the wide hall, swinging his bat about at a torrent of imaginary cricket balls.

"Can't beat it" he said, "wonderful game." Then he motioned me to follow him farther into the house. I entered a reception room and saw the set in the corner. Sure enough there was field cramping.

When I removed the back and directed a flow of hot air at C504 (100nF, 50V) the cramping became much worse.

"Hey, you're making it much worse, not better!" Pike exclaimed.

"All part of the diagnosis" I explained, then went ahead and replaced C504 which, as I expected, had become extremely heat-sensitive. It's a special type, 10Z4. The replacement fixed the trouble without any need for adjustments.

C504 is probably not where you might expect to find a capacitor that affects the field scanning – until you realise that in this chassis the 33V tuning supply also feeds the field ramp generator network associated with the TDA8362A IF/colour decoder/timebase generator chip IC401.

Cricket-mad Pike was more than pleased, and gave me extra on top of the service charge.

## Can anyone help?

Before I close this month, here's a plea for help. Bobby Doorwanand, a regular reader who lives in Mauritius, says he can't get manuals there for love nor money. It's not all that better here Bob! Transmissions in Mauritius use the Secam colour system, and he wants to convert a Sony Model KVX2562U to this standard. If anyone can help in any way, they can reach him at [doorwanad@state.gov](mailto:doorwanad@state.gov)

"My thanks" he writes, "and regards to everyone."

# WHAT

# A LIFE!



**A meddler, a Sony TV repair, camcorder and CD trouble and a Philishaver tip. Don Bullock's servicing commentary**

**P**aul was on duty when our first caller of the day came in. It was Mr Meddler, a friendly little fellow with itchy fingers and a pocketful of money that he likes to spend on his hobby, which is pulling things to bits. He had a shopping trolley with him, and started to natter away as he struggled to open it.

"Hello Mr Bullock. Now, I've something in here. Where is it? It's catching. Why won't it come out? Ah, here it is now. This is it, Mr Bullock. It was all right, but it don't work now. Dunno why, really don't."

He had extracted a half-dismantled JVC video recorder. As he fished about for more bits he continued his commentary.

"Ah, there's the rubber drum thing, Mr Bullock. Came off. Dunno why. And this pulley thing. Funny, innit, the way these bits come off like."

Paul stood impassively and stony-faced until all the bits had been put on the counter. He then sent Mr Meddler on his way and started on the reassembly job.

"I wouldn't do it for anyone else" he said, "But he's such a polite and vulnerable chap, and he doesn't mind paying."

Paul soon had the machine working again. The cause of the trouble had been the usual one with this series of machines. There's a brass retaining boss on a shaft under the lacing guides. It's not supposed to move, but can slip down. The mechanism then seizes.

"Some engineers insert a bit of Rizla paper between the shaft and the boss to make a tighter fit" Paul commented, "but I use Araldite.

Most of Mr Meddler's bill will be for all the extra work he caused. He doesn't seem to mind and, since he pays, I don't either."

When Mr Meddler returned he was beaming and happily reached for his wallet. "Is it done, Mr Bullock?" he asked. "What was it then? One of the parts? Which one was it? The rubber drum thing, or maybe the pulley?"

Paul gave him a brief explanation, and off he went.

## **A massive Sony**

We had a 29in. Sony set in later that day, Model KVE2922U (AE1C chassis). Its owner struggled in with it. "I'm Tim Breeze" he told us, "the sets seem to get bigger and heavier as I get older. This one is stuck in standby, and so am I."

Steven was in at the time and decided to take it on. It was dead, not stuck in standby. The 2SD1548LB chopper transistor Q602 had a base-emitter leak and the 4A mains fuse was blown. After checking for any obvious shorts, Steven fitted replacements and switched on. The fuse blew immediately, and the new transistor died. On further investigation Steven found that there was a dry-joint at the TEA2260 chopper control chip IC601 and that the 47 $\mu$ F, 50V base-drive coupling capacitor C611 was leaky. He decided to replace the chip as well as the capacitor and the other items. After that the set was OK.

"I expect you're wondering what I doos for a livin'" Breeze said when he returned. "I'm a carpenter by trade, and sticks up the skittles

at the Twelve Bells on Wednesday nights. I've had some cards printed - look."

He handed a card to Steven. It said "Timothy Breeze, carpenter and sticker up". Steven nodded and handed it back.

## **Camcorder trouble**

A couple of weeks later he was back, this time with an Hitachi Model VME5688E camcorder which had a cassette jammed inside. Steven had gone out to have a look at the vicar's TV set, so Paul had a go at it.

He tried to eject the cassette but, although we could hear the motor, the carriage didn't move. He set about stripping the unit down and found that the loading motor, which is mounted vertically, just to the left of the video heads, had popped out of its flimsy plastic holder.

"I can only do what I've done before with these units" Paul said. He reinserted the motor and used a plastic cable tie to strap it in place.

Timothy Breeze had more news to impart when he called to collect it. "You know that the BBC was inviting viewers to write and send in plays, don't you?" he said.

We didn't.

"Well, they wuz" Breeze continued, "so I wrote one and sent it in. Got a nice letter back from them saying 'nice try'." He then reached into his inside pocket and pulled out a visiting card. "Just 'ad these done" he said, handing it to Paul. "Timothy Breeze" it said, "carpenter and sticker up, and BBC playwright."

## **Interlude**

Just then Greeneyes came in with

our tea. "I'm not having tea myself today" she told me, "just lemon juice. So I'll stay slim enough for that pale peach costume."

"What pale peach costume?" I asked.

"The one you're going to buy me at Marks and Spencer" she replied. "Here, hold this glass while I squeeze some lemon juice into it."

I got a dose of it in my eye.

## Faulty equipment

In a previous article I mentioned the very cheap Cookworks K8396 electric kettle that I obtained from Argos for only £8.95. We have found it very useful, but it's developed a couple of annoying traits. First, the water-level float tends to stick near the bottom of the visible water column, giving the impression that the kettle needs to be filled when it doesn't. Secondly its on/off switch tends to stick in the off position, so that if you want a cup of tea you have to rattle it up and down until the light in its little window comes on. Small things, I suppose, that might happen with any kettle.

I've also mentioned the compact and tidy little Aiwa digital audio system, a quite expensive Model NSX999, that I bought a year or so ago. The first thing I noticed about this was that it was so packed with unnecessary, gimmicky sound-effect features that getting it to provide even acceptable sound, particularly a decent top response, was virtually impossible. Letters to Aiwa about it were ignored. Anyway, I decided to relegate it to Greeneyes' kitchen and pinched her Woolworths £25 audio-cum-CD player, which provides much cleaner sound quality.

## CD trouble

But Greeneyes soon complained that in addition to the Aiwa's thick sound (ideal for Wogan) it misbehaved when she played CDs. There was intermittent playing, skipping, long gaps between tracks and premature closing down. The CD performance with the Woolworths unit was much better, but occasionally dicey.

Now Paul specialises in VCR and audio rather than TV repairs, so I asked him to look at both players during his next visit to us. He popped a CD into the Aiwa machine first and tried it. "The usual TOC trouble" he announced, "almost every job I get with this trouble is an Aiwa. Got a cotton bud and a scope?"

"Scope?" I replied, "not here I haven't. I even hide the screwdrivers in this house. But I can probably manage a cotton-bud stick. Would you need a drop of alcohol as well?"

"Just a small glass of wine would be nice" he said. "I don't use any spirit on the cotton buds. It can cause blooming when used on some laser lenses, and there's the added risk of loosening certain cements."

He cleaned the laser then played a CD, gently tapping the top of the cabinet with his fingernails to encourage the machine to skip, while carefully adjusting the beam-focus potentiometer. Within a minute or so the unit played the CD perfectly in spite of the tapping, and Paul pronounced it OK.

"But not for ever" he added. "It'll need doing again in a few months' time. They always do, these Aiwas."

He then tried the Woolworths machine, using the same technique. This one also played up as he tapped it, but he was again able to get it going reliably by adjusting the laser-beam focusing potentiometer.

"How did you know what the trouble was?" I asked.

"By looking at the display as I put the CD in" he replied. "If the TOC reading is uncertain or absent, focusing is usually the trouble."

Greeneyes was looking at him in admiration. Then she looked at me, pointedly. "Didn't you know about that?" she asked.

"Of course I did" I replied, "in fact I think it was I who originally told Paul how to do it . . ."

## Philishavers

But here's something I did discover recently, all by myself, though rather late in life. I've used Philishavers for years, and regard them as the single exception to my conviction that while Philips is tops for electronics the company's mechanical products tend to be inept and flimsy. Perhaps this is because of the miseries I suffered during my salad days trying to service Philips autochangers, which were so full of bits of tin and thin-wire rods. Anyway, I'd come to the conclusion that the gradual deterioration with continued use of a Philishaver was caused by head wear. So, when my latest one got to providing me with a less than perfect shave, I decided to lash out on a new set of heads.

Sure enough they did the trick. Shaving became a pleasure again. But only for a week or two, despite my rigorous cleaning with the brush

provided. Then I saw a big Philishave advertisement in a national newspaper, announcing a new Philishaver whose head assembly, it was said, could be washed out under the tap.

"But why only the latest Philishave head assembly?" I asked myself, "surely all Philishave head assemblies are basically alike?"

So, after shaving, I thoroughly washed the head under the pressure of water from the cold tap, allowed it to dry thoroughly, then refitted it to the shaver. Next time it gave me a perfect shave, as good as a new head assembly. I've been doing this for a couple of months now. It certainly works for me! ■



**A voice from the past, but things have changed. Various TV faults and a dud CD player. Don Bullock's servicing commentary**

It was a welcome surprise when Digger Pates phoned the other day to report TV trouble. "Harvey Pates?" I asked, "not Digger Pates, my old oppo of the Hampton Ford days? Blimey! Remember that 'certain thing' we slipped into young Miss Prude's handbag just before her first date with the Curate? Boy, we were something then!"

I'd not seen Digger since our first school get-together over fifty years ago. Just the same as ever! Always a decent, easygoing chap. The sort I might have been had the devil not meddled with my genes. Sony sound trouble. Should be easy! Said he would pop his set in later that day or tomorrow. Couldn't wait to see him.

### Confusion all round

Mr Halwin interrupted my golden thoughts as he headed for the door carrying a huge Fidelity TV set. Pity he tripped over Mr Millford's poodle on its fifteen foot extendible lead. The fuss delayed his entrance. Still, it gave me a chance to answer the phone.

"Listen, Snoddy, I'm coming to put a clout on you!" it bawled.

I drew myself up. "How dare you!" I bristled, "it's not the thought of the clout that gets me, but your confusion. I've been mistaken for an aged and knackered Kirk Douglas on occasion, but balk at being mistaken for Snoddy!"

"Oh, sorry Mrs Bullock" said the voice. "Forgot where I was!"

I looked into the phone's earpiece.

"Fact is, Snoddy's have had my Hitachi set for ages, and this weekend we've got visitors from

Australia."

"Never mind the television set. We do a nice line in tranquilisers" I quipped. "But bring the Hitachi in."

Then Mr Halwin made it through the door, flew flying over a set which had just been placed on the floor and landed his Fidelity set on the counter. "Did you see that lunatic out there with that mobile trip wire?" he exclaimed. "Told me to look where I was going! Cheek of the man."

I looked at his set. "What's the trouble?" I asked.

"Well, he's real thick, isn't he?" Halwin replied. "Got his mouth hanging open all the time."

"No, the set" I said.

"Ah, the set. Just shuts down after a while. Riles me, I can tell you . . ."

At that Paul came in. So I took a quick note of Halwin's details and told him we'd give his a call when the set was ready.

### Diagnosis

Paul helped me carry it over to the bench. It was a 32in. set, Model CTV3288. As it got warm the picture clicked off. The sound remained.

"Ah, the line output stage" I said.

"But you haven't got the back off yet!" Paul exclaimed, "I suppose you're just clever".

"Well yes" I replied, "but it's logical. Since the sound remains and I know that the audio section is powered by a secondary winding on the chopper transformer, that seems likely to me."

Paul took the job on, because a pleasant chap had come in and wanted to see me. He had a Sony set with him, and I heard him mention the sound.

I looked at him. Yep, I thought, that's old Digger! Anybody's money on that!

I gripped his hand warmly. "Hello Digger old chap" I exclaimed. "Wonderful to see you after all these years!" I yanked up his trouser leg and tapped his angle. "Remember that disgusting trick we played on old Chalky Hargreaves with Dobson's hungry ferret? Boy did that ferret find his way about! Should have been classified as a dangerous weapon, that ferret!" As I laughed away I noticed him giving me a strange look.

"I'm Cyril Bamforth" he said. "And I'm a registered councillor. Never had anything to do with a ferret in my life. Don't like the look of 'em. Just want my set mended."

"Er, oh, of course!" I spluttered. "Sorry about that. Councillor, eh? You study oddballs? Ha, ha! Er, what's wrong with the Sony?"

"Sound" he replied. "Sound trouble. First the left channel cuts out, then the right channel sound goes. Sometimes all the sound goes, leaving none at all."

"So you'd say it was sound trouble" I continued, still put out by my gaffe.

"Yes" he said, studying me deeply. "Yes, definitely." Then he hastily departed.

### Repairs

"This Fidelity" Paul said, "there was HT but no line drive. I found the fault heat sensitive. Cause turned out to be the 2SC1573A transistor Q580. A new one's cleared the fault."

"Oh, er right!" I said, "how about having a look at this Sony set? It's

got intermittent sound problems.”

It turned out to be a Model KVDX2112U (AE1 chassis). Sound was OK when we switched it on. “Another iron and freezer job” Paul said, seeking the audio output section. He soon found that the fault was to do with the audio output chip, IC251. By careful use of heat and freezer he managed to remove one channel at a time, or both of them together. A new LA4280 chip restored reliable sound.

### Intermittent operation

Then the chap with the Hitachi set that had been to Snoddy’s came in. The back was off, and I saw a panel tumbling about inside. He fished in his pockets for the back screws, and produced these as well.

“Have I had trouble” he said, “set all in bits, and that tall, thin Snoddy chap tried to charge me 25 quid! Said they’d found the cause of the trouble but wanted 95 quid to put it right. I roughed him up a bit, I can tell you.”

“Of course” I replied understandingly, looking at the mess and hoping I could end up without getting a clout. “What name is it?”

“Basham” he replied. I eyed him soberly and wrote it down.

When I’d settled the loose panel back in place I tried the set. It was a Model C2548TN (A6 chassis) and was stuck in standby, though the standby light reacted. I disconnected the set and checked one or two things, then plugged it in and tried it again. It worked. After a few more trials I found that this was its fault: sometimes it came on, sometimes it didn’t.

I decided to check the HT regulation feedback, and found that R950 in the voltage sensing network read 75kΩ instead of 68kΩ. That was enough to trigger the protection circuit sometimes. A replacement cured the trouble and, with Mr Basham firmly in my mind, I put the set together properly and managed to work out a reasonable bill for him.

### Missing signals

A tiny fellow with a huge set came in. Often happens. He was panting when he put the set down on the counter. Couldn’t have been more than five feet tall.

“What’s the trouble?” I asked, after giving him a bit of time to recover.

“That bloody set” a fifty watt bass voice bellowed, so loud that it

shook my chest. I looked about. No one else there. So I backed away a bit and hovered my pen over the job card. “What name is it?” I asked.

The amplifier bellowed out again. “Biggs” the tiny chap said. “This Sanyo set. No picture or sound. How long?”

I noticed an empty teacup rattling in its saucer. Honestly! “Try this time tomorrow” I said.

And off he went. The set was a Sanyo C28EH27NB (EB3A chassis). It’s not one with which we are familiar.

Steven decided to have a go. “Needless to say, we don’t have a circuit diagram” he commented.

“Times have changed” I said. “There was a time when we had easily understandable, comprehensive manuals for pretty well all the sets that came in. Armed with an Ekco or Philips manual, set repair was straightforward. Now Ekco is no more, and I can scarcely read a Philips manual!”

“Can’t imagine such an easy life” Steven said, turning to the set. When he applied power there was no sound, but there was a faint raster.

He started to check around the chopper circuit. “That’s odd he said” after a while, “every voltage is right, yet we’ve got these two problems. What can it be?”

He tidied a few bits and pieces off his bench, blew his nose, turned off some faint sound from a soak-testing set, and resettled himself on his stool. Thus prepared, it wasn’t long before he found that the signal stages weren’t working. He compared the voltages around the microcontroller chip with those shown on a circuit we did have for a similar model. The supply from somewhere was missing.

Checks at the tiny standby transformer T381 showed that there was voltage at one end of the primary winding but not the other. It was open-circuit, and there was of course no output from the associated rectifier, which feeds a simple 5V series regulator circuit.

We e-mailed an order for a replacement transformer, which arrived next day. When it had been fitted the set sprang to life.

### A CD player

Our next visitor was Ribby Ellis, the practical joker. For once he was serious. “My bird’s packed me up, Don” he told me.

“Don’t blame her, Ribby” I

replied. “You’re a non-stop headache. Ladies need a chap who is brainy, successful and full of charm. A chap like me, not a walking disaster like you.”

“Thanks for those kindly words” he said, “but the problem’s to do with her audio thing, not me. Said I could mend it, but I can’t get it going.”

I felt sorry for him. “Where is it?” I asked.

He brightened up, went out to his car and returned with a Sharp DXR555 CD payer. “It probably isn’t much” he said, “shall I get a cup of tea going?”

“How do you know that?” I asked, “what’s wrong with it?”

“Dunno” he replied.

There was a disc in it. I plugged it in and tried it, but nothing happened. I soon found that the block drive motor wasn’t working. I tried to help it, gently, and it responded. So I put the tiniest trace of thin oil on its shaft, then stopped to have a mug of tea with Ribby. He makes a good cup.

When we’d finished we tried the player again. It worked merrily. “There you are, Ribby” I said. “One trace of oil, half a penny. Knowing where to put it, twenty four pounds, ninety nine pence and half a penny. Total £25, to you.”

“That’s exactly the price I charge for my tea-making skills” he said. “You’re a pal, Don. Quits, eh?”

### Set’s outside

As Ribby left a strip of rough-looking misery, about a hundred years old, came in. He wasn’t very gracious.

“Set’s outside” he barked, “too heavy for me. Anyway it’s your job, not mine. Got somebody to bring it in?”

I went out and collected the set, then looked for a job card. “What name is it?” I asked.

“You ought to know that” he replied. “Spoke to your boss about it earlier. Name’s Pates. Now, I’m in a hurry for the set. Wife’s on my back about it. Can you look at it now?”

I looked at him. “Mr Pates?” I said, “Harvey Pates?”

“How did you know that?” he barked. “You some sort of smartie? Before you answer, just watch your lip. I know your boss, see. Dopey little chap. Likes things right, but never could manage it. Any messing me about and I’ll make things hot for you.”

“Right sir” I said, “Sorry sir, I’m sure. Now what was the trouble with it . . . ?” ■

# WHAT A LIFE!



**The days of C.O. Stanley. Problem with a tiny mains bridge rectifier. The effect of Old Granddad. And an important book notice! Donald Bullock's servicing commentary**

**M**any moons ago, when I was assistant to the radio and television head at a regional GEC base, my boss used to refer to dealers as being "the dirty end of the trade". This was in comparison with our own nice "clean end" of the trade. The phrase came to my mind the other day as I was glancing at the obituaries in my paper. I wonder how many noticed the reported death of C.O. Stanley, and how many remember him?

He was the man who took control of the original, ailing Pye company in the late Twenties, then devised a series of publicity stunts to bring the name to everyone's attention. I remember one gimmick, many years later, that almost drove the manager of a busy and central radio and television shop crazy. I'd better admit that I worked there at the time, having started that week. The meticulous manager ran the shop like clockwork, and it was a bit of my own initiative that unwittingly threw the shop into chaos the day after we'd received a large consignment of particularly good-value Pye car radios.

## Things to avoid

It was a stormy Saturday morning in the early days of television, when every TV shop was inundated with service calls (how TV engineers were revered in those days, but that's another story . . .). One of my jobs was to open and action the post and, on that wet and blustery morning, we received a big, screaming window poster from Pye. So I cleverly stuck it in the centre of the shop window. 'Your New Pye Car Radio fitted in One Hour!' it blared, and by the time

the manager came in I already had two customers lined up waiting. As they told him, all smiles, that their cars were in the street outside, more gleefully arrived. They stabbed their thumbs in the direction of their cars, which now stretched along the rain-soaked street.

The telephone was red hot with service calls about sets and aerial blowdowns. There was by now a shoal of increasingly angry and impatient customers in the shop. Every engineer was on the run, and fitting car radios was anyway a specialist job in those days, with their separate vibrator power packs and interference-suppression problems. The manager flew into a tizzy, ran to the window to tear down the poster and fell into the radios on display, breaking some.

I felt guilty and insecure. A while later, when a customer came in and asked for a demonstration of a Pye hi-fi valve amplifier, I saw the opportunity to redeem myself.

I unpacked the amplifier, unwound the long lead from the separate speaker, and connected its plug to a similar socket at the back of the amplifier. I plugged the mains lead into another similar socket, and connected the other end to the mains supply. When I switched on there was an immediate, ear-shattering bang, like a bomb blast, and an acrid plume of blue smoke billowed from the speaker. An even bigger cloud of black smoke arose from the amplifier.

I glanced at the manager through the resultant confusion, and saw his hands come together as though in prayer. Then he ran out. When he returned, an hour later, I approached him to see whether he preferred me

to leave by the front or the back door.

"Don't worry, Mr Bullock" he said, showing restraint though he was still panting. "I've thought about it and don't blame you for destroying the amplifier and losing the customer. Pye really shouldn't have used 5A mains-type fittings for both the mains and the speaker connections. They sometimes do these silly things. Anyway, they'll have to stand the loss."

I smiled faintly with relief and turned away.

As I did so he touched my shoulder. "Oh and, Mr Bullock, I like your initiative" he said, "but do try not to blow up any more amplifiers, or put any more Pye posters in the shop window, particularly on a Saturday morning. There's a good chap."

## For the bazaar

So much for my C.O. Stanley memories. I was jerked out of them by the arrival of the Reverend Goode, who drew up in front in his ancient banger.

"Ah, Donald" he cried, "just as I help those with spiritual troubles, so I come to you boys with my practical ones!"

"Of the two of us you've got the better job, Reverend" I replied.

He leant back and laughed loudly for two minutes.

"I know, I know . . ." he exclaimed. "Now, we've been given a fine giant of a television set for our forthcoming Church Bazaar. A 28in Schneider one you know. Trouble is, it blows the Church Hall fusebox and makes it smoke when we plug it in. Har, har – are you going to tell me the Devil is in there, Donald? Har, har. You say the funniest things."

In fact I'd said nothing of the sort, but I let that pass. I was thinking about the set. Blowing fuses? Every time?

"The donor tried to get it repaired at, er, Snoddies I believe" the Reverend continued, "but he says it proved to be too much for them. The tall thin chap there kept the set for two months, charged him twenty five pounds and sold him another set."

"Yep, that sounds exactly like Snoddies" I said. But the Reverend hadn't finished.

"And he says he could have bought his new set at Crubbs Foodstore for fifty pounds less – and received a free clay pipe, three-hundred pounds' worth of free gifts and two cycling trips around the world."

We struggled in with the set, which was a Model STV2802T. Steven checked the plugtop, then opened the set up.

"Just look at that" he said, "the mains fuses in the plugtop and the set are festooned with cooking foil. Funny, I wanted to check the mains bridge rectifiers but don't see any."

Paul, who was looking over his shoulder, pointed to a tiny little button-shaped thing with its side blown out. "Is that it?" he asked.

"Never!" Steven declared. But he removed it and looked it over. It was a tiny bridge rectifier, type B250C11500M, and was dead-short however it was tested.

"I'll replace it with a sturdier type with a much shorter number" he said. When he'd done so, and replaced the fuses, the set provided excellent results.

### **An ailing Mitsubishi Euro 4**

Just then Greeneyes came in with the tea. "Is that your thing, the one out of your thingumajig, over there on the what's it?" she mumbled.

"Now what's that all about?" I asked.

"Did you have too much whiskey last night?" she asked in an icy and precise voice.

"Of course I did" I replied.

"I think you're suffering from a thick head" she continued, then pointed to the door. "You've got a customer" she said, gliding out.

A tiny, thin little chap entered. He looked at the floor as he spoke. His voice was thin and quiet.

"Willie Wilkins" he breathed in a Midlands twang. "Come from B'rum. Set outside in the car. Wife put it in. Too heavy for me. Bad back. Always getting colds. Nearly died last Christmas. D'you hear voices?"

"What?" I bawled as Paul strode out to collect the set. I took Wilkins'

details and he departed.

The set was a Mitsubishi Model CT2534TX (Euro 4 chassis). Paul had a go at it. There was sound but no picture. He advanced the setting of the first anode control on the line output transformer and saw that there was field collapse. It didn't take long to find that the AN5521 field output chip's 24V supply was missing. After checking the relevant rectifier diode, D401, which was all right, he found that the 0.82Ω surge-limiter resistor R563 was open-circuit. A replacement restored the picture, which was excellent once the first anode control had been returned to its original position.

### **The American**

We saw Wilkins that night in the Red Lion. But he was so busy studying the floor he didn't notice us. He was drinking a whiskey type drink. When he finished it he put his glass on the counter and caught the barman's eye. The barman poured him a neat measure from a bottle of American 'Old Grandad'. This happened a couple of times. Then he noticed us.

"Hi boys" he said brightly. "I sure like this brew. Yup, nothing like it."

He was now talking with an American accent!

After a couple more Old Grandads he came and sat at our table.

"Yeah, ah come from Texas, where ev'rything's big, man" he told us, "bin over here just a couple of months. Got a ranch back home. Ah'm a singing cowboy, bit like old Bing."

At that he threw his head back, strummed at the front of his jacket and made a few Jimmy Durante-type croaks.

After a few more Old Grandads he began to tell us, in the most Southern of Southern accents, about his thirty Cadillacs, the films he'd made as a Crosby double, and his simultaneous affairs with Gina Lollobrigida, Sophia Loren and Ava Gardner.

As he downed more Old Grandads he became louder and more preposterous. We decided it was time to depart and slipped out, wondering what he'd be like when he called in next day for his set.

When he arrived he was the same shy, shuffling fellow who had brought the set in. He studied the floor intently as he paid up, then crept out as Paul carried his set to the car.

### **Book notice!**

My book entitled *The Legend that was Clapham* has just been published by The Wheatley Press, Dept WAL, 132 Cheltenham Road, Gloucester

GL2 0LY. It's available from the firm at £8.95 plus £1.05 post and packing. A bargain!

The book is about the Gloucester parish where I was born, rather a long while ago now, and a good bit of it describes my early boyhood spent with some of the local characters, most of whom are unbelievable by today's standards. It pulls together a number of articles that have been published over the years in various magazines and papers, together with their illustrations and some early photographs. I've produced it as a complete work in response to many requests from those who have read the odd article. For more details about the book, check the publisher's website at

[www.wheatleypress.com](http://www.wheatleypress.com)

# WHAT

# A LIFE!



**Some TV troubles. Saga of an electric kettle with an inaccessible element. Donald Bullock's servicing commentary**

**S**ome things can give you quite a turn. I suffered from one yesterday. While I was in the shop I glanced through the glass door and saw approaching us what looked like a little television set surrounded by a sackful of cats. As it loomed closer I saw that it was Mrs Magrow, in her best clothes. She was carrying a Minato TV set and had her unruly pair of small twins spinning around her. They were sucking at toffee-apples, and by this time I could hear her voice.

"Kip still you pair" she bawled, "else you'll 'ave me on the ground."

By this time they were entering the shop. There was a set awaiting collection on the floor and, as one of the boys danced up on to it, the other one started kicking at the counter. Then Paul walked over and they both started jabbing at his pullover with their toffee-apples.

"Stop doing that" Mrs Magrow bawled, "you'll get hairs all over yer toffee-apples." She put the set on the counter and looked at me. "You don't get no younger" she said.

I adopted my fish-eye look of severe hurt. "What's the matter with the set then?" I asked.

"You tell me" she replied, "you're the one who's Mr Smarty."

I scrawled 'rabble' on the card and suggested that she call or phone back later.

## **No start-up**

When Paul had sponged his pullover he had a look at the set. Model ST1411 it said. Paul switched the set on and found that it was dead. He soon had it apart and started to take some readings. As there was plenty of voltage across the mains bridge rectifier's reservoir capacitor the start-up resistor seemed a likely culprit. It turned out to be R502 (100k $\Omega$ ). There was HT at one end, nothing at the other. In fact it was

open-circuit. Once a replacement had been fitted the set was OK.

## **Mr Moss and his Hitachi**

Meanwhile Arthur Moss had drawn up outside in his old but spacious car. It took him an age to get out and come in. He's not exactly youthful. But once he'd made it he gave us a cheery wave and a smile.

"Nice to see you again" he said in his quiet voice, "though I wish I didn't have to. It's my television you see. Gone wrong again. I have it in the boot."

As Paul went out to get it I pulled over a job card and wrote his name on it. "What's your number, Mr Moss?" I asked him.

He looked at me, puzzled. "I haven't got a number, Mr Bullock" he replied, "only a name."

"Er, your telephone number I meant" I said.

"Ah, yes, Much-Cackling 298" he continued.

I wasn't sure of the dialling prefix so, with my pen poised, I asked "what's Much-Cackling?"

He'd been doing up his coat, but stopped and looked at me. "How do you mean 'what's Much-Cackling'" he queried, "do you mean where is it?"

"No, what do I dial before 298?" I said.

"Oh, 861" he replied.

"Ah, spot on" I exclaimed, writing it down.

This stopped him again. "I'm not sure, what do you mean by 'spot on'?" he asked.

"Sorry, Mr Moss" I replied, "all I meant was thank you."

When he'd departed I looked over at Steven, who was checking the set. "I really must be careful what I say when he comes back" I said, "he's always been the same: takes everything literally.

"What do you mean 'literally'?"

Steven said in a voice similar to Mr Moss's.

The set was an Hitachi Model C2556TN. We heard the rustle of EHT when it was switched on, but it decayed at once and the set then reverted to standby, leaving a pronounced afterglow on the screen. A check on the HT showed that it was too high at 190V, so the over-voltage circuit had done its duty and come into operation. Some checks in the regulator circuit showed that R950 had risen in value from 68k $\Omega$  to 85k $\Omega$ . Another resistor replacement job then. Once this repair had been done the set came to life with the usual high-quality picture we've come to expect with this model.

## **A troublesome Philips G90AE**

Buck Starr, our next customer that morning, is a burly fellow. He strode up to the counter then, with his feet apart, tapped a finger of one hand against the palm of his other hand as he spoke.

"Set failed last night. 'Right', I said to the missus, 'it's over to Mr Bullock's with that 'un in the morning'. And here I am, like I said. Gollim in the car." Then he paused, as if wondering what to say next.

"Shall we bring it in then?" Paul asked.

Buck nodded and they collected it from the back seat. It was a Philips set, Model 21GR2550/05B, which is fitted with the G90AE chassis.

"We was watching BBC News 24 when he died away" Buck continued, tapping his palm. "It was probably all their endless adverts. Them noisy, flickering messes they keep putting on about their programmes. It's anything to be like ITV now, ennit?"

"True enough" I said. "I never thought I'd see the BBC sink so low.

I wish Lord Reith would come back and clear the whizz-kids out, then find some grown-up staff with standards. And do away with all the electronic noise equipment and the oafs who use it.”

“And BBC radio ain’t no better” continued Buck, tapping away.

“Where they get their crazy noises from I can’t imagine.”

This is all true enough. In September, to make its Ten O’clock News more ‘populist’ and competitive with ITV’s news, the BBC replaced its excellent and sober veteran newsreaders Michael Buerk and Peter Sissons with the allegedly more photogenic Huw Edwards and Fiona Bruce. And in answer to that ITV kicked out its ITV News Editor Nigel Dacre, who had done an excellent job for eighteen years, for “failing to maintain the populist standards” of their bulletins. In other words, for improving the quality. He was replaced by David Mannion because he has “proved populist news instincts”. Then ITV started to move its news about, just to be thoroughly unhelpful. And there you have it: the BBC and ITV vying with each other for ratings instead of quality.

I feel better now!

Buck’s set was stuck in standby. Paul checked the line output transistor and was not surprised to find it short-circuit. As he couldn’t find anything else wrong he fitted a replacement and then switched the set on again. The new transistor died at once. After disconnecting the set from the mains supply Paul felt the line output transformer’s overwinding, which was very warm. An HR7503 transformer was installed, along with another transistor. Then Paul tried the set again. This time it came on, but was stuck on channel 6, with all functions locked up and F7 displayed on the screen.

“Right” said Paul, “where’s the 5V line? Wish I could read Philips’ circuits.”

“So do I” I replied. “There was a time when they were among the best in the trade. Everything from Philips was easy to mend if you had the relevant Philips manual. I’m thinking of the ones with grey soft-card covers. They even contained line drawings of the chassis to show how the components were wired together.”

By now Paul had found the 5V line he was looking for, the one that supplies the microcontroller chip (IC7800) on the teletext panel. It is derived from an 8.3V supply that’s

produced in the line output stage, via a 5V regulator. A scope check on the 8.3V supply revealed the presence of a king-sized ripple, which was caused by loss of capacitance in the reservoir capacitor C2843. This 16V capacitor had fallen in value from 220µF to 150µF. As a result of the ripple, IC7800 was locked up. A new capacitor put matters right.

### **A sad event**

I have a sad event to report. Some of you will recall the cheap (£8.95) Cookworks electric kettle which Greeneyes and I decided to give a whirl. Well, after a brief series of minor illnesses it departed this life last week, when its element went short-circuit to earth.

“The Clockwork kettle has failed” Greeneyes had announced.

After a few skilful questions to find out what she was on about, I brought Plan A into action and applied my razor-sharp mind to the problem. To start with I tried first-aid. The element seemed much like a standard jug-kettle one, so I decided to replace it. The trouble was, I could find no way of getting to it.

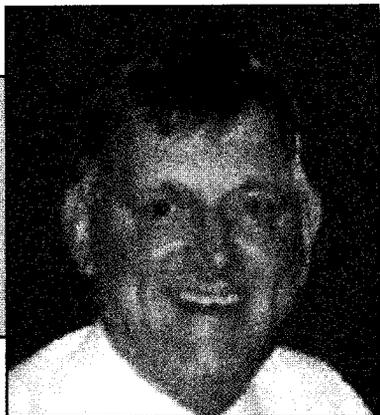
Then I saw that there were two little embossed circles, set an inch or so apart, just beneath the switch. Were they the heads of plugs, or bungs? If so, they would be hiding a pair of cunning screws, or so I thought. I tried to ease them out gently, using a watchmaker’s screwdriver. But I couldn’t get the blade between them and the body of the kettle. After a while the little man hammering inside my chest induced a burst of anger and made me push at them. They slid down half an inch into their holes but would move no farther, in or out.

Accepting Greeneyes’ unasked for comment that the appearance of the kettle had been spoilt, and ignoring her claim that she would now have to have an expensive stainless-steel replacement, I decided to explore afresh. I got the idea of trying to pick out the little orange pilot light lens to see if there was anything beneath it. I managed this, and found two little Phillips screws. When these had been removed I could swing out the upper part of the kettle’s handle. But it was hinged at the bottom with a metal strap, and I could see no way round that. After a while I came to the conclusion that the element would have to stay where it was.

So we had to have a little funeral. After that I was led out, by the ear, to buy Greeneyes an expensive Kenwood stainless-steel kettle.

# WHAT

# A LIFE!



**Greet your customers with a smile! That was the recommendation in a magazine article, but the results were odd when Don tried it out. Some recently tackled TV faults, and the effect of airborne radar on the course of World War II. Donald Bullock's servicing commentary**

**T**he other day I read in one of Greeneyes' magazines that when you meet people it pays to greet them with a smile. "Try it!" chortled the writer, one Alice Mincer. "It always works! Smile when you greet the very next person you see, and watch them smile back as they treat you like an old and trusted friend. Life is easier when people take a shine to you!"

Never one to doubt the word of a lady, I decided to try it. Which is why I greeted old Mr and Mrs Lampwick so warmly when they meandered into the shop next day. She was clutching him, and he was clutching an ancient electric iron.

"Hello my dears!" I beamed. "You aren't going to ask me to repair that old iron, are you? Looks as though it came out of the ark!"

To emphasise my new-found pleasantness I gushed with laughter. Mr Lampwick stopped and eyed me soberly, wiped a couple of dew-drops from his nose, and turned to his wife.

"This is the chap who used to be Mr Bullock, ain't it, Agnes?" he asked her quietly.

"I don't think it can be, Edgar" she replied. "It might be his father or something. Mr Bullock was so polite and sensible."

Then, leaving the iron on the counter, they shuffled off out.

I went to the back of the shop, put the kettle on, and studied my face in the old mirror there. "Hello my dears" I cried out at it. As it looked back at me, unsmilingly, I turned and walked away, just as the Lampwicks had done. Oh well,

better luck next time I thought. Sure to be.

## **Another try**

I decided to tidy the shelves at the back of the shop, and had just about transferred their contents on to the counter when a large and round man, whose face I knew well, came puffing in with his arms around a 25in. Sanyo colour set.

"Hello Mr Waterfield" I cried, smiling broadly and stretching out my hand in greeting.

He saw my hand, darted his eyes about for somewhere to put his set, saw that the counter was crowded and struggled to put it down on the floor. As he did so I heard the seat of his trousers tear. I admired the speed with which he straightened up and turned to face me.

"The name's Bywaters, Mr Billhook, not Waterfield" he said rather coldly.

"What's the matter with it?" I asked, increasing my grin in the hope of getting a better response.

"Nothing" he replied, "I'm happy with Bywaters, that's if you don't mind."

I decided to behave as though I knew he was joking. "Ha, ha, very good, very good . . ." I beamed, "I meant the set of course, but that was really funny, all the same."

He gave me a straight look, and I grinned all the more.

"Stops suddenly, just when it likes" he said, "and always just as the programme gets interesting. I could have thrown it through the window last night. Made me mad it did. And all the missus did was

grin. I gave the dog a wallop, and it's a miracle I didn't clout her as well."

Then he looked at my grinning face. "You might think it funny, but it bloody well wasn't" he continued, "perhaps you would give me a ring." He prepared to depart.

"Goodbye, er, Mr Millpool" I spluttered.

## **Thermal fault**

I decided that Alice Mincer, the ace writer in Greeneyes' silly magazine, was a prat. I also decided to come off my experimental grinning at people, before I collected a clout myself. I connected Mr Waterworks' set – a Model 25BN2 – and switched it on. Later that day it cut out, just as Steven returned.

He took it on and started to check around in the power supply section, using a can of freezer and a hairdryer. After a few minutes he found he could control the fault. The culprit was transistor Q611, which had become thermally sensitive. A replacement cured the fault, confirmed by a subsequent soak test.

## **Line output transistor failure**

As Steven was putting the back on the Sanyo set the phone rang. Paul answered it.

"That was Mrs Wallace" he said. "Lives at the top of the old folk's home. Decent type. Her Bush WS6672 TV has been a bit troublesome during the past six months or so. I've been there twice and replaced the BU508SAF line output

transistor, which was short-circuit each time. Now the set's tripping again. Anyone else might be making a bit of a fuss, but she's still as nice as ever. Who's going to go this time?"

So it was that, armed with a circuit diagram, some replacement line output transistors and a few more bits and pieces, I called on her and tapped at the door.

"Come on in doctor" she said.

I went in and explained that I wasn't the doctor. A people doctor anyway. Not smart enough for that. Then I checked her set and found that, sure enough, the line output transistor had failed again. Why?

I looked around the line output stage carefully for dry-joints, but they all seemed to be sound. I nevertheless resoldered several just to be sure. Then I fitted a new line output transistor and gingerly switched the set on. The new line output transistor immediately sailed off heavenwards. So I studied the line output section of the chassis intensely, and eventually noticed that the 560nF, 250V capacitor in the scan coupling circuit had a broken seal around one of its lead-out wires. When I removed it I found that I could, by flexing it slightly, make it read open-circuit on my meter. I replaced it and fitted another line output transistor. After that the set came on and stayed on.

"How much my dear?" Mrs Wallace asked, reaching for her bag.

"Nothing at all" I replied, "sorry you've been put to so much trouble. I think the set should be OK now."

## The advent of airborne radar

When I was a boy Doris Hamer's fish and chip shop in Gloucester's Clapham district was the only one I knew that offered savoury patties with the chips. Later she broadened her range to include raw carrots. Unusual, you might think. Well, it happened like this.

During the early days of World War II there was a sudden, noticeable increase in the number of German planes shot down over the south of England. We didn't know this at the time, but it was because of a new and highly secret development known as airborne radar.

The man entrusted with the trial of the prototype was Group Captain John Cunningham, a dedicated and

distinguished test pilot. The radar unit was fitted in his Blenheim fighter plane and his air-gunner, Jimmy Rawnsley, was swiftly trained to operate it. On the night of November 19, 1940, the secret invention enabled Cunningham to shoot down no fewer than three German planes.

His success continued and "Cats'-eyes Cunningham", as he quickly became known, achieved national recognition and was applauded for his exceptional abilities. Meanwhile the Ministry of Defence, anxious to avoid any inkling by the Germans of the radar development, ascribed his success to a hearty but fictional consumption of raw carrots which, it insisted, contained a substance that improved dramatically one's ability to see in the dark.

This notion was given a further boost when Lord Woolton, the newly-appointed wartime Minister of Food, was faced with the task of persuading British housewives to use home-grown vegetables, including carrots. He happily joined in exploiting the story.

Whether it fooled the Germans I never knew, but it certainly fooled the British all right. To counteract the blackout, we children were encouraged to eat raw carrots, even to take them to school for lunch. The result was a huge increase in the demand for carrots and, when Mrs Hamer bought in tubs of really large and tasty ones, her shop became our local carrot centre. We bought them at a halfpenny each, devoured them greedily and, we convinced ourselves, could shoot eagle-eyed.

To support this claim we would cite the sign that was painted high on the local Co-Op store. At the time a German invasion was feared nationally. To confuse any parachuted invaders about their whereabouts, all place-names on signs and fascias had to be painted out. But the Co-Op missed the Clapham one. The word Gloucester remained there.

No one noticed it until, a few days into our carrot-eating spell, we lads happened to look up and spot it. We jabbered about it to the first adult who chanced to come by, the excitable and voluble Mrs Wilde.

Fired by fear that the very heart of Clapham might become the centre of German activity, she hastily and noisily gathered an action group of patriots in front of it. We didn't take long to reach a conclusion.

Gloucester was in grave danger, and something had to be done about it.

At that point the luckless George, of the fats counter, came out with a long billhook. He was tackled about the matter of the Co-Op making Gloucester's whereabouts known to the enemy, treated to a lecture on patriotism and the dire penalties in force for aiding the enemy, and all but accused of being a quisling.

All this was too much for the simple George, who maintained that he had no idea what we were on about and said he had only come out to pull the shop blind down. But when he went back into the shop he immediately told his colleagues about the incident.

It wasn't long before the management got someone round with a ladder, a red face and a pot of black paint. He did a good if belated job. After more than sixty years, his handiwork can still be seen there today.

Group Captain John 'Cats'-eyes' Cunningham lived a long and interesting life. He died last summer.

## That book!

The above story has been borrowed from my recently published book *The Legend that was Clapham*. I had no idea when it was first brought out that it would sell so well, nor did I imagine the phenomenal response it would get when I first mentioned it in this column. Each of the many newspaper and magazine reviews has been favourable, and our local BBC radio station inflicted me on its listeners for a whole one-hour programme.

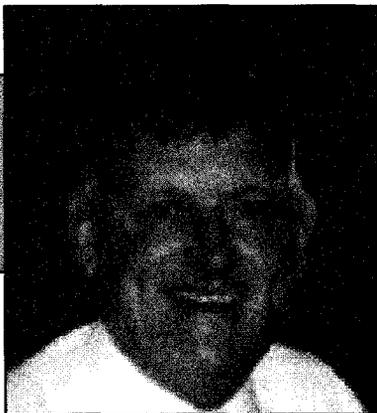
The Clapham in the title is not the better-known Clapham in London of course. It's the back-street locality in the middle of Gloucester where I was born, over a newsagent's shop, in the early Thirties. The book describes a level of poverty and an assortment of characters and happenings that are, by today's standards, barely credible. Some of the incidents are tragic, others uproariously funny.

Some reviews and a lot more can be seen at the website

[www.wheatleypress.com](http://www.wheatleypress.com)

The book can be ordered from there or from the Wheatley Press, 132 Cheltenham Road, Gloucester GL2 0LY at £8.95 plus postage. The telephone number for the Wheatley Press is 01452 529 806.

# WHAT A LIFE!



**A power-supply problem with the Tatung D chassis. Difficulties with today's larger sets. The television trade in the days of single-channel receivers. Donald Bullock's servicing commentary**

**M**r Turnbull looked sour as he trudged through the door carrying his 20in. Decca D20TDE6 (Tatung D series chassis). "Slow to come on and squealing all the time" he complained. "Used to be wonderful, but no more. D'you think you could have a look at it for me?"

I took his details and he departed. Steven decided to take the set on. He plugged it in, switched it on and, sure enough, it gave an imitation of an angry pig. There was no raster for ten minutes.

"Let's have a good look at the chassis" Steven said, "it's always an idea when you don't feel like switching your brain on."

Always the optimist, he started off by giving the chassis a thorough check for dry-joints. After a couple of minutes he tired of this and decided that he would work things out for himself this time. But he continued with some basic tests – on the electrolytic capacitors and high-value resistors in the power supply.

Once he got going with the capacitance bridge it didn't take him long to find that CE802 (220 $\mu$ F, 16V) was at about half the correct value. It's the reservoir capacitor for the TDA4605 chopper control chip's LT supply (pin 6). He fitted a replacement and, with high expectations, switched the set on. It immediately began to squeal again.

He next found that CE806 (2.2 $\mu$ F, 50V) was low at 1 $\mu$ F. This is the smoothing capacitor in the regulation feedback loop. But replacing it made no difference either. Then Steven noticed that one of the leadout wires of C809 (1.5nF, 1.5kV) in the chopper FET's

snubber network had been slyly arcing for some time at a hidden dry-joint, which had melted. This time the replacement restored correct operation. We thought the picture was particularly good. A DC-coupled cascode circuit is a nice design for RGB output stages.

## **Big sets**

"If sets go on increasing in size we'll need a bigger workshop" Paul complained as he struggled in with a 28in. Bush Model 2872NTX – "and I'll have to take a body-building course."

I looked at him, then at the set, eyed myself in the mirror and pushed at my front teeth with my finger.

"There's this 28in. Bush set" Paul continued, "that 66cm Sharp set over there, the Bush widescreen set we took in yesterday, and now Steven's unloading a 28in. widescreen Panasonic set."

The Bush 2872NTX (11AK19E3 chassis), now on Paul's bench, was dead. We'd had the problem before with these sets. C833 (220pF, 600V), which is connected across the chopper FET Q802, had gone short-circuit. As a result one of the 1N4007 mains bridge rectifiers, this time D801, had gone short-circuit and the surge-limiter resistor R817 (2.2 $\Omega$ , 5W) had gone open-circuit.

Once replacements had been fitted the set sprang to life, leaving Paul with two problems: that of finding some floor space for it (Steven had just filled its previous space with the Panasonic set) and getting it off the bench safely.

He decided to tackle the Sharp set next. This was a Model 66ES03H (CA10 chassis). When it was

switched on there was sound and the comforting rustle of EHT as the tube became live, but no screen brightness. This appeared when the setting of the tube's first anode supply preset was turned up, revealing field collapse.

The cause of the trouble was in the line output stage however. The field timebase is of the switch-mode type, and depends on pulses from the line output stage to provide pulse-width modulation. These were missing because of a fault in the line scan circuit. R613 (2.2k $\Omega$ , 2W) had developed enough heat to melt and crack the casing of C613 (680nF, 250V), which had gone open-circuit. A replacement resistor and capacitor restored normal operation. There was then just the little matter of finding somewhere to put it.

## **As we were**

In a recent column I made a passing reference to that bygone age when television engineers were universally respected and held in high esteem. A number of readers have asked for some more recollections of that happier age – for those in the TV trade at any rate. So we'll take a trip through time to the early post-war period, when there was only one TV channel – run by the BBC of course.

To own a TV set in those days was regarded as quite something. Because of this the huge Band I aerials that adorned the chimneys of the few who could afford a set were tremendous status symbols – to the extent that it was not unknown for a family to have an aerial but no TV set!

The early sets were mainly large

and heavy, many of them being housed in console cabinets. These were prized pieces of furniture. But however large the cabinet, the CRT screen was small, rounded and bulbous, not at all like the square-cornered, flat screens we are familiar with today. In fact many of the tubes were actually round-faced, a white-painted rubber mask being used to produce a "squared-off" picture. The 9in. round tube was widely used, with a deflection angle of about 65°. Later 17in. square-screen tubes with a 90° deflection angle were only slightly larger. And as there was no Rimband with the early tubes, a safety screen had to be fitted in front. Increase in scanning angle from 65° to 70° then 90° and subsequently 110° called for very considerable increases in scanning power. The early circuit designs and components could never have managed it.

There was a phenomenal number of brands in the early post-war period, all of them British. Most are just distant memories today – when did you last see an Ambassador, Beethoven, Cossor, Ekco, English Electric, Ferranti, GEC, Invicta, Kolster-Brandes, McCarthy, Masteradio, Peto Scott, Pilot, Raymond, Regentone, RGD, Ultra or Vidor TV? None of the sets had tuners as such: instead, those that were superhets rather than the troublesome TRF types were pretuned to receive a single channel, each batch (for different transmitters) being fitted with different aerial, RF and oscillator coils. They thus responded to one channel only, the local BBC one in Band I. London came first of course, followed by Birmingham. (Sutton Coldfield) and, in time, most of the country.

### **A dealer's life**

The life of a TV dealer was hard in those days. A new television set and an aerial array was a very expensive purchase for the customer. Most were bought on three-year hire-purchase agreements. So customers were fussy and particular.

Because of reception uncertainties, many customers would demand a home demonstration of several sets as of right. And as transmissions didn't start till 7 p.m., the dealer would have an hour or more to kill after closing the shop before he could

begin his first demonstration. He'd be lucky to get home before bedtime.

The prospective buyer's locality had to be considered first. If it had a good signal, the dealer would lug sets of two or three different makes to his van, drive them to the customer, then lug them all out and demonstrate each one. If he got a good picture on one of them he would leave it on trial for two or three days before returning to install and set up the others. This could go on and on, first one set then another being given a trial.

Another complication was that a large proportion of the country's viewers lived outside the main transmitter service areas, many in the so-called 'fringe' areas. As the number of transmitters grew, a lot of customers might be outside the service area of any of them but within the fringe area of two or more transmitters. This could mean protracted delivery and demonstration of different-region sets, plus aerial turning or changing. Profit margins on TV sets were large by today's standards, but they had to be earned.

### **Aerial rigging**

The aerial riggers led hard lives too. Not only did the signal strength vary from parish to parish, even in a good-signal area, it might also vary at a particular house, from one chimney to another. Curiously, the richer customers often lived in the most difficult signal areas. One of my customers, a leading and well-off stamp dealer, ruefully put this down to poetic justice!

I recall selling a large and expensive prestige TV set to a rich mill owner, subject of course to being able to get a good picture at his mansion, which was perched in the folds of a valley in the rolling Cotswold countryside.

But the signal proved to be terrible and, after spending several days erecting and dismantling various aerial arrays on its many chimney-stacks, the riggers conceded defeat. They brought the final array down and leant it across the man's front door while reaching for the knocker to report their failure. But before they could touch it the owner rushed out in a state of great excitement.

"Brilliant!" he cried, "you've cracked it at last. I've got a

wonderful picture – come in and see!" Ducking under the aerial, they trooped in to see an exceptionally bright, clean and steady picture.

Out came the wine, the Player's cigarettes and the cheese and biscuits, and the day ended in a delightfully convivial manner.

The aerial, straddling the door, was in a highly unsatisfactory position. But there was no alternative to leaving it there. The mill owner happily took to using his back door to come and go by, and smartly planted a honeysuckle vine to cover the huge and leaning array. It remained in place for years. Even today when I pass the house, which now sports just a tiny UHF aerial, I glance down at its honeysuckle-covered front porch and slip into my memories of that signal saga.

It wasn't long before ITV came, provided by a mysterious something called Band III. This was to bring us a whole new box of problems, and most of us were scared to death by the prospect.

### **The Legend that was Clapham**

Some readers have assumed that the Clapham in the title of my book, see heading above, refers to the London Clapham or the famous railway junction of that name. It doesn't. It refers to the Gloucester parish of Clapham, the poverty-stricken community where I first saw the light of day, and is largely about the astonishingly varied and larger-than-life characters who lived there in the Thirties. They survived from day to day by exploiting what they had in them – their skills, street wisdom, willingness to try a hand at anything and, in some cases, their charm, roguery or cunning.

Folk featured in the book include the canny Miss Fanny Thesp, Old Harry of the dewdrop nose, Mr Bint the cross-eyed barber, the 'bad woman' Sambo Lane, the singing burglar Lucky-bag Williams, Archie Workman the work-shy bent on lifelong toil, and many more. All highly individual characters who together, and unwittingly, formed a treasure chest of pathos and rich humour.

Fortunately for me the book has turned out to be very successful. For further details, including reviews, you can go to the website at

[www.wheatleypress.com](http://www.wheatleypress.com)

# WHAT A LIFE!



**A field call in the countryside involved some navigational difficulties. Problems with a jammed VCR and some more widescreen TV sets. Donald Bullock's servicing commentary**

It was a lovely day, balmy and still. The sun smiled down from its blue sky, the chaffinches were singing of their love of life, the grasshoppers chirped and passers-by beamed contentedly as they went about their business.

"Lovely day" observed Steven. "Why don't you and mum go for a nice drive in the countryside? She'd love that. You could meander along the riverbank towards Meadowgold. Perhaps have a nice meal at the Kingfisher Arms. They do a lovely mixed grill on Wednesdays.

I eyed him carefully.

"Two points" I said, "I don't know the road to Meadowgold, and today isn't Wednesday, it's Thursday!"

"Oh, ah" he replied, "but it's even better on Thursdays. They do steak and chips. Really nice. And mum knows the way - she went there with me last week."

"So why did you go there last week?" I asked.

"I'd a call to Paradise Cottage, by the weir" Steven replied, "to look at old Mrs Goodhew's Sharp telly. Had to come back to order some spares. I see they've just arrived in the post."

"And now you want me to go there and fix her set!" I said, my razor-sharp mind catching on instantly.

"Got it in one" he commented, "but there's the nice drive, the meal - and I've put the spares and toolkit in your car for you . . ."

"You're so kind" I remarked.

An hour later, when Greeneyes had put her face on and poured herself into her lime-green trouser suit, we sped off into the countryside.

## The journey

Before long the houses thinned out and became the occasional country cottage. I was soon singing of shady nooks and babbling brooks and winding lanes. Just like a youthful Bing Crosby (I thought). Between lines I whistled the music too. A pretty good parody of Bix Beiderbecke's accompanying horn (I reckoned).

Then we saw a whitewashed, creeper-clad cottage ahead, and the road forked to each side of it.

"Left or right dear? Boo de boo boo" I sang at Greeneyes. "Which way do I go, boo lah de dum boo?"

"Straight on" she replied.

I looked at her, saw that the cottage was fast approaching, and looked in the rear mirror. There were two cars close behind. I forgot about Bing and Bix. "Which road do I take?" I bawled urgently.

"I told you, straight on" she replied, "why do I have to say everything twice?"

The cottage was in front of us, and I hurriedly braked. The car behind stopped in time, but the one behind it didn't. There was a nasty crunching noise.

The chap in the back car sprang out and started shouting at the driver behind us, who waved his arms at us and started to bang his forehead with his palm.

"Go left" said Greeneyes.

I smacked the car into gear and shot off, expertly negotiating a series of bends.

"Turn right" Greeneyes said.

I did, into a leafy lane with a duck pond and a village pump nestling beside an ancient church.

Meanwhile two cars sped past the

lane, and we heard some angry shouting . . .

## The repair

When we arrived at Paradise Cottage I found that Mrs Goodhew's set was a giant Sharp Model 56FW-53H, with 56cm screen.

"I'll make a pot of tea and fetch some slices of my apple cake" the good lady said as she bustled off towards the kitchen.

The set was dead, as Steven had mentioned, with its BUH515 line output transistor short-circuit. The soldering in the line output stage wasn't all that good - one of the joints to R613 in the line scan circuit had been arcing. R623 (1Ω, 2W) in the HT feed had also suffered. I replaced them both, then moved to the power supply where the BZW04-145 avalanche diode D753 and the optocoupler IC705 had to be replaced. They are mounted on the copper side of the board. Then I remade some poor joints.

When I'd finished I switched on and was grateful to find that the set sprang to life. It produced an excellent picture.

As Greeneyes finished her second slice of apple cake I noticed that my tea had gone cold. After thanking Mrs Goodhew for her hospitality we set off back home.

"Let's go back on the Ashlehurst Road" said Greeneyes, "it's even more rural and so straightforward that even someone of your age and mental state can't go wrong."

I smiled happily at her consideration. All went well until we rounded a bend and came to

another pretty cottage complete with fork roads. I looked in the rear mirror and saw a lorry load of straw bales fast gaining on me.

"Which fork road?" I cried urgently.

"Straight on, like before" she said as I squealed the car into the left fork.

"No, not left. Straight on I said. Straight on!!"

Then a lecture began. "I said straight on and you turned left. Now I'm having to say everything three times!"

## More trouble

As we arrived back at the workshop we ran into Mrs Bronson and her posse of kids. She was carrying a smallish TV set. The eldest offspring eyed me coldly.

"That man's got a red face mam" he said, "is that 'cos he drinks too much whiskey, like Grampy?"

"Shullup" Mrs Bronson bawled, as her other son ran across and kicked the battery stand over. Then she placed the set on the counter. It was a Samsung CI5079 (SCT11D chassis).

"Ain't got no sound, duck" she said, "I spex it's the loudspeaker thing, or the knob that turns it up."

I took her details, then the family departed. Paul decided to have a go at the set.

"Speaker's OK" he said, "I'd better check the audio output chip."

In this model it's a TDA7056A (IC601). Instead of the expected 12V supply at pin 2 there was only 1V. The feed is via two 0.47Ω, 2W resistors, R812 and R813. When they were checked one of them was found to be almost open-circuit. A replacement restored the 12V supply, but there was still no sound. As there was no obvious cause Paul replaced the IC. This made no difference either.

Scope checks around the separate sound SAW filter (SF101) and IF chip (ICK01, type TDA4445B) suggested that everything was OK here. What else was there? There's a muting arrangement that involves two transistors, Q903 (KSC815Y) and Q907 (KSR1012). The later was short-circuit base-to-emitter. A replacement restored the sound. So there had been two causes of the no-sound problem.

"Good job you're so clever" Steven said.

"Sure am" Paul replied.

The banter came to a quick end when Mr Kenton arrived. He was carrying a Panasonic NVHD90 VCR.

## VCR trouble

"Joo know, this machine'll be the death of me" he complained, "it will, you know. Mark my words."

"Is there someone in there with a gun?" I asked.

"It's not funny" he retorted. "This is the second time it's gone wrong, and it isn't that old. The first time was the winter before last."

"Terrible" I replied, "what's up with it this time?"

"How should I know?" he said, "it's you whose supposed to know about these things."

I leant forward. "What are the symptoms then" I asked quietly.

His face became a picture of misery. "It's jammed, with my best tape in it. Now that can't be right, can it? In all fairness, that shouldn't happen."

I said we would investigate and, when he'd departed, set about extracting the tape from the machine. It was well jammed in all right, but I managed to get it out undamaged. After that I cleaned the mechanism, fitted a new idler and roller, then reset the timing.

But it ran intermittently while on soak test. I had to fit a replacement clutch to get it right.

When Mr Kenton came back for it and saw the bill he started to complain again.

"Three separate things wrong? This is the end, it really is. I can't take any more of this. I'm gonna have to get some stronger pills from the doctor."

## Widescreen TVs

Paul had pulled a widescreen Bush Model WS6674 on to his bench. The complaint was 'dead'. Before he took the back off he looked out a 1MΩ, 1W resistor.

"You psychic?" I asked.

"No, just had a number of these sets in" he replied, "when they are dead it's usually because RP05 in the power supply has failed. A half-watt resistor is fitted but doesn't seem up to it, so I fit a 1W type."

He was quite right about the cause of the failure. The replacement resistor restored normal operation, and an outstanding picture.

Meanwhile Mr Hubbard had struggled in with his 28in. widescreen Panasonic set, Model W28R4DP (Euro-4 chassis). "Has the repair kit you ordered come in?" he asked.

"Yup!" said Steven, "we'll give you a call when it's done."

The problem is that the original type of line output transistor fitted, a BU2508AXLB in position Q551,

tends to fail prematurely. The kit contains two transistors, the one you fit depending on the tube type. In this case the correct type was 2SD1577LB. You also have to replace the resistor, R507, in the feed to the line driver stage. Again, this depends on tube type, either 100Ω or 270Ω (1W, 5%).

There were no problems once these items had been replaced. The kit costs just £5.00 plus VAT. It's worth buying from Panasonic. The 2SD1577LB is hard to obtain elsewhere and can cost as much as £9.00 plus VAT.

# WHAT A LIFE!



**A medley of faults – TV, video, audio and a digibox. Donald Bullock's servicing commentary**

**F**unny chap, Charlie Rowe. He's always been the same. Doesn't just show up with his television set or VCR for repair as others would. Instead, he pops his head round the door an hour or so beforehand to warn us. In fact he's just done so. He'll be back before long.

Charlie lives in a village beside the river Severn. Another of his quirks is the flow of small stories he comes out with. They all seem amusing and just about credible – until he embellishes them with extra bits that make them too fantastic. And he's offended when you question them.

But he's not as bad as his uncle, old Harry Gumm. Harry is nutty as a fruit cake, always was. So was his sister Olwyn. Nutty family. She was the one who spun the vicar a sob story and touched him for a hundred quid, which she put down on a Rolls Royce when a gypsy fortuneteller told her she was set to win a fortune on the pools. She didn't even do the pools.

Still, there's one thing I've learnt in this trade over the last half century – that it takes all sorts. But I remain uncertain about one thing. Do all the nutters head straight for me, or is the world so crammed full of them that I get only my fair share? Do other readers get their share of oddballs? I'd like to know!

## **Charlie and the Samsung**

Anyway Charlie returned shortly afterwards, this time with a Samsung television set. He looked a bit hot and bothered. So I asked him what the trouble was.

"Glad you asked me, Don" he replied. "I've had a dreadful time since I last saw you. It's my Uncle Harry, who owns this set. He's

always been a one for the drink. Now he's started to hear voices. They were jabbering at him early this morning, when he got to my place with the set in his arms. Told him to climb the spire of the village church to bring down the weathercock, because it looked so shabby."

"Good lord" I said, "did you get him to the doctor?"

"Couldn't" he continued, "he ran straight out, went up the spire and brought down the weathercock."

I leant forward, eyeing him suspiciously. "Tell me" I said, "was it crowing?"

Charlie ignored the question.

"Did he, er, do anything else odd?" I persisted.

Charlie straightened up and looked at me severely. "Wasn't that enough?" he asked.

"Oh yes, indeed" I said, "but, er, how old is he?"

"Seventy four!" said Charlie, patting the set he'd just brought in. "And he was carrying the set too. It went up and down the spire with him."

That finished it for me. "Tell me" I said, "what's the trouble. With the set of course."

"OK for the voices, but no picture" Charlie replied.

I made a quick note on the card and told him to come back later.

"Total loony" I said to Steven.

"What, me?" Steven replied.

I screwed up my eyes and gesticulated. "Course not. I mean that Charlie. He leaves you dumbfounded."

We put the set on the bench. Model CI5944, fitted with the SCT12B chassis. I suspected field collapse and advanced the setting of the first anode preset. This

confirmed the diagnosis, but there was also insufficient width.

"Oh, another of those sets with the same fault" said Paul, glancing at the screen.

"This one's for you then" I concluded, and stepped aside.

Paul removed the back then switched the set on. He put his finger on the TDA8350Q field output chip IC301. "Getting hot under the collar" he commented.

"What about the lack of width then?" I asked.

"Same thing" Paul continued, "the chip handles EW drive as well. So there's lack of width."

"I'll get you a replacement from the stores cupboard" I said.

"A new chip and the rest" Paul said. "We need a SEME RK312 repair kit. What would we do without SEME! Samsung doesn't offer a kit.

The kit consists of about half a dozen components that provide a well thought-out modification for this troublesome bit of circuitry. Once it had been fitted the set produced an excellent picture – in addition to the voices.

"They don't seem to give any further trouble once the modification has been carried out" Paul said.

## **Charlie returns**

Charlie looked in again later, rubbing his hands and grinning happily. "There's a bit more news about Uncle Harry and the weathercock" he announced.

"Oh ah" I said, "don't tell me that he ran up a rainbow and hung it there."

"That would be ridiculous" Charlie said coldly, "no, he simply repainted it on the spot."

"He, er, happened to have the paint with him I suppose?"  
"Yes indeed" Charlie said brightly, "and a brush of course. He'd bought a tin of gold paint only the day before to paint his bike."  
"Oh of course Charles" I added, "it all fits, doesn't it?"

### Norah's video

Our next caller was the deep-voiced Norah Pike, who was carrying a Ferguson VCR. She's fond of dogs and has half a dozen of them. Her favourite, Little Leslie, was with her. As it ran to the counter and raised its leg Norah commented on its qualities.

"He's so affectionate" she said, "that's 'cos I've had him seen to. They're always affectionate when they've been seen to."

I looked on in horror and tried to think of something to say. I was saved by the arrival of young Sally Simpson, who was carrying a Sharp CD player. Sally reminds me of a bank of pure white angora wool set in a valley of summer cornfields and honey, but I'd better not get carried away about that.

"What a friendly little dog!" she sang.

"Yes" said Norah, "it's 'cos I've had him seen to. They're always friendly after that."

"Oh, er," said Sally, her voice tapering away. She was lost for words, as I'd been.

So I cut in. "Norah" I asked, "what's up with the video then?" It was a Ferguson FV77HV.

She smiled and cleared her throat. "Oh yes, the video" she said, "it's dead dear."

"Bet I know the answer to that one too" muttered Paul as he reached for a job card.

I stepped aside again, just as Norah made for the door and Edgar Sprigg bounced in, clutching a Toshiba DVD player. It all happened to Edgar before he got as far as the counter.

"Oh my Little Leslie likes you" grated Norah as the dog trotted over and raised his leg. "They're always affectionate when they've been seen to. My friend Ernie Hubbard has a massive Alsatian that..."

Edgar's mind was more on his DVD player than dogs and Norah's reminiscences. He started to nod and shake his head, then looked down and saw the state of his trouser leg and shoe. Norah departed hurriedly.

Paul had begun to tackle the VCR and had already opened it up. "I've had several of these dead Ferguson

machines in lately, all with the same problem" he commented, "they seem to come in waves. It's the electrolytics in the power supply that cause the trouble. They go low in value. These three."

He pointed to CP19 (22µF, 63V), CP11 (220µF, 25V) and CP26 (1µF, 50V). The machine sprang to life once he'd fitted replacements.

### The Sharp CD player

Sally's Sharp CD player was a Model DXR555. It had seized up. This too proved to be a recurrent fault. Steven had come across it before, always with the same cause.

"It'll be the optical block drive motor" he said. "They seem to be made to very close tolerances which, I suppose, is a good thing. High-precision engineering and all that. But the shaft so easily becomes stiff. My remedy is to clean the shaft thoroughly then apply some WD40. That seems to free the motor, and I've had no bouncers."

### DVD department

Steven's has also become knowledgeable about DVD players. So he tackled the one Edgar had brought in, a Toshiba Model SD110. The symptoms were no display and no sound, though picture playback was OK. This turned out to be another stock fault.

A quick check showed that the -31V supply was low, down by about 6V. There was barely any voltage on the associated -9V line.

"The fault led me a dance when I first encountered it" he said, "but I've had about a dozen of these machines with the same problem now and the cause has always been the same, C298 (100µF, 16V) on the main panel. It doesn't go open or low as you might expect. It goes short-circuit."

### Digibox trouble

Greeneyes provided the last job that afternoon. She clopped in and announced that our Panasonic digibox had failed.

"I turned it on in good time to see the cookery programme. But it went off straight away and started ticking like a bomb" she said.

"Good thing too" I said, "the less you see of those cavorting cookery buffoons the better it'll be for you. They ought to be rounded up and bunched together, maybe somewhere on the moon. They are their inedible concoctions. They should have started out properly when they were kicked out of

school, doing grease-monkey jobs in the backs of remote and oily garages. If I had my way...

But no one was paying any attention. Paul went off with Greeneyes and shortly after they returned with the box.

When Paul connected it up it sat there tripping happily. He carried out a careful inspection for conductor breaks and dry-joints but couldn't find anything amiss. So he settled to carrying out cold checks on the electrolytics in the power supply, followed by the diodes. Eventually he came to D811, which was leaky, with a low front-to-back ratio. It's type UF5404 and seems to lead a hard life. Be that as it may a replacement restored normal operation, and Greeneyes was able to see the rolling credits for the programme she'd missed. ■

### Nutters

Going back to the question I asked earlier, about nutty customers, I'd dearly like to hear about the experiences of others in the trade in this respect. Emailed comments would be very welcome. They'll reach me at [donald@bullock-bros.com](mailto:donald@bullock-bros.com)

# WHAT A LIFE!



**Some emails prompt Donald Bullock's reflections this month. On oddballs, radio and TV receivers in the early days, projection TV sets and the present lamentable state of broadcasting**

**S**hortly after last month's issue came out I received an email from David Blount replying to the question I had asked – do I get all the oddballs, or only my fair share? David is in no doubt. "Rest assured" he says, "we all get our share!"

His experience convinces him that they come in well-spaced waves. If this is so, are my waves more closely spaced than those of others?! Compressed into shorter wavelengths, so to speak. He went on to mention two recent examples.

The first nutter had bought a multimeter from the local DIY store. He didn't know how it worked, and had no use for it. He'd bought it simply because it seemed cheap at £4.99. In due course he turned up at the shop and "asked me how to mend television sets with it".

The other one showed up with an old Sony reel-to-reel audio recorder. Since it used tape, he reasoned, and VCRs use tape, "could I convert it to work as a video recorder? I'm not sure how many ways there are to say 'no', but I think I had to use them all!"

## **Early days**

I've had a number of welcome emails recently (if you want to get in touch, the address is [donald@bullock-bros.com](mailto:donald@bullock-bros.com)). David Else refers to my mention, in the January issue, of the development of airborne radar in the UK in 1940. I had mentioned two servicemen colleagues, John Cunningham and Jimmy Rawnsley, who had been given the task of airborne testing with the original prototype. David

tells me he knew them both well.

Jimmy Rawnsley had worked with David's father as an electrical engineer at the Hendon Power Company. During the war, when the Elses' family home had been flattened by German bombs, they moved into Jimmy's former flat.

"Rawnsley and Cunningham often stayed there with us when they came to London" he writes, "and at an early age I knew about the radar connection."

David's father was a radio enthusiast in the earliest days, and had a licence to experiment with receiving aerials – presumably a mandatory requirement at that stage. David himself obviously caught the bug, and went on to become an exceptionally keen and productive TV amateur.

"I can recall my father's old plug-in coils, chokes, condensers (not capacitors then!) and valves" he writes. "I used them to learn about wireless. We had been among the few who had a TV set before the war. It was a combined multi-band radio and television receiver which we used after the war as well, when TV transmissions restarted in 1948. We could see the Alexandra Palace transmission aerials from the roof of the flats. When my family eventually replaced the set with a then modern Philips rear-projection model there were problems with too much signal.

During the Fifties, he continues, many shops were selling government surplus electronics components and equipment. Several of them advertised in this magazine, which was then known as *Practical Television*. David built the first of

his two home-made TV sets following constructional details published in the magazine. Its display was provided by a surplus radar tube with a green screen. This was so successful that he subsequently built another one. They have been kept in regular use up to the present time, with modification and updating from time to time as necessary. The last such modification was the addition of a Sony teletext panel to one of them. "They both remain in use", David adds, "one having clocked up 18,300 hours of operation, and have proved to be remarkably trouble-free".

David mentions a letter he sent me in February 2001 supporting my complaint, in an article at that time, about the decline in the standards of our radio and TV programmes and their presentation. In his latest communication he notes that the situation has become worse. "For me Radio 2 is a no-listening zone after ten – I listen to Classical FM instead" he concludes.

## **Projection TV**

David's reference to the old rear-projection TV sets brought back the misery and hopelessness they caused me all those years ago. The idea was to get round the size limitation with the direct-view CRTs of the period. Instead, the source of the display was a 2.5in. tube, the Mullard MW6-2, which was operated at the incredibly high (for those days) EHT of 25kV. It produced a very bright picture that was magnified (in size, not brightness) and passed via mirrors and a correcting lens to provide the

display on a translucent glass screen. To my eyes the pictures always looked a sorry mess.

The sets were heavy and cumbersome, and the brilliant picture produced by the valve-sized CRT could make your eyes useless for an hour or so should you fleetingly glance at it. Because of the high EHT the early sets could also be lethal. If the optical system was disturbed, even slightly, it was very difficult to realign it to get a correctly positioned and focused picture. There could be problems even if the optics hadn't been disturbed. In the very earliest sets there was no CRT protection, so failure of either the field or the line timebase would instantly burn a line on the phosphor screen, destroying the tube. A separate unit with a blocking oscillator and a line-type output stage that fed a voltage tripler (three EY51 valves) was used to generate the EHT. Protection was incorporated in later sets. Diodes were used to rectify the outputs from the field and line output stages, providing a bias for the CRT and, sometimes, the video output pentode.

The sets weren't cheap. In fact they were absurdly expensive. They were also very troublesome, and the pictures they produced were terrible. I never knew anyone who would mess with them for choice.

### Early radio sets

David's reference to the old plug-in, basketwork coils and the other components that were available for those who built their own sets in the early days of radio took me back to my boyhood. When I was a boy I made a variety of crystal sets and amassed an assortment of these coils, of different sizes and inductances, most of them tuned to receive a particular group of transmissions. They were fitted with a two-pin plug that was inserted in a socket at the front-end of the crystal and valve sets we used to make.

Money was tight when I was young. I used to scour the tables of junk outside the local second-hand shops in my area in search of old hand-built wireless sets, some of the crystal type, which I would find in various states of disrepair. They were often in heavy, hand-made and hand-polished cabinets. These were often a bit bigger than a shoe box, with a lift-up lid supported by a long brass hinge.

The receivers didn't have a chassis, and the components

weren't soldered together. Most of them, particularly the condensers, had two screw-holes and would be secured at the bottom of the box by means of small woodscrews. Connections between the components consisted of lengths of carefully cut and angled heavy copper wire. This was often square, not round. Most of the components had tall, carefully turned and knurled brass nuts that securely clamped the wire to the embedded brass bolts. The condensers were of dull black Vulcanite, each about the size and shape of a domino. Their undersides, which consisted of hard yellow-brown resin, were stamped with the value. No one bothered about miniaturisation then – it was a sensible world!

Does any reader recall these products of a bygone age? How many have actually seen a cat's whisker or know exactly what it consists of? I'd like to hear from you – via this modern email system!

### The programmes

I agree wholeheartedly with David's comments on the ever-increasing decline in radio and television programme standards. Even when a programme is worth listening to, or watching, the insane presentation often makes you reach for the switch.

There was a time when the BBC, at least, trained announcers to speak well and clearly. With a few notable exceptions, this no longer applies. Many are now just gabbling machines, with hard voices and brazen attitudes. And those who do pass muster on these counts have to compete with pumping, pulsating synthetic noises and drumming sounds that drown them out. This nonsense was started by the commercial broadcasters, with the aim of capturing the attention of viewers so that they would stay tuned in. It was then copied by the BBC. The din even accompanies, and half-obliterates, the opening TV news headlines!

This is not the full extent of the rot. When in Spain I sometimes switch to Sky News because I find much of its reporting crisper than that of the BBC News 24 channel. When I can no longer stand the offensive and frequent adverts, I switch back to the BBC. But what do I find? Similar horrible adverts – for the BBC's forthcoming programmes, for the programme by-products available, or for anything else the Corporation can think of, all with the accompanying

pulsing, pounding noises and flashing, zooming vision sequences developed by the commercial broadcasters. And this doesn't end until the latter have ended *their* racket.

As to the programme material, the problems are repetition and similar material being broadcast on most channels at the same time. Suppose, like some of us, you don't want to watch football. Switch channels and what do you get from the 'competition'? More football in all likelihood, with similar noises and the frenetic 'commentary' telling you what you can perfectly well see is happening.

The trouble is that the broadcasters all seem to be petrified at the thought of losing their share of the 'ratings figures'. So they cut their standards, filling the hours with pap that they hope won't offend anyone. There are supposed to be supervisory authorities to ensure that we get variety and some decent programming. They seem to be ineffectual.

It's all such a pity. Broadcasting doesn't have to consist of endless trash.

### Back to earth

Back to the subject of oddballs. As I was reading these emails last Sunday afternoon there was a frantic knocking on the front door. When I opened it I was confronted with a huge, scruffy fellow who looked as if he lived in the woods on nothing but rough cider. He started his spiel with the usual words used by Sunday afternoon knockers-up.

"Sorry to bother you on a Sunday afternoon, like, only our telly went pop just as we was settling down to our dinner."

I looked at him hard. "I don't often do calls, and never on Sunday afternoons" I said. But he went on as though I'd said nothing.

"The missus tried callin' at Mr Snoddy's 'ouse up Toff's Hill, 'cos we allus calls Mr Snoddy. But 'e musta been on the larrup last night 'cos 'e was a bit funny like. When 'er asked 'm to come and mend the telly quick, 'e called her some terrible names. Yeah!"

"Anyway I 'spex it's a valve, or the transformer. Give us a valve now and I'll get the missus to try 'im first. If that don't do, you can 'av 'im back an' I'll take a transformer to try. Don't mind 'aving a go like, 'cos you'd charge for a Sunday call, wouldn't you?"

# WHAT A LIFE!



**A further welcome batch of emails brings all manner of subjects to the fore, including customer problems and humour, cat's-whisker and other early radio receivers, camerawork and filmmaking, and the decline in broadcasting standards. Also possible problems with use of the Astra 2D satellite. Donald Bullock's monthly commentary**

**D**uring the past month I've received another batch of emails from readers of the magazine. All very welcome – keep it up! My email address is included at the end of this article.

## **Water**

One email came from my old friend and fellow contributor Steve Beeching. As regular readers will know, Steve's expertise is wide-ranging. His easy-to-read articles often cover technical matters of some complexity. But he manages to put it over in a painless way. These days he specialises in camcorder repairs. He's great company, with a warm sense of humour and a very sharp wit. He mentioned the following story about someone who phoned to ask him for an estimate for putting his full-sized camcorder right.

"What's the trouble with it?" asked Steve.

"Water ingress" said the voice at the other end of the line.

"How much water?" countered Steve.

"I can't be sure until tomorrow" said the caller. "That's when the diver is due to recover it from the boating lake."

## **Maintenance**

Dave Hookings, a dealer, told me about a woman who is a member of his TV maintenance scheme. She complained that she couldn't stand the chocolate advertisements in the middle of her favourite programme, *Coronation Street*, and asked him to modify her set to remove them.

When he told her he couldn't do this she became very angry indeed. "So

what am I paying you my maintenance payments for?" she bawled.

Dave had something to say about the BBC's adverts too. More on this later.

## **A PlayStation**

Charles Coultas tells me that he's an electronics engineer but not in our trade. "In my spare time I fiddle with customers' PlayStations, fitting naughty mod chips and the like."

Naughty mod chips? I've obviously led a very sheltered life!

"I fitted one for a chap" he continued "and away he tripped, a happy chappy. Six months later he was back."

"It won't read DVDs any more, any ideas why?" he asked.

It worked when Charles fitted a new optical unit, but was a bit touchy. A week later his client was back again.

"I was cleaning the inside of the PlayStation with the compressed air line at work when I accidentally dropped a screw in it" he said. "There was a flash and a loud bang and now it won't even switch on."

It transpired that the screw had dropped into the power supply, across the legs of the chopper MOSFET. Fortunately a new fuse and MOSFET put matters right.

"I haven't seen him for a while now" Charles concluded.

## **Cat's-whisker receivers**

Another regular contributor, Ray Porter, recalls reading *The Beginner's Guide to Radio* by F.J. Camm, who started this magazine off after founding *Practical Wireless* in the early Thirties. Ray well remembers the cat's-whisker radio detector, which was an early form of semiconductor junction-rectifier

device. Its base was about the size of a domino. Above this at one end stood a tiny 'cup' of crystal atop a one-inch support. It faced a similar-sized support at the other end. This held the 'cat's whisker', which in practice was about five turns of light copper wire formed by winding it round say a thin matchstick then gently stretching it to a short, spring-like shape. Its 'business end' was bent to protrude from the centre of the winding and snipped to form a point that was gently spring-loaded to touch and remained in contact with the crystal.

I made my own detectors, paying sixpence for the chunk of crystal which, as Ray says, was often galena. The crystal set was a simple affair, consisting of a coil of varnished or cotton-covered wire (I used 28 SWG copper wire), an 0.005 $\mu$ F variable capacitor (the 'tuner'), the crystal detector, a headphone-type earpiece (I made my own) and a couple of fixed-value capacitors. Crystal sets were strictly TRF of course, so a coil of different inductance was required for each programme frequency you wanted to receive. Deciding which programmes I wanted, and working out the coil winding details, was a lot of the fun in building a crystal set. The well-off could buy ready-tuned, factory-made 'basketwork' coils of course. I eventually managed to pick up a few here and there.

To receive a programme you had to touch the whisker point on to a 'lucky' spot on the crystal. Sometimes several different spots had to be tried before anything was heard and, as Ray mentions, once you did there was a compulsion to try a different spot again

in the hope of getting better and louder reception.

Crystal sets didn't require a battery. They used the voltage induced by the transmission. Despite this primitive arrangement, sound quality could be excellent. A good aerial and an earth connection were required. One of the first things we did, as kids, when we camped out on our local hill in summer was to climb the highest tree to suspend an aerial wire from it, so that we could listen to the programmes picked up by my home-made crystal sets.

Ray also remembers those sets which, instead of a mains dropper, used a length of resistance wire that was built into a fat and bulky mains lead. This lowered the supply sufficiently to light up the series-connected valve heaters. The problems that mains-lead 'droppers' caused were many – particularly when a tidy-minded set owner shortened the mains lead or replaced it with ordinary twin wire.

I can still recall a lady who brought her set in after her husband had changed the lead. She explained that it was their bedroom set, which they used to lull them off to sleep at night. "But it was hopeless last night" she complained, "I had to turn it off straight away. We just couldn't get to sleep. Not only was it too loud, but it lit up the room like daylight!" His handwork cost them another mains lead plus a complete set of valves.

## **Camerawork**

In commenting on my moans and groans about the BBC's falling standards, Ray mentions the too-clever camerawork we nowadays have to tolerate in plays and dramas. He refers to cameras going round in circles while photographing an ongoing conversation between two people say sat at a table. "This makes the ever-changing background continuously sweep past" he complains, "and distracts me from the conversation. Is this nonsense all in the name of art?"

I don't think so, Ray. I think it's another case of precocious youngsters trying to impress us by using technology simply because it's there. Let's hope they don't learn to fly. If they do, instead of flying off and leaving us in peace they'll hover around and we'll be expected to study the tops of the actors' heads as their

conversations proceed.

Everyone knows that modern filmmaking is, technically speaking, in most cases sheer rubbish in comparison with the black-and-white filming of the Forties and even the Thirties. In this connection I recall that a short while back a modern film studio desperately wanted to recreate some of the Busby Berkeley effects, in particular of filming symmetrically-grouped dancers from above and making them appear as ever-changing flower patterns. They failed! Couldn't do it!! Yet the studios of those days did it routinely, using the limited equipment of the then young film industry.

And I recently learnt why so many present-day TV dramas are so hard and irritating to follow. It's not because of an assumption that present-day viewers are all coarse riff-raff with no standards. No, it's because the standard fade-out and fade-in techniques between scenes have largely been abandoned: the new whiz kids consider them to be old-fashioned and cumbersome.

## **Between programmes**

This brings me back to Dave Hooking's email. He writes as follows. "Between programmes the BBC is now more aggravating than the commercial people, with its succession of adverts for its own programmes and products. I wonder what percentage of so-called programme time this takes up, and how much cheaper the Corporation's programming bill is as a result?"

This seems to me to be a valid point. I think that the ITV 24-hour News programmes are excellent, crisper than those of the BBC, but as with all commercial TV they are debased by the intrusive, tasteless ads. I sometimes select ITV News, only to switch to the BBC when the ads crash in (do you remember that there used to be a break, so that we could dash to the kitchen or wherever?). And what do I get when I switch to the BBC? More adverts!

## **Channel trouble**

I have a dislike of much of the sports coverage, which I used to be able to avoid by switching channels whenever the sporty oddballs came on with their breathless spiel. But what do we now encounter? A different set of sporty oddballs! The channels now seem to be just

carbon copies of each other.

As Dave says: "It's so frustrating to see these whiz-kids breeze in, muck everything up then move on to their next lucrative job, leaving their debris behind them."

## **Astra 2D**

Dave also refers to the BBC's plan, which he reckons is half-baked, to give Sky the elbow and move to Astra 2D. "Do they," he asks, "expect us to invest in a cardless satellite receiver that won't get ITV or Channels 4 and 5? Or has some secret arrangement been made to carry these channels as well? We ought to know – it's due to happen any time now. Once Sky has been dispensed with, the average viewer is going to be faced with more expense and trouble to get what he already has at present! And how narrow is that beam? We are on the 60/45 divide here in West Wales. Do we have to prepare for when our customers start complaining that their BBC programmes are breaking up? And what are we then expected to do?"

That's an interesting question. I read the other day that ITV, which already uses the low-powered Astra 2D satellite, suffers from dead spots in some parts of the UK.

## **Advice to the BBC**

How sad that the BBC, which was created with such high ideals by the late lamented Lord Reith, has fallen to such an extent that it now looks up to, and tries to emulate, the commercial services. In my earliest days in the trade we used to refer to those, jocularly, as "Gutter".

My advice to the BBC, which I know won't be heeded, is to sack every single one of its whiz kids, every one of its gabbling disc-jockey oddballs, and every one of those shrill-voiced women who seem to have overrun the place. Once that has been done the Corporation could revert to the limited number of high-quality programmes for which it was so well known that the very term BBC was respected throughout the world.

## **Where to contact me**

Those of you who want to email me can do so at [donald@bullock-bros.com](mailto:donald@bullock-bros.com)

We also have a website at [www.bullock-bros.com](http://www.bullock-bros.com)

Look forward to hearing from you! ■

# WHAT

# A LIFE!



**Readers have continued their email communications. There are reminiscences about servicing back in the Fifties and Sixties, the dreaded Collaro Conquest record-changer comes up, and Steve Beeching contributes a note on a misleading fault with certain Panasonic camcorders. Donald Bullock's monthly commentary**

I've had more emails from readers passing on reminiscences, stories, hints and so on. Always welcome. You can reach me at [donald@bullock-bros.com](mailto:donald@bullock-bros.com)

Here's a selection from the latest emails.

## Dirty tubes

Allan Lloyd of Plymouth recalls his time spent working in a mining district. There were many calls to deal with dim pictures – because coal dust in the air was attracted to the screen by the tube static. But cleaning meant more than just a wipe with a damp cloth. In those days, before the advent of the CRT rimband, the sets had a thick glass implosion screen in front of the tube's faceplate. With some Ekco models you could remove the glass by laying the set on its side and removing three tiny screws that secured a gold-coloured strip of angled metal. The glass could then be prised forwards and out, using a fine blade, so that the tube face and the glass screen could be cleaned. With most sets however a dirty screen meant that you had to take the tube out, which involved removal of the main chassis and ITV tuner (if one had been fitted). It was a time-consuming job, and there could be complications.

All sets had a masking escutcheon between the tube face and the implosion screen, and this also became dirty. Some of these escutcheons were made of a hard, thin plastic material while others were made of thick, heavy rubber. Both types tended to warp with time, and the resulting gaps led to an uneven coating of dust.

The workshop where Allan worked had very high standards. The escutcheons were taken outside to brush off the greasy dust, and were then taken back in and immersed in a sink full of hot soapy water. This treatment was all right if the escutcheon hadn't been painted. If it had the paint, which was often white, would flake off in patches as soon as the escutcheon was handled, revealing the

true colour which could be black, brown or any old colour. In this event the original paint had to be removed, which could be difficult at times, almost impossible at others, before repainting.

"All in all" Allan comments, "we had to be more than just television engineers". But there were laughs. One customer, a small-holder, reported that there was a live fly trapped between the tube's face and the implosion screen. "It runs about while we're watching our programmes and distracts us" he complained, "can you remove it?"

"Only by taking the tube out and doing a complete cleaning job" Allan replied. "It means a good deal of work, and the charge is six pounds. That's quite a lot for a single fly. Why not tolerate it until the fly dies?"

The customer decided to take this advice, but came back a few days later. "That fly's not going to die" he said, "in fact it's livelier than ever. My missus wants it out. Can you do it?"

The set was dismantled, the fly released, then the cleaning job was done. The bill was made out along the following lines:

To removing set to workshop, dismantling, removing chassis, tuner, cathode-ray tube, implosion screen and escutcheon. To cleaning escutcheon and polishing tube face and implosion screen, then reassembling, redelivery and setting up: £5.19.11d.

To removing and releasing one large, arrogant housefly: £0.0.1d.

When the customer came in to pay, he protested that a penny was excessive for the fly since it wasn't large, as we had claimed, but only of average size. He said he intended to reduce this charge to a half-penny, but would add a halfpenny tip in view of our excellent service. We ended up with the £6 plus a couple of boxes of vegetables!

## Metal-bowl tubes

Allan also mentioned a Cossor model that was fitted with a round tube whose bowl was made of metal instead of glass. Being the final anode, the metal bowl was at EHT potential. It was shrouded in a funnel-shaped cone of PVC. If this was left off when the tube was refitted, the EHT would fly, cracking about to all the metal high-points on the chassis!

I recall an even nastier set of that time, a huge and heavy English Electric model that also had a metal-bowl tube. Its soldered-in EHT rectifier was buried in a trough of solidified wax, well under the tube's bowl. The idea of these metal-bowl tubes was to get a really flat screen. One disadvantage was that, compared with the thin internal graphite coating in a conventional tube, the thick metal bowl comprised a capacitor plate of enormous mass. As I ruefully recall, it could deliver a whacking great elbow-jerking shock even days after the set had been disconnected from the mains supply.

Sadly these tubes seldom survived the regunning process, which was a necessity in those days when a new tube cost several times an average man's weekly wage. This was basically because of the high rejection rate in tube manufacture.

## Tube life

In those days tubes were guaranteed for only six months, and the failure rate was high. I recall one customer, a rather aggressive hulk of a man, whose tube shrugged off its earthly worries just a week or two outside its guarantee period. Every time I tried to move towards the telephone to tell him so, my legs took me somewhere else. When I finally managed to impart the sad news he accused me of stealing his tube and feeding him with a pack of lies before inviting me to call at his place "to be sorted out".

At another time I worked with about seven others in the television service room over Tom Foyle's furniture shop.

Customers were often committed to a three-year credit contract for their sets, so tube failure could lead to tears and accusations of all sorts. None of us ever volunteered to be the messenger who brought the news, so we used to draw lots and worked it so that poor Norman, who was a bit thick, usually ended up being sent off to do the dirty work. He would often be gone for ages, and eventually return looking as though he had been savaged.

I remember being pressed into the job of telling Mrs Whratham the sad news. She ran a tough dock-side pub, and was usually well primed. When I told her, in the show-room, she looked me over, told me exactly what she thought of me and ripped the music stand clean off an expensive piano nearby.

## Sobell

But back to Allan's reminiscences. He recalls the Sobell/McMichael range of sets at that time. Sobell was owned by a colourful figure, Michael Sobell, who was prominent in horseracing circles. In those days television sets were generally housed in sober polished-wooden cabinets. Sobell thought that they were too dull and, after producing an initial range of sets in wrap-around, yellow-brown plywood cabinets, he went on to produce a range of models that were finished in plastic, imitation woven-material in bright pastel shades, notably orange and beige. They were run-of-the-mill technically but were competitively priced and sold well.

There was a recurring fault with the tuners Sobell used. The PCF801 mixer valve worked hard and, when its early demise came about, it would blow open its 10kΩ screen-feed resistor. This soon became a well-known stock fault. Allan recalls a visit to a house on one bitterly cold night to deal with the problem, only to find that his repair made no difference.

He took the set back for bench attention, and when he returned found that a number of other sets had been brought in. The real cause of the trouble that day had been the local transmitter, whose mast had iced up and collapsed.

## ITV

Stephen Mallison of East Sussex recalls his 25 years in the trade, mainly as a technician with ITV. When he began, the programmes were all in black-and-white and BBC2 had just started. The videotape machines then used were huge and noisy and the tape was two inches wide. Programmes were recorded by a cine camera that looked at a high-quality monitor.

Steve also made crystal sets. He recalls the thrill of pulling those crystal-clear programmes out of the air. I remember it too. Sheer magic!

## Snoddies then as well

Ron Bravery of Brighton, who ended up as a lecturer at the local technical college, reckons they had a Snoddies-type dealer

there at one time. Having been called to restore the picture on a set they had sold and installed, he noticed that the picture shift was mis-set – there was a dark gap down one side of the screen. The customer was delighted and astonished when he centred the picture correctly.

"But it's always been like that" the customer said, "the installation man said it was caused by the lamp-post outside!"

Ron recalls how difficult it could be to get out of the house after carrying out a repair. He devised an excellent solution. He would set up the picture correctly, then set the field hold so that the picture slipped vertically every few seconds. The customer would focus his attention on this, and Ron would say "right! I'll adjust it and you tell me when it's as you want it." This happened when he set the control correctly of course, and after that he'd get out fast!

## Collaro

Fellow contributor Michael Maurice is a man who enjoys punishment – he tells me he's a regular reader of this column, and brings up the subject of the Collaro Conquest record-changer! "There was a common fault with the speed-selector mechanism" he writes. "The pulley rises up on the motor shaft and the record then plays too fast. Another characteristic is that the pick-up arm does a little dance then comes over and touches the edge of the record to determine when the stack has been played. I've three of them, and a manual, but am loath to strip one down to discover how it works."

What a man to even contemplate such a bout of self-inflicted punishment! The answer to how they work is easy, Michael. They don't! Nothing in this trade caused me so much misery as Collaro record-changers.

"At last!" ran the publicity material, "a completely foolproof record-changer that always works!"

I recall the pick-up arm swaying about like an anaemic cobra ready to strike, and the whole stack of records falling on to the turntable while the first one was being played, thus fracturing the cartridge and sometimes its bulbous head moulding.

Our workshop was always full of them. I recall being driven to borrow one from a showroom radiogram and stringing it up, well above the bench, along with the faulty one, to try to figure out where the latter was going wrong. But the complex mechanism has hundreds of parts and, after about a half an hour, I had a pain in the neck, a first-class headache and became boss-eyed. By then the 'good' one had failed, and I needed a third . . .

Then the BSR changer came along. Its mechanism was simple, with very few moving parts, and though its movements were a bit frantic it was reliable. Soon after almost every record-player and radiogram used it, and that was the end of the Conquest.

## Wielding symptoms

Steve Beeching tells me about the first time he encountered a baffling fault with a Panasonic camcorder, where the symptoms appeared to have no relationship to the cause of the fault. He's now had the trouble on several occasions.

When the camera was switched on it sometimes powered up and produced a defocused monochrome picture. This led him a merry dance until he discovered that the lens was faulty! "It seems," he writes, "that if the system cannot fully initialise the lens, the chroma circuits don't switch on and the camera remains in a mono, low-light mode."

"We get our full measure of tricky faults" he continues, "and in most cases we just fit a replacement board and/or software. Not a lot of skill is involved in this – a monkey could do it. In fact from the state of some camcorders that come to us after being previously 'looked at' a monkey has!"

## Old Smoker Sam

A long-time customer of ours, Old Smoker Sam, told me the following tale when he brought his set along. He's well over seventy and has smoked for a long time. Last week his doctor sent him to the local hospital for a session of aerobic exercises.

"When I went along I found I was one of seven" he relates. "We all had to sit in a row. In comparison with the rest I reckon I looked like an Olympic athlete. They were all stooped and wheezing, and four of them carried little oxygen canisters that fed them continuously through nose tubes. Because our exercises involved us in moving about, the nurse connected these four to long, thin rubber tubes that were fed from a big canister in the corner. One of them, Cyril, sat next to me.

Our first exercise was to stand up then raise and lower our arms ten times. I found it easy but the others puffed and blew a bit. Cyril quickly went blue and sagged to the floor. The nurse ran to him, then spun round to me.

'Sam, move your right foot at once' she shouted, 'you're standing on Cyril's oxygen line!'

Fortunately he recovered."

## Help wanted

Finally, a couple of readers seek help. Stephen Head of Perth, Western Australia says the column is read and loved by many of his trade colleagues there. He has asked for help in repairing a UK Bush TV set, Model 3463NTX/400. His email address is [stevehead@inet.net.au](mailto:stevehead@inet.net.au)

Michael O'Sullivan is trying to repair an LG Model CF25A50F without a circuit diagram. If you think you can help, his email address is [microsat@eircom.net](mailto:microsat@eircom.net)

He presumably writes from Ireland. The trouble with emails is that unless the sender includes the information you've no way of knowing where the message comes from. ■

# WHAT

# A LIFE!



**Sony dry-joints, VCR faults, record-changer unit difficulties, UPS trouble and a plumbing problem. Donald Bullock's commentary**

It's an ever-changing world. When Sony first launched its TV sets in the UK, their extreme reliability, coupled with their robust construction and superior pictures, frightened the few remaining British manufacturers to death. The sets had no 'stock' faults that we knew of and their Trinitron tubes, based on a new concept in colour tube design and operation, bore witness to Sony's capacity to innovate.

## Sony marketing

In those early days several of my established customers came to me to buy one of these sets. So I phoned Sony and asked to be supplied. The chap who answered the phoned politely laughed me out of court.

"We supply only selected dealers who pass our detailed scrutiny" he said. "You'll have to refer your customers to a Sony dealer."

"Look" I replied, "your purpose as a company is surely to make money. You sell television sets. I want to buy some. Simple enough, isn't it? Let's set the scene: you sell, I buy. You fulfil your purpose and prosper accordingly."

"Your basic assessment is incorrect, sir" he said. "We aren't in business to make money. We're in business to make people happy."

"Well, you aren't making me very happy" I commented, "and when I tell my customers the result of this conversation they won't be very happy either. So you don't seem to be on the right track to me."

So I developed a dislike of Sony, though I had to concede that their products were excellent. In fact I ended up buying an expensive Sony sound system.

Now, today, virtually every multiple outlet and catalogue dealer sells Sony – but they still haven't found out how to make people happy, if the experiences of Mr Woodford, one of our old repairs

customers, is anything to go by.

## A Sony KV25X5U

He told us that his Sony Model KV25X5U, which is fitted with the FE1 chassis, spent more of its early life in the retailer's shop than it spent with him and continues to give trouble. There were several things wrong when he brought it to us the other day. There was poor EW correction, unacceptably high contrast, lack of width – and it kept shutting down spontaneously.

Every one of these faults was caused by dry-joints, for which so many Sony products are infamous. The picture geometry trouble was caused by dry-joints at the 9V regulator IC605 (TYA7809CTV), the intermittency and width problems by dry-joints in the chopper power supply and line output circuits, and the contrast trouble by more dry-joints in the video section. Whilst we were at it we found and remade many more poor joints in various parts of the chassis.

"My neighbour's got one just like it" Mr Woodford said as we were loading the set into his car. "Gradually, the picture has gone dull and red. He wonders whether you would care to look at it."

"I don't think it would be too wise, Woody" I replied, "my news would only make him very unhappy. I've seen so many like that, and the price of a new Sony tube is out of this world. Tell him to throw it away and buy another set."

"Not me!" he exclaimed.

## Mrs Drubit's Aiwa

We came back in to find the Reverend Goode entering the shop together with Curate Bland, who was sagging under the weight of an Aiwa HVFX1500 VCR.

"Hello Donald, old sport" boomed the reverend, "you look well! I see that the Lord is smiling upon you!"

"More likely laughing hysterically, Vicar" I replied. "I wish we could swap jobs!"

"Oh, I'd make a terrible electronics engineer" he boomed, "and you, er, you . . ."

"I know, I know" I said, "what's the trouble with the recorder?"

"Terrible picture and sound" he replied, "it's old Mrs Drubit's, you know. She's the oldest in my flock – ninety-eight, and none to well. She thinks the devil's in the machine and called upon me to exorcise it. If you can get it right it'll help keep her faith. Er, she's very well off you know, and the church does need a new roof . . ."

"I understand" I said, making out a job note.

The cause of the trouble was in the capstan motor. It raced at high speed, and we found that the flywheel had slipped and had been rubbing on the windings for some time. They'd shorted together in places. A new one cured the fault, and I noticed the Reverend happily propelling her and her wheelchair to tea at the vicarage soon after.

I mentioned her to John Berryman, the hale and hearty village undertaker who called in shortly afterwards.

## A Panasonic NVFS90

"Yep, ninety-eight she is" I said, "wonderful isn't she?"

"Well, 'er goes on if that's what you mean" he answered. "Ever since I put her 'ubby away thirty years ago 'er's been promising I'd get 'er when the time comes. But it don't seem to come. I gets a lot from these parts. 'Ow you been keeping?"

I looked at him coldly. "Bad news, John" I said, "very well indeed thanks. Now what have you brought for us?"

It was a Panasonic NVFS90 VCR. When it was cold it was all right, but when it got warm it flew into the stop

mode. Now we know this fault well. The cause is usually dry-joints at the AN3821K capstan drive chip. But this time resoldering it failed to cure the fault. A new chip was required.

When John came back I asked him if trade was good.

"Better 'n ever" he said, "it's this 'ot weather. I likes a few 'ot spells. 'Ow old be you, by the way?"

I waved this question away as he headed for the door.

## Record changers

Glancing through my notes on Collaro record-changers last month I was reminded of some of the other changers that used to send us grey back in those days. The Garrard was no fun, then there was the Philips range. I have to declare a personal bias here. From my earliest days in this trade I've been convinced that while Philips products are, electronically, superior to most, the company's mechanical products are too gentle and unconventional. The Philipsave breaks this pattern in being robust, but Philips autochangers used to cause a lot of concern to us.

One or two of them resembled a kit of unlikely-looking parts. There was an elaborate and long spindle that had to be pulled out and reinserted at each loading, after which you had to juggle a detachable platform over it while trying to support the heavy pile of records. And most of the Philips changers I ever saw were well endowed with lots of very thin, interconnecting wire rods that the manual advised us to bend and crimp as necessary to set the various changer operations.

We used to struggle manfully, and sometimes managed to get one or another of them working by some fluke or other. But our spare bench gradually became cluttered with those we'd "put aside for a while". At this our service manager Ted got concerned and tackled a few himself – to show us that they could be fixed. But he was no more successful than the rest of us and, somewhat rattled, he decided to let them wait until the Philips TLO called on his monthly visit.

He called and drew back all pop-eyed, like a trapped rat, when Ted confronted him with the changers. But, to his credit, he and Ted managed to fix them all, though it took them the rest of the day and threw his schedule out. There were a few for him the next time he called, and the time after that. Then, the following month, he failed to turn up. We wondered whether he was ill.

We watched out for him when he was next due. This was easy, as we knew he would come striding towards the shop on the opposite pavement of the high

street at about ten o'clock. But there was no sign of him. Now Ted was a canny fish. He knew that after calling on us the rep walked on to Tom's, a friendly dealer a bit farther along the street. So he phoned Tom to ask him whether he had missed any of the chap's calls. He hadn't.

When the TLO was next due, Ted kept an eye on the reflections in the plate-glass windows of the shops opposite. Sure enough, at about ten, we saw him – with his collar pulled high, furtively loping past with a series of low, crouching bounds. Ted gave him most of the twenty minutes he usually spent at Tom's, then rang Tom and asked him to tell the rep that we had spotted him absent-mindedly strolling past and that it would be nice to see him. "Tell him we're just about to put the kettle on" he joked.

A few minutes later the rep breezed in, to be greeted with a nice cup of tea – and half a dozen more errand changers. And there at the bench he stood, bending this rod and crimping another until the changers grudgingly improved their behaviour.

## Spanish electricity

Every Spanish house I'm familiar with has an automatic electricity cut-out box. These are set in clusters along the streets, cutting out if any household tries to draw more than its allotted 5.5kW at a time. They switch back in after a couple of minutes, provided the load has been suitably reduced.

The boxes are locked from the consumer by the electricity suppliers and, being both thermally and mechanically operated, they give trouble. This is roughly proportional to the number of times they pop open. When they fail we have to phone the supply people. And when they eventually amble along to poke about with the box we have to pay about £30, plus another £50 or so if they think that the mechanism is in need of replacement.

Instead of a fuse-box in the house we all have a 'consumer unit' box that's set into the wall. It contains a series of trips, plus a single live-to-earth resettable circuit-breaker. This latter device is handy, in a way. But the bad news is that the supply system in our part of Spain is wired in a Heath Robinson fashion. Sometimes the mains voltage falls so low that microwave ovens can't cook properly, while at other times we get high-voltage surges that blow the trips.

Last night, just as dusk was falling, our lights started to flicker and dim. After a series of recoveries they went off completely, to the sound of our trip-out tripping. It continued to trip when I reset it. Then the trip in the road popped open, and I noticed an acrid burning-plastic

smell from son John's bedroom-cum-study. It came from his PC's UPS machine, which was hot. So I disconnected it.

When our street-box reset itself, the trip inside the house fired again and the acrid smell intensified. I was puzzled, and checked the mains voltage. It was fluctuating wildly and rapidly. A scope check revealed that it was full of peaks and troughs. Sniffing about led me to my own computer's UPS unit, which was also hot and was the cause of the remaining smell. All was normal when I disconnected this one as well.

When I opened the two units it was clear that they had both been cooking separately. All very puzzling. I came to the conclusion that when John's unit had become faulty it had fed its rampant waveforms back into the common mains-supply leads, much as a TV receiver's chopper circuit can do (thus loosening the screw in the plug's negative lead). I reckon that this was what had upset the other unit.

## A plumbing problem

Just as I had sorted that lot out our plumber friend Frank dropped in. While telling him about my problem I mentioned that there was no trade like mine for such inexplicable troubles. He reckoned that his was as bad, and went on to tell me about a recent problem he'd had.

His customer had complained that she couldn't draw water through her garden hose tap. Sure enough there was no water from the hose when the tap was turned, though the tap was new. He felt the pipe. Instead of being hard and heavy with compressed water it was light and pliable. So he went to the wholesaler, bought another tap, and fitted it. The results were the same.

When he unscrewed the hose fitting the tap worked. Curious, he refitted the original tap. This also worked, with no hose connected. He felt carefully along the whole fifty yards of hose for an obstruction, but couldn't find one. The hose was soft and pliable throughout its entire length. When he reached the hose fitting he disconnected it and tried to blow through it, which was impossible.

When he looked into it he discovered that the fitting had a polished and tapered plastic anti-return plug. This had been fitted the wrong way round during manufacture, and therefore closed when it was subjected to forward pressure.

"Good, wasn't it?" Frank commented. "It cost me half a day and the price of a tap I didn't need, and what could I charge the old dear for finding the nozzle fault? The nozzle thing isn't worth five bob!"



## A mixed bag of faults and some outrageous customers. Donald Bullock's servicing commentary

**H**aving spent an age in this trade I've seen more than a few miserable faces, I can tell you. But none as bad as the fellow who barged into the shop the other day. Mind you it was very warm, and he was struggling with the weight and bulk of a 28in. Goodmans set, Model W282NS.

"Quick, where can I put this down?" he panted. "Be quick. It's heavy y'know."

At the time Paul was lounging at the end of our short counter, writing something down. He had the phone jammed between his shoulder and chin and was propping himself up with one elbow.

Ever considerate for someone in difficulty, I brushed an outstretched arm along the counter to hastily make room for the Goodmans set, and accidentally swept Paul's elbow into space. Paul went down with a wallop, grabbing at the rotating battery stand in the process. He ended up littered with batteries and nursing a dead phone that had been torn from its socket.

"I was told this place could be a madhouse at times" our visitor commented.

Feeling in need of a bit of dignity, I pulled myself up to my full height and put on a highly respectable expression. This faded a bit when I realised that I only came up to our surly visitor's armpit.

"This 'un's dead" he growled. "Everything I touches seems to cost me a fortune. First went wrong eighteen months ago. Snoddies charged me a fiver! As I said to the missus, 'never again'. Nah, nobody catches Bill Bradmore twice!"

I noticed that Paul was pulling himself up. "Sorry about that" I said.

"Not at all" he replied, "anytime, anytime . . ."

### A troublesome set

I booked Bill Bradmore's set in and bade him good day. Paul had a go at it. The set was dead all right, but we've had this before. Failure of D25 (BA157) is a common fault. It overheats and goes short-circuit. Sometimes it chars the board. Paul soon had a replacement installed.

"I daresay that's the full extent of the trouble" he said as he switched the set on, "it usually is."

He smiled when the set sprang to life, but not for long. The picture was bowed because of an EW fault. Paul started to finger his chin, then suddenly it died. The set, not his chin . . .

He dived into the EW section and discovered that C70, a hefty 0.22 $\mu$ F, 400V capacitor, was short-circuit. So he fitted a new one, checked for any further failures in the area, then switched the set on again. The set rustled into life briefly then died.

"Hope there's not much more wrong" I said, "don't forget Bradmore's complaint about the fiver Snoddies charged him!"

"It's over twenty-five quid already" Paul replied. His next discovery was that the S2055N line output transistor had a base-emitter leak. A replacement restored normal operation, with a surprisingly good picture. "That will cost him thirty-five quid" he said.

### An Aiwa combi

We had better luck with our next customer. It lifted our hearts when this delightful young lady came in.

"Please, I have troubles" she announced. She'd brought along an Aiwa TV/VCR combi set, Model VXT147. We were all mesmerised and didn't get round to asking what the problem was. I just booked it in and told her it would be a pleasure to attend to it.

Steven tried it out and found that the trouble was with the VCR deck. When a cassette was inserted it was drawn in reluctantly and at a very

slow rate. There were hesitations before the cassette was fully accepted.

"It'll be the loading motor I expect" Steven commented as he began to dismantle the machine. But the motor worked perfectly when it was powered from an external source. This suggested trouble with the 12V regulator, IC504, which turned out to be leaky. Its 56 $\Omega$  feed resistor R534 was also faulty. It had risen in value to nearly 90 $\Omega$ .

Replacements for these two items restored normal results, and we looked forward to the return of Lotus Blossom!

### Storm damage

Then I saw that the weather was worsening. The sky darkened to a silent lead grey, and the air settled still. Suddenly there was a bright flash of lightning, followed by a loud clap of thunder. The rain flooded down in sheets.

But it didn't take long, and as it cleared the phone rang. It was Eunice, Ramsbottom Nugent's seventy-year old daughter. Ramsbottom himself is over ninety. He and Eunice have lived alone together since Ramsbottom's wife left him sixty years ago. He's not easy to get on with, and Eunice has a hard time. They come from a remote part of Wales.

"Dad's video recorder went off in the storm, Mr Bullock" she sang, "can you send someone to fix it?"

"Tell them now!" came a deep, musical voice in the background.

"Dad says now, if you could, Mr Bullock."

They live fairly close by, so Paul popped along and brought the machine back. It was a Samsung SV241K, and Paul seemed to know what had failed.

"I've had these machines in before after a storm" he said. "There's a little varistor, VA1 on the circuit diagram, that blows apart. We've

got some in the drawer.”

He was quite right. When the VCR was opened we found that the varistor was physically damaged. A replacement cured the trouble.

“I don’t suppose it’ll be the last one we will be fitting” he added.

## A live-wire

Charlie Rowe is a live-wire type with a non-stop supply of tales. They start off promisingly but all too often become incredible. He came in with an old Sharp set, Model CV2133H (8PSR chassis).

“All right for days, this set” he said, “then it does this sorta thing.” At that he started to jump up and down. “Nobody can watch a picture like that” he added.

“I’m sure you’re right” I said as I tried the set. It came on at first, then the picture collapsed and the set went into standby.

“Reminds me of Eadie Dungly. Joo remember her? Tall thin woman she was, to start with at any rate.”

I looked at him. “What do you mean to start with?” I asked, though I knew it was a mistake.

“Well, when her husband started to take an interest in that fairground trapeze artiste she started to do somersaults to show she could do just as well.”

“Hmm . . .” I said, “this set of yours has some sort of short-circuit. It’s switching itself off to avoid further trouble.” I took the back off and had a careful look around the chassis.

Charlie continued in full flight. “She did more and more somersaults. At all times of the day. Higher and higher. Even over passing cars.”

I gave him a look, then turned back to the set. I noticed that R521, the 3-3Ω surge-limiting resistor in the 27V supply to the field output stage, looked a bit cooked and started to unsolder one end.

Charlie was still engrossed in his story. “And over some smaller houses” he added.

I looked at him again, wanting an end to it. “I must ask you what happened” I prompted him.

“Well, the more she jumped, and the higher, the shorter she became. Sort of pounded herself shorter. Wore herself down.”

“If you want your set done, you’d better get this over” I said.

“Well, her husband left her and fled off with the fairground lady. Said he’d loved her because she was so tall.”

“Enough” I said, and replaced R521. But the set still went to

standby at switch on. So I decided to replace the IX0640CE field output chip IC501 with the recommended LA7830 type. This did the trick, and the results were good.

## Charlie’s return

A few days later Charlie turned up again, this time with a Panasonic Model TX21V2 (Alpha 4 chassis).

“This set plays up, but for only a minute or two every few days” he announced. “I talked my neighbour into letting you do it.”

“For heaven’s sake!” I exclaimed, “we just love intermittent faults here Charlie.”

He beamed as though I meant it.

When I connected the set and switched it on it seemed to be perfect. Then Charlie started to fling himself from one side of the shop to the other, moving his hands from side to side as he went.

“This is how it goes” he said.

“Now she can’t watch a picture which does that, can she?”

I shook my head solemnly.

“Did you hear about Tom Short?” he asked.

“Can’t say I recall the name” I replied. Then I caught on and touched his arm. “Charlie, this isn’t another of your silly yarns?” I asked.

“It’s a true story this” he replied, “came to a head last night. Tom was a hunchback and none too tall. He was eighty, and no one had ever seen a smile on his face.”

“Good heavens” I said, “but what about him?” As I spoke the set suddenly developed its fault condition. Bright lines flashed across the picture, and the sound was also affected. The symptoms persisted long enough for me to come to conclusion that the cause of the trouble was probably in the tuner. As I opened it and started to examine the joints, Charlie resumed his tale.

“He complained about backache last week and was taken to hospital. They put him in a busy ward where he laid scowling, as he always did. As the clock struck twelve last night he uttered a loud shout and died. The bed was shaking. Nurses and doctors rushed in and were astounded to find that he was smiling angelically – and was no longer a hunchback. He had straightened out like a ramrod. Over six feet tall!”

“And that’s a true story is it, Charlie?” I asked.

“Absolutely true!” he replied.

“Look Charlie” I said, “I’ve just

found a really bad dry-joint in this tuner and resoldered it. Now I’m going to reassemble the set as quickly as I can, so that you can take it with you. Just stand there for a few minutes, will you?”

“Sure” said Charlie.

“And while I’m doing it, Charlie, will you do me a favour?”

“Just ask”, he replied, “you know me. Anything.”

“Not a word while I’m at it, there’s a good chap. Not a word!”

## A reminder

Hints, reminiscences, stories and so on from fellow members of the trade are always welcome. You can reach me by email at

donald@bullock-bros.com

I look forward to hearing from you. ■



# WHAT A LIFE!

**The recent heat induced some reminiscences, including problems with communal aerial systems and Band III converters. There are also some audio servicing tips. Donald Bullock's servicing commentary**

The other day Steven and Paul decided to slip up to the Midlands to do a bit of shopping. Before they went, they promoted me to the position of Chief Repairman and Bottle-washer.

I received the news sombrely. The prospect of being Mr Big about the place was all very well, but it meant that I would have to handle all the customers who came in, answer the phone calls and do all the benchwork – at the same time! Not to mention lugging about TV sets as big as cars for young fellows who claimed to have bad backs and parked their flash vehicles hundreds of yards up the road...

Anyway, the warm weather made me feel tired. In fact I *was* tired and, as they departed, I decided to sit on a TV set behind the counter and muse away for a minute or two. Then I'd get cracking, I told myself.

The voice of a deliveryman floated over from the shop opposite. "Thank you very much, madam, goodbye!" he sang out. Then the engine of his van sprang to life and he was gone. Those words, and the way they'd come across, reminded me of old Matt Morris.

## **New job**

It had been my first day in a new job, and Matt was showing me the ropes before he went on to his next call.

"Don't particularly like this area" he sang out as we reached a row of houses

at the edge of town. Packs of dogs roamed the litter-strewn streets, and there were several old cars with their bonnets up, some receiving attention from oily characters. We stopped outside a house that looked rough. Matt banged on the knocker and, when the door opened, strode in shouting "television man, missus". I followed him.

A sour smell hit us for six. So did the tacky floor and mangy cat. Piles of empty cans and bottles contributed to the stench. "Christ" said Matt as the lady of the house gave him a toothy grin of welcome. He strode smartly on, went round the table and back out through the door, with me following. I suppose it had all taken about five seconds.

"Thank you very much, madam, goodbye!" he sang out as we jumped into the van, which immediately burst into life, taking us away at a very good lick.

I looked curiously at Matt, but received no word of explanation or clue about what might be next. Funny business, I mused...

## **A DVD player**

My reminiscences were brought to an end by Grenville Carter, who had sidled in carrying a DVD player. I shuddered. DVD players frighten me. And Grenville is no oasis of charm.

"Wish I had your life instead of mine" he growled

I grinned back, and decided to be uproariously funny. "Perhaps we could come to some arrangement, Grenv" I said brightly, "what's your missus like?"

As I spoke a miserable lady came in and walked up to Grenville. "Ave he mended 'im yet?" she growled. I looked at Grenville with fresh understanding, then they departed together.

I looked at the player, which was a Sony HCD-S800. It was dead. I went straight to the fuse, but it was all right. So I reached for the meter and went gingerly round the power supply. It wasn't long before I found a diode, D909, which was short-circuit. It's type RK46LF. When I had fitted a replacement the player worked a treat. Aw, DVD players are not that bad to mend I reckoned.

## **Band III problems**

Old Grenville looked a bit like another customer we had long ago. His name had better be Carruthers. He was a tall, thin, dry character who had earned his living as a packman, selling cloths from door-to-door in the poorer parts of the town. Packmen never got all their money, but they made enough from those who did pay to live comfortably. After retirement he and his wife invested their savings in a large, four-storey house in The Square, a once-grand area. They lived in the basement and let out the rooms above.

With the advent of ITV we were given the job of installing a communal TV signal distribution system there. At the time we were in a fringe service area. The Band I BBC signal could be fairly well received, using a large multi-element aerial mounted at the highest point of a house. But the Band III ITV signal came from distant Sutton Coldfield – when it came at all. Twelve-element aerials were required for this, often with a head amplifier. The signal was weak, and sometimes faded entirely.

Carruthers was a highly-strung hypochondriac, with every illness known to man plus a few more, and his only interest in life was watching television. His grey-haired wife didn't take too readily to her self-appointed role of long-suffering nursemaid-martyr. "He's a trial, but he's worth it. I couldn't live without him" she told us.

Having installed the amplified communal-signal system, with a distribution amplifier in a cupboard on the top landing, we called that night to see how well it performed. As always Carruthers was sitting in his tall armchair, about two feet in front of the huge 23in. console set, with his long fingers ready and eager to flick about to adjust the fine tuner, the contrast, the brightness and the hold controls for the best picture.

We switched on and at first the ITV picture was excellent. "Mr Bullock, you've worked wonders – what a good picture" he cried

Then the picture faded and broke up. Carruthers started to complain like a child. "Oh dear, the picture's gone.

Gone! Mr Bullock, please do something about it. I shall have to have another cigarette. Mary, I shall just have to. Give me one, will you?"

"Certainly not!" she snapped, "you've already had one. Whatever next!"

"Some fellahs have three or four a day" he protested, "and, oh dear, I'll never know who murdered him now! It's too awful. I feel quite ill! Medicine, medicine!"

Sighing much too loudly, his wife went out and came back with a trolley that resembled a chemist's shop.

Carruthers wasn't short of money and, in the coming weeks, we tried everything to improve his ITV picture. We fitted an extra, cascaded RF head amplifier, tweaked his tuner for optimum gain rather than bandwidth, and even added an extra IF amplifier to the set. These steps improved the situation somewhat, and eventually he agreed that, having done our best, it was now for him to enjoy his pictures such as they were.

### Following weeks

As the weeks went by we had a number of calls to the Carruthers' address, all complaining about intermittent ITV. Each time the caller had been advised to get in touch with us by Mrs Carruthers. We serviced the sets at the address, one by one, and souped them up for maximum gain. In fact we improved most of them considerably, but their owners still kept complaining that ITV sometimes disappeared completely. Soon we were spending a lot of time on free repeat calls, yet each time we found that the pictures were all right. The only people in the house who didn't complain were the Carruthers.

Then one night, when we called on one of the tenants to deliver a repaired radio set, we found that he had no ITV at all. Enquiries showed that the other tenants were all in the same boat – and wanted us to do something about it. Not knowing quite what to do, we went down to the basement to check with Carruthers. Looking through the window we saw him sitting there contentedly, watching the best ITV picture we'd ever seen.

His wife saw us and ran outside to hustle us away. "He makes me do it, Mr Bullock" she exclaimed. "When ITV fades he makes me run upstairs to the cupboard to pull out all the aerial leads except ours."

### A year later

About a year later we had a call to a large house in an expensive area on the

other side of the town. It contained some high-quality flats and our caller, an upstairs tenant, complained that his ITV had completely disappeared the previous night. But it seemed to be all right to us. Soon he was joined by another tenant, and yet another, who had experienced the same trouble.

Meanwhile a chocolate-brown Bentley glided into the drive, driven by a slim and elegant blonde who had clearly seen better days. She was accompanied by a handsome and attentive young fellow.

"How nice to see you, Mr Bullock!" cried the blonde. "This is one of my boyfriends, Rock."

I looked at Rock and smiled. Then I looked at her.

"Ah, you don't recognise me" she said. "Marilyn's the name. Marilyn Carruthers! You used to do our repairs before I put my grumpy old husband to rest. Thought he'd live for ever, but . . ." She clicked her tongue twice and grinned. "You remember, we lived in The Square!"

I gave her a watery smile and made hastily for the van.

### An Amstrad

"Here, is there anyone here or not?" boomed a powerful voice.

I quickly returned to reality to see the swarthy Charlie Rowe at the counter.

"This micro-thing" he boomed. "Belongs to the missus. The little record thing in him goes round and round like the devil, but no sound comes out of 'im. I'm giving him one more chance. If he plays up again, out 'e goes."

It was an Amstrad MC2900 micro hi-fi unit, and I had a good idea what the cause of the trouble was. I opened it and studied the multi-ribbon cable that plugs into the optical block. Sure enough, it had cracked at the end. I made it good carefully, and after that it worked a treat.

"You'd better behave yourself now" I told it as I boxed it up, "or it'll be curtains for you."

### Band III converters

Bill and Hilary Wright of Rotherham have written to ask whether I know anything of the old ITV converter boxes. I'll say I do. And I've still got the scars! They used (I'm told!) to sit on the tops of early BBC-only TV sets in the Fifties to receive Band III ITV and convert it to Band I for feeding to the set. They were, I suppose, a necessary evil of their day. Bill asks if I have a photo of one. Sadly, I only have my photographic memories! If anyone can help in this respect, please get in touch at the email address at the end.

These converters were soon superseded by the large and rather clunky Cyldon and Brayhead 13-channel tuners that became available as kits for fitting into the cabinets of BBC1 only sets. We had to remove the RF amplifier and mixer valves in the set and plug the new tuner's pair of Paxolin valve connectors into their sockets. We must have fitted hundreds of them. They were all alike in that the results were largely unpredictable, and they often produced herring-bone patterning – sometimes with other people's sets if they were close by.

Fitting one of these meant using a brace-and-bit and a drill, also sometimes a keyhole saw, to cut the cabinet. I soon learnt to try them out by connecting them electrically and observing the results before deciding to fit them physically. The results weren't always all that successful, and customers who found them to be poor, with their beloved polished-wood cabinets cut about, would sometimes get shirty.

We devised various dodges to cancel or reduce unwanted patterning and to improve the gain, including wiring one of the converter's plugs straight into the circuit instead of the intended valve base, using the base thus made available for an extra IF stage – because in many areas the Band III signal was extremely weak and noisy. We also had dodges to combat the patterning that converters caused with neighbour's sets. But this meant bringing in the sets concerned, and not every neighbour was happy at the prospect of fuss and bother, to say nothing of having to pay out in the hope of curing or reducing the patterning that was caused by their neighbour's activities. I could tell many tales about the troubles this caused.

### Requests

Darren Henwood, who runs a fishing-tackle shop in Romford, has asked me if I know of a computer database package. I don't, but if anyone can help I'll be delighted to pass the message on.

You can reach me by email at [donald@bullock-bros.com](mailto:donald@bullock-bros.com)

Hints and tips and reminiscences are always welcome.

Darren also asked about my recent book, *The Legend that was Clapham* (in Gloucester, not London). I gave him the publisher's website address, which is [www.wheatleypress.com](http://www.wheatleypress.com)

There aren't many copies left, which is just as well – it will encourage me to complete my autobiographical book *Hovels and Haydust*. ■



# WHAT A LIFE!

## TV and VCR faults. Band III converters. Strange customers and warm sets. Donald Bullock's servicing commentary

**W**e were due to return to Spain earlier in the month but, by way of getting their pound of flesh, Steven and Paul thought up a wheeze that would keep me in the workshop for a couple more days. They decided to go on an extended tench fishing exercise. It's my own fault I suppose. I became addicted to the sport at fourteen or so and I guess they are just taking after me. Of course they are nowhere near as good at it as I am!

### Enter Shiner

I had scarcely taken my coat off when Shiner Albright danced in. He's a 'ten per center' – he will take this or fetch that for anybody, saying that he does it out of the goodness of his heart. So he might, and no one says a word against him. But he always insists on a ten per cent discount from the shop, and charges the customer ten per cent on the price he should have paid to the shopkeeper. A handy way of getting by. He's also a natural charmer, with a quiet and casual gift of the gab. People queue up to have him help them.

He brings us a lot of jobs, so we can't complain. This time he brought in a Sharp VCM29HM VCR and a Toshiba TV set, Model 2151TB.

"For two of my good friends, Donald" he said. Then he heard cups chinking, but didn't let on. It was Greeneyes making the tea. He's always full of compliments for the ladies, and Greeneyes falls for his charm. He dropped his voice and smiled at her.

"There wouldn't be a cup of that nectar for poor old Shiner, would there?" he asked.

There was of course.

### The Toshiba TV

When he'd danced off I put the Toshiba set on the bench and plugged it in. After five seconds it clicked off. So I tried it again, and once more it tripped. I removed the back and looked around the chassis for dry-joints. There was a beauty at the mains bridge rectifier's reservoir capacitor. I felt good as I speedily dealt with it and tried again.

I didn't feel so good when the set tripped off once more. I had to do a bit of thinking. Then I reached for the meter to check the HT output from the power supply. It should have been about 115V, but the reading was way out at 145V. No wonder.

I decided to check the electrolytics on the primary side of the power supply and soon found that C817 (22 $\mu$ F, 100V) had fallen to about 2 $\mu$ F. It's the reservoir for the STR58041 chopper chip's -42V supply. The set worked perfectly once a replacement had been fitted.

### The VCR

Then I got round to the Sharp VCR. Apparently it kept chewing tapes and seizing up. When I opened it I found that there was a large amount of tape debris, all saturated with oil. After cleaning out the debris and mopping up the oil I carefully degreased the deck. In so doing I noticed that the left-hand spool was stiff, because the back-tension band was sticking to it. A new one put that right.

When Shiner breezed back I'd prepared the bills, taking care to add the ten per cent that he would want subtracted. He paid up happily after deducting his ten per cent, as he always does.

"Er, Shiner" I commented, "you didn't accidentally drop a teeny spot of oil in the recorder's works by any chance, did you?"

"Well, in a manner of speaking, just the tiniest drop" he replied, "but I want to thank you for doing these two so quickly. One is my granny's, the other

belongs to my aunt Rosie. You've made them both happy, Donald. Now it just so happens that I have another couple of jobs for you."

### More TVs

He ran out then returned with a giant Goodmans TV, Model GTV69W3BLU4. We know it, the chassis being the Vestel 11AK19PRO. From where I was the set seemed to run in on its own two legs.

"Dead as a dodo" he said as he put it down. "It belongs to my uncle Herbie." Then he danced out again and returned with a widescreen Sharp set, Model 66FW54H (DA100 chassis).

"Cracking and banging and all sorts" he announced. "Belongs to my late younger brother's wife." He winked at me, clicked his tongue then put on a devout face.

The Goodmans set had a short-circuit line output transistor, type BU2508AF. A replacement restored the picture, but the width was poor and there was severe EW distortion. It didn't take long to establish that the BUK444-200A EW driver FET was short-circuit. I fitted a PNQ20T in its place as this is more up to the job. But the bowing remained. After checking the various capacitors in the circuit, including the scan-corrector C630 that gives a lot of trouble, I turned my attention to the EW modulator diodes. The capacitors had both been OK, but D611 (BY299P) was open-circuit. A replacement completed the repair, and the picture was perfect.

Not bad I thought, now for the Sharp set. There was a lot wrong with this one, which was arcing badly. The HT reservoir capacitor C720 (100 $\mu$ F, 200V) had blown off its top, and the BUH515 line output transistor Q601 was short-circuit. R623 (1 $\Omega$ , 2W safety type) in the HT feed to the line output stage had gone open-circuit, and I assume that there had been excessive HT.

The MOC8106 optocoupler IC705 in the power supply is the prime suspect in this event, and turned out to be faulty. So were R765 and R766 (both 100 $\Omega$ ) in the feed to pin 1 of the optocoupler. They all live on the copper side of the board.

There were a number of faults on the CRT base PCB. The TEA5101A RGB output chip IC1801 had to be replaced, also Q5407 (2SA1837) and Q5408 (2SC4793) in the scan velocity-modulator output stage. R5425 (470Ω, 1W) in the supply to this stage was open-circuit.

It took some time to replace these various items. I then switched the set on, somewhat gingerly, and breathed a sigh of relief when it behaved perfectly. To prevent a recurrence of this sort of thing Sharp recommends adding a 170V avalanche diode in parallel with C720, with its cathode to the positive side. The part number is RH-EX0875BMZZ.

### Band III converters

Last month I mentioned that Bill and Hilary Wright were looking for a picture of a Band III converter, the first type of set-top box, that used to sit on top of BBC-only sets in the Fifties, after the start of ITV transmissions. I was doubtful whether there would be much response – they soon became obsolete, as the setmakers devised their own Band I/III tuners for fitting inside their sets. And what a mixed bag of tuners they introduced! Some were quite good and tidy, others were good but clumsy, and some were an absolute headache. The worst, to my mind, were the Ultra ‘trombone’ ones. They remain etched in my memory!

To my surprise however there was a good response. It’s clear that many readers have collections of vintage radio and TV sets and other brown goods items. I received photos from two readers, Bob Webb of Burton upon Trent and Dave Higgison of Doncaster. One was of a brand new, unused converter made by Champion! Dave mentions that it was potentially lethal, because it has a two-pin 5A mains connector into which the TV set could be plugged. Nothing wrong with that but, instead of fitting a shrouded socket, there’s a two-pin unshrouded live plug! My thanks to Bob and Dave.

### Emails

I am also grateful to those who have sent me emails on various points. Keep it up! You can reach me at [donald@wheatleypress.com](mailto:donald@wheatleypress.com)

Greeneyes is also very grateful to a reader we recently met and is about to settle in Spain. It wasn’t long before *Television* was mentioned and, when this column came up, Greeneyes confirmed that I was the guilty scribbler. He stepped back, looked at me carefully, then said:



“Coo, but that picture at the top of the column is an old one of you, isn’t it?”

In fact of course I’m much younger and more handsome than the picture makes out. I think someone else walked in front of the camera as it was clicked . . .

### Strange types

Dave Smith of Leigh, Lancashire tells me about some of the strange types who have wandered into his TV and electronics shop. One was an old lady who came in and studied a large card display of control knobs. She declined assistance and eventually turned away, showing some upset. Dave approached her again and it transpired that she thought she was in an ironmongers and wanted a brass doorknob.

Another time a tall, intelligent-looking chap slapped his money on the counter and asked for a packet of rubber goods. Dave explained that they didn’t sell them, and that he should try the chemists opposite.

“But,” the chap persisted, “I naturally assumed that you would be the best place to try, this being an electronics shop. After all each one is electrically tested, isn’t it?”

Then there was the chap who bought a radio kit and brought it back, saying it didn’t work. It looked neat and tidy but when Dave investigated he found that a fine-nozzled tube of grey Bostick had been used instead of solder!

Darren Henwood of Romford, Essex mentions the oddball who came into his TV shop and plonked a pair of well-worn shoes down. “I’d like these soled and heeled please” he said.

### Warm sets

Peter Nutkins of Charmouth, Dorset called at our place in Spain last year. He commented on the fact that customers often complain that their sets, after being repaired, get too warm. He

*The first sort of set-top box, a Band III converter that dates from the mid Fifties.*

recalled an incident in his early days in the trade when a customer with a Bush TV22 complained that it got too warm. Peter reassured him that he was mistaken, then placed the palm of his hand on the side of the Bakelite cabinet. It was red hot!

When he looked inside he soon found the reason for the heat. In an effort to suppress some slight mains-borne interference someone had added an RC circuit that consisted of a large wire-wound resistor in series with an even larger paper capacitor. This had been fitted to the side of the cabinet, on a tag strip, and wired across the mains input. The capacitor had gone short-circuit and the resistor was indeed red hot.

Another case involved a Bush TV53. This model had a strip of gold-coloured metal trim along the bottom of the tube’s implosion screen. The owner phoned repeatedly to complain that she got shocks from the trim while adjusting the controls. He explained that this wasn’t possible, as there was no connection between the trim and anything live.

Eventually she threatened legal action and he called to discuss the matter. In fact she was right! While it was true that there was no physical connection of anything live to the metal trim, a fault condition made it fleetingly and painfully ‘live’. The EY51 EHT rectifier was going short-circuit intermittently. As a result the EHT would momentarily collapse and induce a charge in the metal. Profuse apologies and a new EY51 restored good customer relations.

Peter did not mention it, but I wonder why the lady didn’t notice the effects of spasmodic EHT collapse on her picture? Too busy getting shocks maybe. ■



# WHAT A LIFE!

## Trouble with prats of one type or another – including ITV News! Sets and couples and their demands. Some TV and a TV/DVD combi unit fault. Donald Bullock's servicing commentary

**A**s regular readers will know, I seem to receive the attention of an excessive number of prats. I've often wondered whether every one of them in the locality makes a beeline for me, or whether others get a share. It might help me to decide about this if other readers who regard themselves as prat-prone would drop me an email to tell be about their experiences. I'll give you the address at the end of this piece. If enough emails on the subject arrive, I'll include some of the details in a future column. To give you the idea, I'll recount some recent prat experiences in a moment. Meanwhile I have to say that the ITV News channel qualifies for membership of the league of prats.

### ITV News

When it isn't running advertisements by the yard, ITV News provides a series of written news items at the bottom of the screen. The problem with this lies in the presentation. Take first the awkward style. Imagine a report on a current football occurrence. An average grown-up might write "Basher Punk, the footballer, was found guilty today and mildly reprimanded for attacking ten other players during last Saturday's match and also hitting the referee. He denies the charges and says the others were simply accident-prone".

Not ITV News however! You get a horrible, disjointed presentation of the story via bottom-of-the-screen headlines, in this sort of style: "Basher Punk has been charged. Basher Bunk has been mildly reprimanded. Basher Punk found guilty of attacking ten other players.

Basher Punk is a footballer. Basher Punk also hit the referee. Basher Punk denies the charges. Basher Punk says men were all accident-prone."

One's mind reels when confronted with this repetitive nonsense. Then there's the all too common illiteracy. Take the news item about a parachutist who died when his parachutes failed to open. We were able to read, all day, that the parachutes' "chords" had been cut. Chords relate to music of course. They meant cords.

If you think I'm being a bit too sensitive about this, bear in mind that it's a British news programme that goes out all over the world from the ITV stable, the country's second largest broadcasting outfit. When exposed to such incompetence, viewers must wonder how accurately the actual news presentation is handled. When I was at school such abysmal standards would have produced instant reprimands. My old schoolmaster Mr Cryer would have a very busy time if he could be brought back and let loose amongst today's TV broadcasters!

Most intelligent viewers would turn the channel off as soon as they had heard the news headlines – or tried to hear them above the pulsating, stabbing and bubbling electronic noise that ITV insists on using to drown its announcers' words.

### The Russell-Burrows

Back to customers however. Have you noticed that when you encounter a decent, agreeable chap his wife is all too often a battleaxe? It works the other way as well: decent lady,

disagreeable chap. It has been said that it takes a couple to produce two complete individuals. Trouble is they don't make equal contributions, certainly when it comes to the decency or the prat scale. Take the case of the Russell-Burrows, old customers of ours.

They came in the other day with their Bush Model WS6671 TV set, which is fitted with the Vestel 11AK19P4 chassis. "Hello Mr Bullock" he greeted us cheerfully as he entered backwards, holding one end of the set. "It's dead like. You've done work for us before, a long time back. It was the sound that time."

"Wojamean a long time back" cut in his wife, "it wasn't that long ago at all. You'm goin' the right way to us getting a great big bill again!"

Greeneyes quickly checked and handed a sheet to me. "March 1999" it said, "no sound, dry-joints, £7.50." I showed it to Jack Russell-Burrows.

"See dear, it wasn't that much" he said. "And they got it done it an hour or two."

His wife Enid scowled. "Seems a lot to me" she said, "just for a loose wire ..."

Fortunately he steered her out at this point, and Paul soon dismantled the set. There wasn't much left of D822 (MR856), which is in series between the mains bridge rectifier and the chopper circuit. Paul fitted a replacement then started to carry out cold checks on the components downstream. The MTP6N60E chopper transistor Q802 was short-circuit, also D823 (1N4148) which is connected between the gate and source of Q802, and D824 (BA159).

"Don't think old Burrows' wife is going to like this one bit" he commented. Further tests showed that three more BA159 diodes were short-circuit, D825, D826 and D827. Having fitted replacements he surveyed the chassis and carried out one or two spot checks. Then he looked around the power supply for dry-joints, resoldering a couple that

were suspect. The next step was to spray the new diode in the D822 position with freezer and keep an eye on it when he applied power. The frost disappeared at once. Paul pulled the plug then felt D822 with his finger. It was hot.

"Oh dear" he said, "the MC44604P chopper control chip IC802 must have failed." Paul fitted a replacement and went through the D822 spraying procedure again. This time the set performed perfectly when he switched it on.

"Eight new components and a couple of hours for labour – assuming the set survives its soak test" he concluded, "the lady ain't going to like it at all!"

## The Horrobins

Mr Horrobin then barged in, accompanied by his quiet and cheerful wife. On the decency scale I'd say she contributes 96 per cent to Mr Horrobin's four per cent. They chalk up the same score on the noise scale.

"Your bloody front door's stiff to open" he barked, "anyway, 'im's in the car. Can't manage 'im on me own. You two beller bring 'im in. Then if 'e gets dropped it's your fault not mine."

"Eustace!" his wife said, "not so loud dear."

"You shullup" he replied, "I wants tuh talk to these people."

She smiled at us by way of apology, and Paul and I went out to collect the set. It was a monster, a 28in. NEI Model C28F1FXN.

"What's the trouble with it?" I asked Mr Horrobin.

"That's for you to find out, ennit?" he replied, "atter all, you'm supposed to be the telly experts, ain't you? I dresses tripe, and can talk tripe for hours."

Steven plugged the set in and switched it on. It remained in standby. So he prepared to write out a card.

"What's 'im going to cost, and when can we have 'im back?" Mr Horrobin said. "Couple of 'ours, shallus say? Not as we watches 'im much, mind."

"We'll phone you as soon as we know" Steven replied.

When the Horrobins had gone Steven started to check the set, concentrating on the line output

stage. He found the BU508AF line output transistor TR128 short-circuit base-to-collector. When this happens the BY299 diode (D110) in the EW diode modulator circuit often fails as well. Sure enough it was short-circuit. Steven fitted replacements and, not finding anything else wrong, switched the set on again. All he got for his trouble was a loud click – the set remained in standby. When he freeze-sprayed the replacement components the frost disappeared immediately. They were both short-circuit. "They didn't have a very long life!" he commented.

Steven fitted fresh replacements then spent some time checking about in the chassis. But he couldn't find any other faulty components. After a while he suggested that one of the replacement components might have been faulty. As they were new, he hadn't checked them.

I thought about it then shook my head. "There must be a short somewhere" I concluded, "or an intermittent joint arcing and drawing a lot of current."

Steven returned to his checking and finally removed the scan-coil plug. This was the cause of the trouble: it was badly carbonised, and had been arcing. When he'd fitted a replacement he hesitated before trying the set again. He needn't have worried. The set worked well, and Steven heaved a huge sigh of relief.

## A TV/DVD combi unit

While he'd been doing this Horace Price called in with a Grundig TV/DVD combi unit. I saw him coming and slipped off to the back of the shop. Not to be away from Horace particularly, but to be away from the combi unit he was carrying. They frighten me! Paul stepped forward to greet him.

"Hi, Horace, what's new?" he asked.

"Toothache, a lousy cold, won 200 salami sandwiches in a Crubbs Foodstore competition and" he hesitated, then brightened up, "oh yes, the missus left me and went to live with that tall, thin chap who runs Snoddies! It's heaven now. I go shopping on my own and if I want a pie I have a pie. And another if I want it. If I want to cross over the road for a pint at the Trafalgar Arms, over I go. I feel twenty years younger!"

I came out when Paul had booked the unit in and Horace had gone on his way, maybe to the Trafalgar Arms. "There goes a happy man" I commented. On a decency scale for the couple, Horace had contributed the lot. "I'm glad she settled on the tall, thin chap from Snoddies" I added.

The combi unit was a Model TVDVD1450, about a year old. Paul plugged it in and found that it produced an unmodulated raster with no sound. After carrying out a lot of voltage checks and clearing everything else, he concluded that the cause had to be the tuner. He packed it up and sent it off to MCES in Manchester. We rely on them when we get tuner problems. They provide a first-class service and we never have to worry about the results. The service is fast and the charges very reasonable.

## A widescreen Panasonic

Shortly afterwards Tom Murphy called in with his wife. He was having trouble with his 32in. widescreen Panasonic TV, Model TX32DK2.

"It blubbers and bejabbers" he commented, "but it's mighty heavy like. I've got it in the car outside. I want you boys to help me get it out."

"Do you think you could?" added his wife. "He doesn't like bothering people, but he's not as young as he was . . ."

So we all went out to pull and coax the monster out of the car and into the shop.

When Steven tried it the set produced a blue screen. It didn't take him long to discover the cause of the trouble, which was the tube – type W76ESF031X13. There was a short in the blue gun.

After getting Murphy's acceptance of the quote we ordered a replacement from D'Lec Components at Cobham in Kent. It arrived a couple of days later. When we'd fitted it the set worked exceptionally well.

"Nice couple, the Murphys" I said to Steven. "Both decent, too. I'd say they're about 50/50 on the decency scale!"

Oh yes, the email address. You can write to me at

donald@wheatleypress.com

I look forward to hearing from you!



# WHAT A LIFE!

## Unusual customer requests. Component-level testing. Odd fault with a Panasonic set. Steven and Paul scarp off. The TV clinic. Donald Bullock's servicing commentary

**T**here was a very welcome letter at the top of my postbag today. Another from Ron Bravery, telling me about strange customers he's had over the years. First a rather forceful lady.

"I want a BBC test card, please, young man" she declared.

Ron swallowed, straightened his tie and did his best. "Er, you can't actually buy them, I'm afraid" he managed.

"Can't buy them? Well perhaps you can give me one. Right away, if you could. I've a lot to do, and I'm in a hurry" she replied.

"Er, I can't do that either" Ron replied, "you see, they belong to the BBC, which transmits them over the air."

"Don't try to fool me" the lady replied, "my neighbour's got one. I've seen it a number of times."

Ron doesn't tell us what he did next. He obviously managed to extricate himself from the situation somehow. Space helps, if you can manage it quickly!

The other odd customer was an old boy who breezed in and asked for "a box of medium waves and a tube of  $Q$  paste to help with selectivity improvement".

You don't see  $Q$  referred to much nowadays. It was the measure of the goodness of a tuned circuit. The higher the  $Q$  factor, the more sensitive the radio receiver.

Stick at your post, Ron, I say. There are better times around the corner. Hopefully.

### Aerial work

David Porter's email addresses me as Mr Billhook. Says he's taking on some of the characteristics of his odder customers. Welcome to the club, Dave! He goes on to mention a colleague of his, Bill Wright, who doesn't collect

characters but photographs some of the odd things they do. In fact he's compiled a sort of rogues' gallery of excellently photographed blunders and outrageous workmanship. If you want to take a look, go to

[www.wrightsaerials.tv/roguesgalleryview.html](http://www.wrightsaerials.tv/roguesgalleryview.html)

I've had a look. Some of it would be unbelievable were it not for the extremely clear photographs. Well worth a visit!

### Component-level testing

Alan Velden tells me he moved from TV servicing to computer repairs some while ago. Reckons he's past the age of retirement. But I think he's one of the newer fellahs in disguise. Says he thinks *Television* started out with this title when he was a youngster. That gives the game away. In its earlier days it was known as *Practical Television* and was edited by F.J. Camm, who also edited *Practical Wireless* – amongst other Newnes publications. This wasn't an entirely accurate description of his role however. He was certainly clever, and was able to master the technology of the day fast enough. He seemed to like to have his name on magazines and books and Newnes backed him, making him a sort of celebrity at the time. Others, rudely, would refer to his magazines as Camm's comics. But they sold well, so FJC obviously knew his market. The chap who did the day-to-day work of editing *Practical Wireless* and *Practical Television* up to the late Fifties was Bill Delaney. But he never got his name on them!

Alan says he is surprised that there are still engineers who routinely diagnose and repair equipment down to component level. I suppose he bases this on the cost of time compared to the low cost nowadays of mass-produced panels.

But there are other aspects. For a start engineers aren't always paid an appropriate rate for their time and skills. Never were in this trade. And where power circuits are involved it will always be worthwhile looking for and repairing faults. Even at the present unbelievably low cost of much domestic electronic equipment it remains cheaper to deal with the dry-joint that's giving the no results symptom than to buy new.

"I've enjoyed your column for so long" writes Alan "that I can't recall when it started." Nor can I, for that matter! But I do recall that it coincided with my ever-increasing family – we ended up with five boys and a girl – and my developing taste for malt whisky. "Please tell us how it all started, and of all the changes over the years" he concludes. Well, Al, it would take me a long, long time, and fill a very long book!

### Odd TV set behaviour

Gerry Meek, another long-standing reader, mentions an odd fault he has with a Panasonic TX32PK2 32in. widescreen colour set (Euro-4 chassis) that he bought as recently as 2001. He describes the symptoms as follows.

"At switch on a yellow background with fuzzy white lines appears, the sound being OK. Then the set switches to standby. If I try again after a few minutes, the same thing happens but the picture gradually becomes sharp, only to fade to white after which the set cuts out again. When a further try is made a few minutes later the set gradually settles to produce an acceptable picture."

Now I'm not clued up about this chassis. Steven has dealt with a number of these sets however, so I asked him for his comments.

There's a 120k $\Omega$  resistor, R558, in the line output stage that tends to go high in value or open-circuit. It's worth checking this. The CRT's pins and the sockets on the base PCB should be carefully cleaned. The EEPROM chip is a frequent casualty in this set but fails completely: since the fault isn't consistent, this possibility is ruled out.

Otherwise, it could well be that the tube's emission is low. Regardless of what the tube label says, it will be of

Philips manufacture. They do seem to bite the dust as early as this. We've never come across one priced at less than about £300.

So there you are. As one who has taken many batterings from fairly new Sony tubes ("dull red picture, Mr Bullock") I'm sorry to have to suggest this sad prospect.

### A stint at the shop

Just before we returned to Spain after our last visit to the UK Steven and Paul tackled me in the shop, pointing out in a well-rehearsed manner that they had both been working so hard recently that they were faded and jaded.

"We need a day or two away from the shop" Steven said.

I must say he did look a bit fatigued, so he had my sympathy. Then Paul cut in.

"I'm not as young as I was" he commented, "and I heard on the news the other day that someone's sons and daughters are nowadays unlikely to live as long as their father".

"I heard that too" I replied. "And did you hear why? Because, instead of getting up early and getting cracking and eating proper food and living active lives, you lot loll about in front of TV sets stuffing fatty rubbish and watching the antics of other fat bores who are even duffer than yourselves. Why, when I was your age..."

"Never mind that" Paul said, "I've had a headache for days. Strain and overwork I'd say. A chap needs a day off now and again - to recharge his batteries, so to speak."

"I see that the weather out there is vile" I pointed out. "Cold, cutting wind, puddles everywhere, dark skies full of rain. It couldn't be the time for the Cheltenham races, could it? The weather certainly suggests so."

"Why I do believe it is the Cheltenham races today" said Paul.

"And all weekend" added Steven.

"And I daresay you've raided the petty cash and looked up where the Guinness tent is?" I asked, then pointed to the pile of sets on the shop floor. "Fill me in" I said.

"That's old Scrubber Hopton's Sobell" Steven said. "Tube, line output transformer, paper capacitors oozing - not worth repair."

"Sobell!" I exclaimed, "I thought they went out with the Major!"

"And the rest are all done, with the bills attached" Steven concluded.

And with that the two of them skipped off, like a pair of sprightly yearlings.

They passed a grim-looking old dear at the door. It was Mrs Hopton. She

headed for me and eyed me suspiciously.

"You used to be that Mr Bullock, didn't you?" she asked.

"Well, if you put it that way" I replied. "Now this set of yours, very old now you realise. Too old to be worth repair in fact, even if we could get the parts."

"You're trying to sell me a new one, ain't you?" she said, "that tall thin chap at Snoddies warned me that's ussactly what you'd say!"

"Wouldn't he mend it either?" I asked.

"E'd just lost 'is screwdriver, otherwise he would have done. A real gennulman, not like you lot!"

"You tell 'im Mam" commented a dapper little chap who was struggling in with a widescreen Akura TV set. It was Sid Tredwell, and his set turned out to be a Model APTPV028WSS.

"Too much width, and the picture's sorta shaped like an hourglass" he explained.

### Dr Bullock's TV clinic

"EW trouble" I pronounced, then opened up the set and pounced on RV38, a 2-2Ω safety resistor that had failed. I fitted a replacement then switched the set on. The new resistor immediately went open-circuit. This time I replaced CD21 (680nF) as well as the resistor. That did the trick. "Next!" I bawled.

A thin, spare chap came in, looking as though he had just been wound up.

"I'm Mr Leaky, hasn't it?" he sang, "and my set is in my car's boot, Mr Burley. You can bring it in for me, if you will, 'cos I'm getting old like."

He looked about fifteen years younger than me, but I walked out for him, leaving Greeneyes to mind the shop. His car was about a hundred yards up the road and the set was an ancient 21in. Pye Model 52KE1585 (CP90 chassis). I hadn't seen one for ages.

"Long time no see!" I said as I brought it in, trying to be bright.

He looked at me, puzzled. "No sea, Mr Burcock? No, that's true. But there never was here in the midlands, wasn't there?"

I smiled benignly, having decided to get back at him via his pocket. "What's the trouble with it?" I asked.

He looked surprised. "Well I suppose it's because the land is too high" he added.

I tapped the set hard. "The set" I said firmly, "what's wrong with it?"

"Oh" he exclaimed, "plenty of sound like, only no peecture."

My first instinct was to look for the 165V supply to the RGB output stages,

but it was all right. Then I advanced the setting of the first anode control. This made no difference, in fact the A1 supply was missing. That meant a new line output transformer, which we happened to have in stock. It must have been waiting for ages for a suitable set to turn up. I fitted it while Mr Leaky waited. The result was an excellent picture. He was well pleased.

Then I quickly did the bill and presented it to him. His smile faded.

"Oh, thirty powends is it, Mr Bursome" he commented, "didn't take long to tot itself up to thirty powends, did it?"

But, as he peeled some loot from the nest of notes he had in his wallet, his smile returned. "Oh well, these transformer things don't grow on trees, do 'un?" he observed, "but it's sort of funny how one moment you've got thirty powends in your pocket and the next it's in someone else's!"

Another caller had arrived however, with a Sony KV25K5. He put it on the bench and started to explain.

"It's giving me serious trouble" Mr Wu said. "When I switch it on all I get is two flashes from the standby light."

"Not much of a show" I sympathised, then went straight to the line output transistor which was dead short. In this chassis (FE1) it's a 2SD2539, and nothing else will do. Fortunately we had one in stock, so I fitted it then checked for dry-joints in the line driver stage. There they were, in all their wickedness, waiting to punish the new transistor. But I resoldered them carefully, then switched on. Another excellent picture, and one more satisfied customer.

The final customer that morning was a charming young lady who brought in a 14in. Matsui portable, Model 14TR50. She's actually Elijah Spry's fifth wife. A remarkable man!

"It's causing us a lot of worry. When we switch it on it goes for only five seconds, then this little light flashes" she said, pointing to the standby LED.

"They do these things" I replied, glancing at my watch. I must have had about a thousand of these sets on the bench, all with the same trouble. I took three 180kΩ, 0.5W resistors from the drawer and tinned them. Then I quickly dismantled the set and fitted the resistors in place of the open-circuit ones on the tube base panel. After that the set worked perfectly.

Lotus Rose was pleased and paid the modest fee happily. It was time to hang up the 'gone to lunch' notice.

Oh, and don't forget, keep those emails rolling in. You can write to me at [donald@wheatleypress.com](mailto:donald@wheatleypress.com)



# WHAT A LIFE!

## Odd customers and their sets. The role of batteries in the trade over the years. Points from emails. Donald Bullock's servicing commentary

"Hello Mr Bulmer!" sang the little chap who came through the shop door the other day, "it's me, Mr Leaky, couldn't it?"

I recalled Mr Leaky well, having repaired his old Pye television set not all that long since. When he paid he made the amusing observation "funny how one moment you've got thirty powends in your pocket and the next it's in someone else's!" Well, yes! I eyed him anxiously, wondering whether he'd come to ask for it back or to pay me some more. It turned out to be the latter, and I was soon all smiles again.

"I recommended you to my neighbour, Mrs Hewitt" he continued. "'Er set died on 'er last night, like. She's a widow. Rather fancy her, so I said 'let me take it to Mr Bulsome, 'e'll do it.' 'Clarence, you're so kind' she'd replied. Anyway, 'ere I am with it like. It's in the car, isn't it?"

It turned out to be a Sharp 56FH53H (DA100 chassis) and, when Mr Leaky had piped off, Steven got it on to the bench and started to make some checks with his meter.

"Trouble in the power supply" he announced, "the HT reservoir capacitor has blown its top clean off."

He replaced it and started to check associated components. In the process he found that the regulation feedback optocoupler IC705 was short-circuit.

When I looked his way a few minutes later he was still frowning. "Can't make it out" he commented, "my meter tells me there's an avalanche diode up the creek, but I can't see one!"

It turned out to be on the copper-print side of the panel – D735, type BZX04-145. He removed it, checked it and looked up the specification.

"Good thing I did" he said, "with a number like that you'd think the breakdown voltage would be 145V, but it's not – it's more like 170V. Bit of bright numbering, that!"

He replaced the optocoupler and avalanche diode and switched the set on. It's voltages were now normal, and it behaved perfectly.

### Boozy's Beko

Boozy Bashford then stumbled in with a TV set that Paul seemed to recognise. Boozy runs a dockside pub, and is reckoned to be its best customer.

"I'm seething" he said thickly as he swayed about, rolling his bloodshot eyes around for somewhere to put his set down.

Fearing that he might drop it on to a few sets that had been done and were parked on the shop floor, Paul raced round, took it and placed it on the bench. "What's the matter then?" he asked.

"I've just had to throw a drunk out of the pub" he said. "Third time this week! If there's one thing I can't stand it's someone who drinks too much."

"Too true" said Paul.

The set was a Beko, Model NR28128NX. Boozy said it was dead, then staggered off.

Paul examined its chassis carefully before carrying out any tests. "Another burnt out R101" he commented, "that means a faulty line output transformer."

"How do you know that?" I enquired.

"Because we've had three like it recently" Paul replied.

He fitted a replacement, and asked Steven to add another one to the order that was being prepared for SEME. R101 also had to be replaced of course: it's 4-7 $\Omega$ , 0-5W. The set then worked normally.

### Old Fishy's Bush

As Paul stowed the Beko set under the bench Old Fishy appeared outside the front door, mouthing silently through the glass. He was carrying a Bush Model 2027T. Steven ran across and opened the door for him.

"Morning Mr Carp!" he said, "has your set failed?"

"Yes he bloody have!" said Fishy. "Once a year 'e goes west, allus about this time."

"Good!" Steven interjected, "if this goes on many more years we'll have to give you a quantity discount. Remind me about 2010!"

"It ain't good enough, you know" continued Fishy.

"Nah – every six months would be better!" said Steven.

When he tried the set the picture was too small and resembled a dome.

"Whatever could this be?" he muttered. Then he noticed that there was also a slight hum. When he checked the outputs from the power supply he found that the HT voltage was low, with AC ripple. The reservoir capacitor was low in value.

### Tightwad Sceats

Our next caller was Tightwad Sceats. We weren't at all excited to see him, because there's no money at all in him. In winter he makes a living selling tripe, while in summer he sells ice-cream. He's also an undertaker, when he can get a client. Tightwad has never bought an envelope in his life. He simply crosses out his name and address on ones sent to him and reuses them to send out his replies and bills – sealing them with paper tape, and never putting enough stamps on.

"Will you test this battery at no charge?" he asked Paul.

Paul did so and told him it was flat. "Right, give it me back will you?" Tightwad said, "I know where to get 'em cheaper than you'd charge."

### Batteries

While Greeneyes was out shopping the other morning she noticed that her watch had stopped. We had arranged to meet that lunchtime for something to eat. Because she couldn't bear the thought of missing me (or was it the food?) she popped into a jewellers to see if it needed a battery. It did, and she was charged £4.

Later we found ourselves in one of those 'Everything for a £' shops and

bought a card of about twenty similar batteries for £1. There's obviously something cockeyed somewhere. It set me thinking about the ever-changing battery scene.

When I first came into the trade so-called personal radios were mains-battery types that were full of valves. They were usually built into a rexine-covered box with an attaché-case type lid, and were big by today's standards – about four inches thick and a foot square. Battery manufacturers loved them, as each set used two hefty batteries that didn't last long. One was used to light up the valves, the other to provide an HT voltage.

Incidentally as these sets aged, those customers who used them with a mains supply would complain that the Light Programme (Radio 2 to most of you) had disappeared. The remedy was to replace the frequency-changer valve, usually a DK91 or DK96, or change the voltage tapping from 240V to 220V.

Then, quite suddenly, the reps started to prepare us for the advent of the transistor radio. Our Ever Ready man, a rather insecure fellow who used to call every week and top up our battery rack with new stock, became a very worried man.

"It seems that the batteries will last virtually for ever" he complained. "I'm going to have to keep my eyes open for another job."

Fortunately for him he didn't find one. While the first transistor radios were of similar size and shape to the valve models they replaced, the set-makers soon began to produce smaller and smaller radios that used smaller and smaller batteries which lasted no time. The rep's living standards rose visibly, along with his confidence.

## Sales spiel

About that time I changed my job, going to work at a multiple shop that was managed by a chap we called Porky. The bench engineers told me he was the ninth manager that year. "They don't last long" one of them said, "they come and they go."

Like his predecessors, Porky's wages were set at peanut level so that he would be encouraged, or driven, to make them up with the commissions he earned on sales. I soon noticed that he was selling transistor radios at a phenomenal rate. We in the service department upstairs wondered how he managed it. I found out one day when I was in the showroom, replacing a valve in a stock set.

An old couple came in with a valve portable.

"Can you change the batteries?" he was asked.

"I can do better than that" breezed Porky, taking their set off them and putting it down. "I can sell you a set that's lighter, smaller and costs virtually nothing to run!" With that he led them to a display of transistor sets and started to deliver his spiel. The couple were impressed when he told them that the sets used just one tiny, cheap battery.

"And how long does the battery last?" he was asked.

"Last!" echoed Porky, "it lasts absolutely for ever! Once you buy one of these you've finished buying batteries for life."

And with that his till took another hammering and the set went from the shop in the arms of his beaming customers.

By coincidence I was in the shop a few weeks later when the same couple came back with the set. It was dead.

"Most unusual!" exclaimed Porky as he took the set into his hands. "By the way, there's a new machine on that stand over there. It makes your early morning cup of tea all by itself!"

"Eh?" they exclaimed as they turned to look at a Goblin Teas Maid. As they did so he swiftly replaced the battery and their set sprang to life.

"Ha, loose wire!" he exclaimed. "Sorry about that. The set will be all right now."

As the couple trundled out, beaming again, Porky casually popped the battery back into his stock behind the counter.

We were to discover that he had been doing a great deal of this. He solved his stock deficiencies by reselling the dud batteries. Of course it all caught up with him before long, and he was soon replaced with manager number ten.

I was reminded about all this by a letter from Mark Garton in the last issue. He referred to the AF117 type germanium transistors used in many vintage transistor radio sets. I recall them well, and the recurring short-circuit fault that would develop between the earthed internal screen and the collector. The result was a silent set and, very often, a flat battery as well by the time the set came to us.

The transistors had four leadout wires, the one for the base being apart from the other three, which were for the screen, collector and emitter. As Mark points out, all you have to do to bring the set back to life is to use a pair of

fine-nosed snips to separate the screen lead. We used a tiny dentist's mirror, or perhaps I should say a dentist's tiny mirror, to see what was what in some small, closely-packed sets.

Those AF117s made a good few bob for us.

## Emails

Bill Wright, whose website address I gave in the January issue, says my mention generated a lot of website visits. He also mentions that he's getting a bit 'long in the tooth' for ladder work – "I run out of puff and have to pause on every second rung". Writing just before Christmas, he says "I'm sure you'll exercise moderation over the festive season". I wish I could share his optimism!

Alan Velden has sent me another email recalling the F.J. Camm days. Says he had always thought that the name was a pseudonym. Not so Al, there was an FJC all right – he made numerous appearances at shows, lectures etc.

Alan also says he agrees that TV engineers have always been absurdly underpaid – even in those far-off times when the sets themselves were sensibly priced. Alan, a youngster of 67, says he left the trade back in 1966 to become a postman, as that was a better-paid job.

He also recalls the then well-known, maroon-covered Newnes *Radio and Television Servicing* books that contained nothing but condensed service information for hundred and hundreds of receivers, with a separate volume issued each year. You could buy them as sets of books or separate ones.

My first set came as something of a surprise, as I hadn't ordered it! The accompanying bill seemed to be for rather a lot of money. I immediately contacted Newnes, which sent me an apologetic letter and a photostat of the coupon it had received, made out with my name and address. This was a hoax, and I recognised the handwriting. To save me the expense of returning the books, Newnes invited me to accept them at no charge.

By the time I discarded them years later every page was well worn from frequent use. They must have made me a fortune, enabling me to repair so many sets. I had every reason to be thankful to the hoaxer, who had set out to cause me trouble but had in fact done me one of the best turns in my life.

Keep the emails rolling in!  
The address is  
donald@wheatleypress.com



# WHAT A LIFE!

**A mixed batch of faulty equipment.  
An even more mixed batch of customers.  
Donald Bullock's servicing commentary**

I'm not too good at remembering faces. Never was, and it has caused me more than a few problems over the years. This can be particularly so when I sell TV sets or whatever, especially those bought in at 'special' prices, where the profit margin might make the job almost worthwhile.

## **A displeased customer**

When dealing with customers I can get really friendly and personable. Almost nice to know.

It happened again last week. Paul had diagnosed a faulty smoothing block in Mr Hoighty's TV set – a monster with the largest screen I've ever seen and all the latest technical extras. It was capable of everything short of doing the washing up.

But Mr Hoighty had become displeased with it, because this was the second time it had given him trouble during its first eighteen months. When we told him that this time we wanted £25 to repair it he became even more displeased. His eyes turned to slits, and he slammed his upper lip down like the top of a roller-top desk.

"I gave it a chance last year" he hissed, "and let you repair it. I would have let you repair it this time if it had been under guarantee, like then. But nothing and nobody plays me up twice, see? I'm cute when it comes to paying out. You can keep the bloody set!"

He signed our bit of paper with a flourish and strutted out, beaming like a victorious gladiator.

Paul, who had witnessed it all, scratched the top of his head like a puzzled Stan Laurel. So I tried to ease his evident discomfort, Olly style.

"What's the matter Stanley?" I asked. "Now it's ours. We can mend it and sell it for a mighty good price. Just think, Mr Hoighty hasn't been bad to us at all!"

---

*When dealing with customers I can get really friendly and personable – almost nice to know...*

---

"He hasn't?" said Paul.

"Not at all" I said, "in fact he's done us nothing short of one great big favour." I began to hum a tune. Paul looked at me, pursed his lips and smiled with his mouth, though not his eyes.

It wasn't long before the set sat gleaming in the middle of our shop display. When it caught the eye of Bertie Bunyan, happiness started to well up within me. The keener Bertie became, the happier I got. Within two minutes we were on the most jovial of first-name terms. Two minutes after that, as the set became his very own, he made me and our till croon. Our lifelong friendship had got off to a flying start.

A day or two later, in the Red Lion, some chap started waving and grinning at me from across the room. I looked at him stonily. "Who's that lunatic over

---

*His eyes turned to slits, and he slammed his upper lip down like the top of a roller-top desk*

---

there?" I asked Steven.

"The chap you sold that monster TV set to" he replied.

I turned round to wave and return his grin, but by now he seemed to be deep in thought, studying the carpet.

"Funny chap" I said. "Didn't really take to him. Bit dishevelled. Thought he might work for some oil-stained backstreet dump that tinkers with bangers..."

"But don't you remember his face?" Steven continued.

"Well, not really..."

## **Video trouble**

Just then a heavy little fellow sloped up to us, nursing a pint.

"Be you the Mr Bullock that mends tellys?" he asked.

I gave him a watery grin and pointed at Steven.

Pausing only to give me a withering look, Steven smiled at him and bent down to align his ear with the chap's mouth.

"I don't wanna talk shop when you're 'aving a drink after a day's work, but I got a video, see?" he continued. "And he's gone dead like. 'Ow much would that cost now? Could you do 'im quick? Couldn't be much wrong like. Oney they've got brand new 'uns up town fer £35.50..."

At that I caught sight of somebody I knew over the other side of the room and sloped off, leaving Steven to deal with the fella's questions.

Next morning the chap waddled in with his recorder. It turned out to be a Samsung SV230B. He saw me there.

"Joo work here?" he asked. Then he saw Steven. "I brought the recorder in, Mr Er..aww..ahh" he said. "I knows it can't cost much. Only the missus 'as this in-grown toe-nail like, an' 'er sister ent none too good..."

When he'd departed Paul took the machine to the bench and opened it up.

It was dead all right. But nothing difficult. The two start-up resistors on the primary side of the power supply, R15D12 and R15D15, were open-circuit. Once he'd replaced them the machine seemed to be OK. He started to write out the job card.

"Don't forget his wife's toe nail" I said, "and the state of her sister ..."

Then we noticed a personable and, I suppose, good looking chap in a leather jerkin thing. He was heading for the shop door and was carrying a VCR.

"Can't be coming in here, can he?" I commented. "He looks too normal."

He did come in, smiling pleasantly, and the VCR was an Akai VSG745.

"Morning Mr Bullock" he said, closing the door quietly behind him. "Is there any chance you could repair this for me, please?"

As Steven booked it in I could see that he was impressed. "Nice to encounter a normal fella for once" he commented.

This VCR was also dead, for the same reason. Paul, who handles the videos, soon found that R209 (270k $\Omega$ ) was open-circuit. The repair took a matter of minutes.

The chap came back later that day, and was happy with the price. He opened his jerkin and pulled out a frilly pink handbag.

I turned to Steven when he'd gone. "As you said, he was a bit different" I commented.

### A camcorder

Our next caller opened the door and popped his head in.

"Hello Mr Burford" he exclaimed, "I'm Tom Western and I'm coming in!" Then he ran away.

We exchanged glances, but not for long. Within a minute or two he was back, clutching a camcorder. It was a Samsung VPL500.

"He works, Mr Boodle, but he don't work" Tom explained helpfully. "You puts a tape in, and he don't play it, then you takes it out and he do." Steven gulped a bit.

"Any chance of me picking it up tonight?"

"We'll try" said Steven, "call in about five."

"That's good of you. See you tomorrow." Steven looked at this one. He found

*"It blew up, Mr Bullock" he trumpeted.*

*"Just as my wife was about to watch her favourite programme!*

*Have you met my wife?" ...*

that the carriage drawer would close without a cassette in, but with a cassette in it wouldn't. When he dismantled it he found that the capstan motor was sluggish. It didn't respond to cleaning and lubrication, so a replacement was ordered. It arrived first thing next morning. Once it had been fitted the camcorder worked normally.

Later that day Mr Western popped his head around the door, said he was coming in, then dashed off again. But he soon returned, and was happy that we'd been able to cure the trouble with his Samsung.

"Glad you were able to fix it by today" he said, "only I needed it last night to see that *Cheaters* programme. Really good, innit?"

### A blown up Sharp

Mr Christianiou hales from Greece. He's tall and well padded, and sports a big black moustache. The set he struggled in with was a Sharp 51CS05H, one that's fitted with the CS chassis.

"It blew up, Mr Bullock" he trumpeted. "Just as my wife was about to watch her favourite programme! Have you met my wife?"

I shook my head. "Don't think I've had the pleasure" I commented.

He rolled his eyes and brought his hands up as though to conduct an unseen orchestra, swaying to its silent music.

"Oh Mr Bullock" he continued, "my wife ..., my wife ..." He smiled happily at the thought of her.

"Er, yes. Well, right" I said. "We'll have a look at the set and give you a ring."

"Oh thank you, Mr Bullock" he continued, "my wife will be pleased." Then he closed his eyes and started swaying again.

When he'd departed Steven pulled the set on to the bench. We've had a lot of dealings with these sets. They can blow the line output transistor weekly unless you get to the root of the trouble, which is a couple of capacitors, C604 (330 $\mu$ F, 10V) and

C714 (1,000 $\mu$ F, 10V). C604 is in the line output stage and forms part of the unusual feedback drive arrangement. C714 is the reservoir capacitor, on the secondary side of

the chopper circuit, for the 7V supply that feeds the 5V regulators.

Steven replaced them and the line output transistor, after which the set worked happily enough.

### Help wanted

The phone rang. Steven answered it, but I could hear the raucous voice from the other side of the room. It could only have been Stan Idler.

"If you comes outa your shop door and looks to your right, you'll see me by my red car" he bellowed, "I'm wearing a brown trench coat and a big cap like."

Steven frowned and put the phone down. He went out, huddling his shoulders against the rain, paused, looked right then ran off up the road.

He was away for fifteen minutes. When he returned, puffing and blowing, he was soaking wet and was carrying a large 21 in. Matsui set, Model 2107R.

"Thanks for 'elping me, Mr Bullock" Idler said. "I'd have carried 'im meself, except I've this bad back like."

Steven opened his mouth to reply, but no words came out.

"Give us a ring like" said Idler as he made off,

"Where did you get to?" I asked when Steven had recovered his breath.

"He was parked over a hundred yards up the road" he replied. "He could have pulled on to the front ..."

By now Paul had powered the set and found that it was dead. The trouble was in the start-up circuit, where a 1M $\Omega$ , 0.5W resistor was open-circuit.

"Experience has taught me to suspect any resistors that are over 68k $\Omega$ " I commented, "the higher the value, the more likely it is that you'll find them open-circuit."

A replacement got the set working again.

### Keep it up!

Many thanks to all of you who have sent me emails recently. I'll include some comments next time. Keep it up - you can reach me at [donald@wheatleypress.com](mailto:donald@wheatleypress.com)



# WHAT A LIFE!

**The shop to myself for a while. Some faulty TVs and a dead VCR. Then a visit from the shop steward... Donald Bullock's servicing commentary.**

**T**hey are clever lads. "There's a fine new restaurant in town" Steven said to Greeneyes and me the other day as we were closing the shop, "and Paul and I would like to take you both out for a meal tonight." In less than no time we were enjoying the best nosh-up of our lives, wine and all. So instead of being suspicious when, afterwards, they gave us a great joint smile, I smiled back benignly. Then they drove us back home. They're good lads.

"Oh, there's just one thing" they said when we reached the door. "We've got a little trip planned for tomorrow morning, down Meadow Pool way. Pike spinning, you know. Won't take us many hours. Do you think you could open the shop and look after things until we arrive a little later?"

Well of course I didn't mind, and said so. "Take as long as you like" I added.

"Oh, and there's one other little thing" Steven said, "we've a couple of repair jobs due in soon after eight. Best open the shop at eight instead of nine, wouldn't you think?"

## Next morning

At twenty past eight next morning a car drew up outside and a sleek, gentle figure, like a dressed-up and bearded eel, slid out. The day had hardly begun, yet he was smiling happily.

"Ah, you will be being Mr Bullock!" he said softly, "the 'old man' as your sons say."

I shot him a look.

"I am being Mr Ng, and very pleased to meet you."

"I am being, er, pleased to meet you too" I replied, pulling on the best smile I could muster at twenty past eight.

"What is being the aah" then I couldn't control a big yawn. "Sorry about that - television trouble is it?"

"Yes indeed. My misfortune, your gain!" he smiled, "so it is being good

for you that I am unfortunate you see."

We managed to extract two sets from his car, a monster widescreen Bush model and an Aiwa TV/VCR combi unit. Then he was off.

## Mr Ng's sets

The Bush set was fitted with the 11AK19 chassis and was stuck in standby. As I was the only one there, I had no choice but to have a go at it myself. I began by getting to the chassis and giving it a keen examination in the hope of discovering a simple remedy, like a dry-joint. Yes, there it was! A beauty at the anode of D825 in the power supply. Although it had been arcing, the diode was undamaged. I resoldered it feverishly, then tried the set again. To my delight the EHT rustled up and the screen brightened. But there was no video, just a bright screen with no display.

I noticed a video output IC on the tube base panel and decided that it could well be the cause of the problem. I was right. It's a TDA6108JF, and the lads had one in stuck. When I fitted it the set produced an exceptionally good picture.

The Aiwa combi was slow to start up from cold. When it did, it produced murky video and audio wow from our test tape. I have always found that the cause of the trouble is, with these units, low-capacitance electrolytics. This one was no exception. C523 (100 $\mu$ F, 16V) had fallen in value to 60 $\mu$ F, and C522 (2.2 $\mu$ F, 50V) had fallen to 1 $\mu$ F. Replacements cured the trouble.

## Interlude

As I was boxing the unit up the telephone rang. I made a grab at the phone, which slipped off the counter. "What's the bloody matter" I barked when I recovered it just before it hit the ground.

"Mrs Wellington-Harper here" an educated voice boomed. "My tom cat

Marmaduke is bothering Phyllis, my brand new, delightful little girl cat. Will you come out and, er, attend to Marmaduke for me?"

"No" I snarled, and slammed the phone down.

It rang again, and once more I rattled it from its rest. "What is it now?" I shouted.

"What do you mean, Mr Bullock, what is it now?" bumbled an ancient voice. "I haven't telephoned you since 1992."

I wiped my face with my dry hand. "Oh, hello, Mr Dodd" I said, "er, ha ha, was that a crossed line we had there? These things happen, don't they? Ha ha."

"What an odd fellow he must have been" said Old Dodder, "hope he's done - for good."

"Sure to be" I continued, "now what can I do for you Mr Dodd?"

## A Beko

"It's my telly, Mr Bullock. A Beko it is. Got it in Snoddies Sale last week. But when I told the tall thin chap there that it had gone wrong he was most unhelpful, unpleasant in fact, and hung up. Shall I ask my sister Molly to help me bring it along?"

"Er, good idea Mr Dodd" I replied, "in fact spot on!"

There was a pause. "What's 'spot on' Mr Bullock?" he asked.

"Well yes, do bring it along" I said, then gently hung up.

A little while later he drew up outside in his car, with his woolly sister. I went out to help them carry the Beko in. He was tugging it from his side of the car.

"Lift your end, Molly" he shouted "now push it to me."

"No, you push it to me" Molly said.

Old Dodder straightened. "Molly, you're not being at all helpful. Just confusing things. Same as always."

"Stop bullying me Cyril. Did you hear

that, Mr Bullock? He's always been the same."

I waved to them to stop, grabbed the set and took it into the shop.

Old Dodder toddled in after me. "Can I visit your loo?" he ventured.

"Over there" I said, then hastily moved Mr Ng's Bush out of the way.

The Beko was stuck in standby. I checked the line output transistor and found that it was short-circuit. So I fitted a replacement and tried again. The core of the line output transformer then arced violently to the chassis. It was type 1352-5048. The HR8368 is an equivalent and, after finding one in the stores, I fitted it. The set then produced an excellent picture.

Old Dodder reappeared. "Oh that's good" he said when he saw the set. I suppose I must owe you some money."

"You've got it in one" I smiled.

Old Dodder stepped back and looked at me. "What do you mean, Mr Bullock, I've got it in one?" he asked.

Molly had come in. "Cyril" she exclaimed, "concentrate on the Beko. I'm glad we chose it instead of the one you wanted."

"You backed a winner" I pronounced.

Old Dodder frowned. "A winner, Mr Bullock? My sister doesn't bet on horses, you know."

"Definitely not" Molly rejoined.

## Another Beko

As the old pair left I saw that they had forgotten their umbrella, and picked it up to chase after them. But just then Greeneyes came in, looking quite ravishing in the new green and beige outfit she had worn the week before for son James's wedding to Dawn at Porthmadog in North Wales. And, as if by magic, Mr Flighty also entered the shop, jauntily with his fetching smile and pencil moustache. He was wearing a cravat and a black blazer with a gaudy, club-type red and gold crest.

"Hello dear" he sang out to Greeneyes, "my you do look sparklingly attractive today. As always, of course."

Greeneyes smiled demurely and, at that, Flighty pretended to notice me for the first time.

"Oh, hello Donald old chap. My! Time passes! Bad night last night? Still on the tablets? Do you always carry an

umbrella, Donald?"

I smiled at him as best as I could manage. "Some sort of trouble, Mr Flighty?" I enquired.

"Well yeah, Don. It's a Beko telly that belongs to my neighbour. She's a young widow, poor thing . . ."

"I understand," I said simply.

He did a double-take at my sincere face. "Er, black lines keep coming and going on the picture. When they appear there's none of the usual writing to tell us what it's on. Only I'd like to help her, you know . . ."

"I'm sure you would" I replied, "why not bring it in then?"

He went back out to his car and returned with the set, a Beko Model NR20242-8R. Then he smirked at Greeneyes and departed.

We've had this trouble before. The TV trouble, I mean. It led us a merry dance until we discovered the cause, which is a tiny 1,000pF surface-mounted capacitor, C410. It often disintegrates as soon as it's warmed by the iron.

I fitted a replacement then turned to Greeneyes. "What shall we charge him dear. Eighty quid maybe?"

"How could you!" she exclaimed.

"Aw, well, it would be quite easy" I said.

## A Mitsubishi VCR

Colonel Starch marched in shortly afterwards. He retired twenty five years ago and still goes on and on.

"Hello Donald, old boy" he rasped, pumping my hand energetically. "Always good to see you, and your charming young wife. What a lucky chap you are! And so you should be. One of us. True British! But, as you know Donald, my dear wife is so silly. Bought one of those Jap video recorders. Against my advice, I might add. Told her British is best! Always was!"

"Er, what did she buy?" I ventured.

"Told you! I'll go get the thing in."

He strode off to his vintage car and returned with a Mitsubishi VCR, Model HS641V.

"Says she can't see the dial thing, or whatever it is" he continued.

"Don't know why she'd want to, but there it is! We have to make allowances, I suppose."

When he'd departed I put it on the bench. It was dead, with no display. Faults like this mean something wrong in the power supply of course. Sure enough one of the outputs was very low indeed. The relevant reservoir capacitor is C910 (4.7μF, 50V). I wasn't surprised to find that it was open-circuit. A replacement worked wonders, with everything then working correctly.

## The shop steward

During the late afternoon, as I was beginning to look at my watch, we had our last caller that day. He was a forthright, formidable-looking fellow. We soon learnt that he was Jim Fargill, the top shop steward at a nearby factory.

"Still working hard at this end of the day?" he commented. "You want to join a union, you know. What's your boss like? I'll bet he's taking it easy somewhere luxurious."

I wondered whether he meant Steven or Greeneyes, but never mind. We need his patronage.

"Look" he said, raising his left palm and tapping it with the forefinger of his right hand. "Point 1, I've got a Goodmans TVC46 combi unit, right?"

I nodded.

"Right. Point 2 it's as dead as a door-nail, right?"

I nodded again.

"Point 3, I want it repaired. Got it? Can you manage that?"

I nodded weakly, then he went out and returned with the TV/VCR unit. He placed it on the counter, shook my hand and announced that he would be back the following day.

I was feeling tired, but opened the unit and headed for the power supply section. An easy one. The power switch SW08 was badly dry-jointed.

I resoldered it and tried the machine out. There didn't seem to be anything wrong with it, so I boxed it up and turned to Greeneyes

"Time for home I think, dear" I said.

## Keep it up!

Many thanks to all who have sent me interesting emails recently. These are welcome, and I'll be commenting on some of the points raised. You can reach me at

donald@wheatleypress.com

# WHAT a LIFE!

**From a pool-side idyll to a surprise interview, all in a day's work.  
Donald Bullock's servicing commentary**



It was good of the boys to pressure me into having a day off. Since it looked promising, I decided to follow the quiet country lanes to the Haven Pool to prepare my favourite tench swim for the start of fishing next month. It's a magical spot. There were a few overhanging willows to trim back, one or two water-lily roots to drag out and, to make room for my rod, a few bank-side bulrush reeds to tether. To make it all enjoyable, the scent of wild roses filled the air.

## Summer idyll

It promised to be a day of bliss. The sun smiled contentedly, and a gentle mist shrouded and softened the water. A pair of blue-powdered doves fluttered and cooed in a nearby beech tree, a flock of amorous coots twittered and dived at the far end of the pool, crickets chirped in the long grass and dragon-flies hovered and darted over the lilies. I plopped a handful of bread-paste nuggets into the water where my float would soon be. What heaven, I thought, what total tranquility! There was never anything like the peace and solitude of the waterside to banish all thoughts of television – and the bores who pester those who carry its cross.

## An interruption

Then I heard the sound of feet tramping on the overgrown path. They drew nearer. It was old Moggy Morgan, who farms nearby. "Ah, Donald" he wheezed, "just the chap! That set you fixed the other month. Still playing up, you know. My missus reckons that the picture slips from corner to corner, and the sound sort of races. But 'er's been under the old Quack, like. Keeps on complaining though. Pop over to the house for me, will you?"

I screwed my face up and pre-

pared to go along. Then Gaffer Unwin appeared. Another local. "Ha! Just phoned the shop" he exclaimed. "The boys said you were in the country, and I thought 'yes, and I know where he gets. He won't mind a visit to the cottage for a minute or two. Ready?'"

I stared at them both. "Look, I'm off duty" I said, "why not take your sets to the shop?"

The air seemed different when they'd departed. No more magic. The soft mist had gone, also the scent of wild roses. And the doves, the coots and the dragon-flies. I decided to return to work in the hope of being able to go out again next day.

## Back at the shop

Moggy Morgan and Gaffer Unwin got there at the same time as I did. Both had brought along enormous TV sets. I let them go in first. Inside the shop the boys were talking to an extremely scruffy-looking chap with a flash camera. He turned round and looked at us as we came in.

"Donald Bullock?" he asked Moggy.

"Not me" Moggy answered.

"Donald Bullock?" he asked Gaffer.

"You're joking" Gaffer replied.

I followed them in and hastily went through to the workshop, leaving Steven to book in their sets. Moggy Morgan's was a 28in. widescreen Sharp set, Model 66GF63H (DA100 chassis). "Crackle on the sound and no picture" he said. Paul immediately put it on the bench.

Gaffer Unwin's set was a 32in. widescreen Matsui model, fitted with the Grundig CUC2058 chassis. "Just before it died" he said, "it displayed a bowed picture".

## The Western Gazette

The scruffy chap, taking it all in, wanted to get on. He addressed himself to Moggy Morgan. "Who are you then, boy-oh?" he asked.

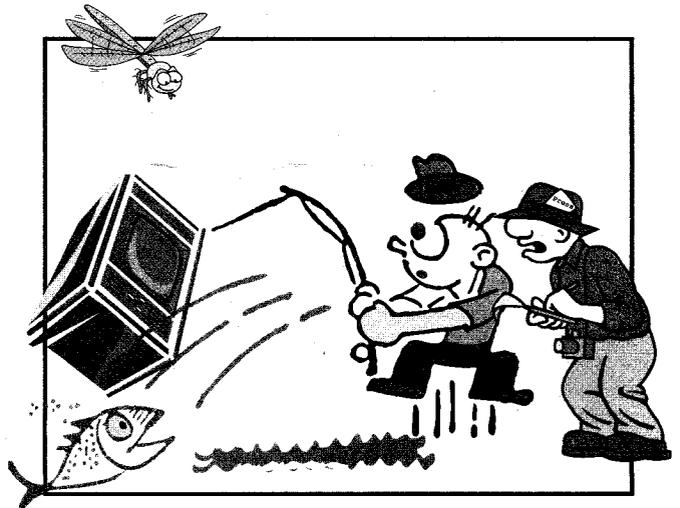
Moggy told him.

He then turned to Gaffer Unwin. "You sure you're not old Mr Bullock?" he asked.

"Quite certain" said Gaffer.

At that Steven called me out to introduce me to our scruffy caller.

"This is Scoop Spinner from the *Western Gazette*" he said, "he



wants to interview you on your lifetime in the television trade.”

“Ello, Mr Bullock!” said Scoop, “that’s it, we’re doing a series featuring old-established local businesses. Do you know that yours is by far the oldest-established local TV firm?”

## A hectic time

As he spoke the Reverend Goode came in with his curate, who was carrying an Awai XR-MDS7EZ hi-fi unit.

“Greetings, Donald” the Reverend boomed. “Do be the angel you are and have a look at my verger’s gramophone thing, will you? His wife is suffering from severe toothache.”

Greeneyes then brought in the tea, and Paul announced his findings after dealing with Moggy’s Sharp set. On test the set had displayed a faint blank raster with flyback lines, and there had been a crackle with the sound. The cause of the former fault had been Q912, a BC337-40 transistor on the tube base panel. Its base-emitter junction was open-circuit and, as a result, the TEA5101A RGB output chip had no 12V supply at pin 2. The crackle had been from the front centre speaker. Replacement of the TDA7480 centre audio output chip IC1302, the BA4558F driver chip IC1300 and three associated electrolytics on the centre-speaker PCB had cleared the crackle. Some resoldering was also required. After that the set worked well.

Scoop Spinner, who was paying attention to everything, was beginning to look bewildered.

Mrs Catmore, accompanied by her unruly kids, then came in to buy a battery. The eldest had a sticky toffee-apple which he waved about, the youngest pulled the telephone off the counter while the other one spun the battery carousel around so that it collapsed and scattered batteries all over the floor.

“Was a marrer with you lot?” Mrs Catmore shouted, “I can’t take yous nowhere, can I?”

## A Lecron

A further visitor, Roger

Dodgeworth, then arrived with a 28in. widescreen set. “It’s a Lecron, Mr Bullock” he said.

“A what-ron?” I asked.

“A Lecron” he replied, “Model CTV900W it says on the back. It’s dead. Belongs to my cousin, Mrs Woodward, who got it from Debenhams with the insurance she received after she put her husband away. Did you know him?”

I shook my head.

Oh, a real beast he was” continued Roger, “a real beast. Why he . . .”

“Look Roger” I interrupted, “it’s a bit hectic here at present. Can we talk about the set?”

“One day she refused him a Woodbine” Roger continued, “and he walked out. Bought a toffee ’ammer, went home and gave her an ’ammering!”

Steven was looking at the Reverend’s Awai hi-fi unit while Paul was attending to Gaffer Unwin’s Matsui TV, so I decided to take a look at the Lecron. We’d no data on it, and I couldn’t identify the chassis, but checks in the power supply revealed a blown fuse, a short-circuit BUZ90A MOSFET, designated T602, and a similarly shorted TDA4605-2 chopper control chip. I fitted replacements, then checked for any other shorts. Not finding any, I switched the set on. The fuse blew at once. Further investigation revealed that the degaussing posistor was virtually short-circuit when cold. Once I’d replaced this item the set worked normally. The picture was OK, and the sound particularly good.

## Progress

As I was boxing the set up Steven mentioned that he’d found the cause of the trouble with the Awai hi-fi unit. There had been an open-circuit fusible link, PR001, in the supply to the display. It worked correctly when this had been replaced.

Then George the postman came in with our mail. “Nothing too worryin’” he commented, “a packet from SEME, your water rates, a letter from the telephone people, a few bills and a nice let-

ter with a lady’s handwriting. Smells nice and scenty . . .”

By the time he had gone on his way Paul had got Gaffer Unwin’s Matsui back in working order. The cause of the dead-set symptom was similar to that with the Lecron. The 1.6A fuse Si60001 had blown, the IRFPC50 chopper MOSFET T60006 was short-circuit, also the TDA4605-3 control chip. In addition resistor R60001 had risen in value from 270kΩ to over 550kΩ.

Once these items had been replaced he investigated the EW fault. There was a short-circuit modulator diode, D53072, and the 4.7Ω safety feed resistor R55006 was open-circuit. After fitting replacements he’d tested the set. To his relief it crackled to life and produced excellent results.

## The interview

Scoop, who was getting impatient and was a bit confused about what was going on, gnawed at his pencil and darted his eyes about. He decided to settle on the Reverend.

“Paul” he said, “was there ITV when . . .”

“That’s Paul there” the Reverend said.

Scoop turned on his feet and saw Greeneyes. “Er, Mrs Catmore . . .” he began. Greeneyes sighed loudly and left the room.

At that Steven decided to intervene. “Look Scoop” he said as he pointed to everyone in turn, “this is Paul, I’m Steven, the gentlemen with the white collars are the Reverend Goode and his curate, George the postman brought the letters, and Moggie Morgan, Gaffer Unwin and Roger Dodgeworth brought their sets in for attention. And this is my father Donald, who you came to see. Mrs Catmore left with her little ones after buying a battery, and you’re Scoop Spinner of the *Western Gazette*.”

“Oh right, Donald” Scoop replied, “tell you what. Things can be a bit hectic here, can’t they? I’ll go back to the office and we’ll finish the interview on the phone, if that’s OK.” ■



# WHAT a LIFE!

**The True Story of a Goblin carpet shampooing machine, and a collection of TV faults. Donald Bullock's servicing commentary**

**H**ello Boys and Girls! Are you all sitting comfortably? Then we'll begin! Today we are going to start with a Story! And it's a True Story! About a little boy called Donny who delighted in making people Happy!

## The Goblin story

Now Donny spent a lot of time in Spain with his Very Best Friend, a pretty and vivacious little girl with Bright Green Eyes who loves doggies, chocolates, doggies, children, doggies, Spanish meals and doggies. She loved to play with her doggies on the nice marble floor of the villa where they lived.

But when the Cruel Winter came the nice marble floor became Very, Very Cold. Greeneyes cried some big, clear Tears and complained that it was not fair to her doggies.

This annoyed Kind and Thoughtful Donny, who slyly kicked the doggies but bought her a Nice Big Carpet to sit on while she fed them lots and lots of smelly bones and dishes of meat.

Donny didn't like Greeneyes' doggies much. In fact he didn't like them at all. But he did like to sit near her because she kept pouring him lots of little glasses of what he did like. While she had her back turned he would slyly jab his foot at Flashy, her Very Favourite Doggy. Whenever Donny caught Flashy in a sensitive spot, Flashy would leap up and fly out of the door, yelping his head off. Greeneyes would call him back and tell him he was being a silly boy, and that Donny wasn't like that at all.

One day Donny noticed that his pretty friend Greeneyes was crying again, and asked her why?

"Because my Lovely Doggies have accidentally played on the carpet So Much that it needs to be cleaned" she sobbed, "and I haven't got a Carpet Cleaning Machine."

Now Donny, always kind, didn't like to see his Greeneyes friend Upset. So he saved up all his beer-bottle pennies and drove to England to buy a big Goblin Shampooing Machine to take back to her in Spain.

This made her Very Happy, and in no time at all she had the carpet as Clean and as Fresh as New!

When Greeneyes had used her nice Goblin carpet-cleaning machine a few times, what do you think happened? It broke down!

Donny, kind as ever, took a look at it. He saw that the little plastic tube that projects from the cleaner's dome for the clean soapy water pipe to slip on to had broken at the elbow, because of a Big Big Bubble in the casing.

## Repair

Now Donny knew how to mend such things and, while Greeneyes sat sobbing on her carpet, he telephoned Morphy Richards who make the clever Goblin machine.

"Morphy Richards Customer care!" sang the Friendly Lady who answered the phone. Donny felt that he was in Very Good Hands.

He told her about the faulty Goblin machine, said he was in the trade and that if she could arrange to send him the little spare part he could easily mend the machine himself.

But the Friendly Lady said she couldn't, because Morphy Richards didn't trust anyone in the Whole Wide World to mend their machines. He would have

to take it back to the shop where he bought it, for sending to them.

"But the machine is in Spain, with me!" cried Donny.

"Then your guarantee is invalid" sang the Friendly Lady, "and we can't help you."

"I'm happy to pay for the spare part" persisted Donny.

"We can't supply it" she said, "not to anyone. You must send the whole machine to us, and we will charge you."

"But it's too heavy and bulky" Donny said, "I could fit the spare part in a minute if you'd send it to me."

But the Friendly Lady said "No. Why not make a spare part and mend it yourself?"

"Will you email me some dismantling instructions?" Donny asked.

"Certainly Not" said the Friendly Lady.

So Donny took the Clever Goblin Shampooer to his little workshop and turned it round and round to see how to open it. At last he flexed off two thin plastic wings that clipped the pretty blue cover to the dome, and undid a self-tapping screw under each one. Then he lifted the dome and the Clever Goblin Shampooer rolled on its wheels on to the marble floor and broke into lots of eggshell pieces!

Donny wondered how a company like Morphy Richards could have arranged for such a Very Heavy machine to hang by only two self-tapping screws to the shell that includes its carrying handle.

When he tackled the Friendly Lady again, she told him that because the machine wasn't guaranteed there was nothing to be done.

And now, Question Time. We

have Two Questions for you to answer.

First, would any of you buy a Clever Goblin Shampooer after reading this tale?

Secondly, where can Donny buy a Proper and Sturdy carpet-shampooing machine?!

### **A Sanyo 21BN1**

Meanwhile back at the shop Charlie Rowe had bounced in, under the weight of a 21in. Sanyo set, Model 21BN1 (EB4-A21 chassis).

"And when you've done this one, boys, there's a big Goodmans in the boot. Belongs to my neighbour Ducky Gribble!"

Charlie's a live wire with a rich supply of yarns, some of which get less believable as he spins them.

"The Sanyo first" Steven said, "what's up with it?"

"He comes out of standby but he don't start up" Charlie replied. "Gives me missus the ab-dabs, but never mind 'er. By the way, did I ever tell you about my neighbour Ducky Gribble? He was certainly a boy."

But Steven wasn't paying attention as he opened the set up. A couple of 120kW resistors in the power supply in this chassis, R620 and R621, give trouble. They were both OK however. Some further tests showed that the HT rose momentarily at the switch on, then quickly decayed.

Charlie was eager to continue with his spinning. "Yeah, Ducker liked his drink, but never had any money" he said, "yet he managed to stay half cut."

I looked at him. "How?" I asked.

"Well, take the other lunch time" Charlie continued, "he sauntered to the Spread Eagle at opening time and saw three old-timers waiting in the shade for Tom to open up. When he did, Ducker gave 'em time to go inside and order some drinks. Then he bawled out 'get yer cloths back on, yer brazen hussy!' After that he went in the back door and scoffed the drinks while the landlord and the old-timers were a running around outside looking for a woman as wasn't there!"

"Is that true now?" I asked. "Absolutely true it is" said Charlie.

Sensibly, Steven had been concentrating on the Sanyo set. He had found that the line oscillator struck up then closed down. This was a protection mechanism. The cause of the trouble was failure of the LA7832 field output chip IC501. Once it had been replaced the set worked normally.

"Now who's a bringing the Goodmans outa my boot?" asked Charlie.

Paul and I went off to get it.

"Then there was the bowling for the pig at the Church Fete" Charlie resumed, "who do you reckon slipped the pig into the beer tent and scattered all the drinkers? And he got the Reverend Goode to run him home afterwards, on account of being a bit unsteady like."

### **The Goodmans set**

The Goodmans set turned out to be a widescreen Model W282NS (F19 chassis). It was dead, but there was a clue that helped. Once the back had been removed there was a smell of smoke. D25 (BA157) had gone up because the line output transistor TR16 was short-circuit. When Steven tried the set after fitting replacements he found that there was picture breathing and EW bowing. The cause was a 400V capacitor, C69, whose value depends on tube size.

It wasn't too difficult to get Charlie on his way once his two sets had been done, though we had to listen to yet another improbable yarn.

### **A monster Hitachi**

Later Ribby Ellis, another right nuisance, called in with a 28in. Hitachi set, Model C2867TN. It worked, but there was no remote-control operation and the product code C46TN was permanently present on the screen.

"Ribby" I said, "we're feeling a bit worn out this afternoon. Had Charlie Rowe in for the best part of a couple of hours. So none of your practical jokes, eh?"

Ribby grinned, pursed his lips and gave me a thumbs up sign.

"But I'll tell you about a chap I met the other day" he said, "name of Turpin, Dick Turpin actually."

I gave him a pained look, and Steven took on the Hitachi set. "Would you look out a TMP47C1637N-RA01 micro-controller chip if we have one" he asked me, "it's in circuit position IC001 and I don't like the look of it. Could well be the cause of the faults."

I managed to find one while Ribby stood there smiling to himself. Better be sociable I thought. "What's your trouble then Ribby?" I asked.

"Well I went for a spin in a stagecoach the other day" he began.

"And that's when you met this Dick Turpin fella I suppose" I broke in.

He nodded. "There were several of us. Suddenly we heard shots and Dick Turpin was there, spinning his gun on his second finger."

"As they do" I said understandingly. I noticed that Steven had managed to fit the microcontroller chip and had reset the EEPROM. This had removed the product code, but there was still no remote-control operation.

"Then Dick Turpin looked us all over" Ribby continued "and said 'Right! I'm going to rob all the ladies and pester all the men!' At that a fat lady next to me started to laugh. 'No, no' she said, 'you mean rob all the men and pester all the ladies!'"

"At this a thin little chap in the corner jumped up, folded his arms and stamped his foot. 'Mr Turpin knows what he means' he said."

I looked at Ribby, who was laughing to himself. "Enough, Ribby, I think - Steven seems to have finished the job with your set."

There had been dry-joints at regulators IC951 and IC952, a not uncommon condition in this chassis. Once they had been attended to remote-control operation was restored and there were no further problems.

We managed to get rid of Ribby pretty promptly after that!



# WHAT a LIFE!

**Feedback from readers and a miscellany of TV and video faults.  
Donald Bullock's monthly commentary**

**"M**y wordprocessor was playing up last night" I said to Steven, "so I'll have to do my article in the workshop. Do you think you could try to keep the customers away until I've finished it?"

"I'll do my best" he replied, "but it would be easier if they couldn't see you sitting at the desk at the back of the counter."

"I've no choice" I said, "that's where the machine is!"

So I settled down and began by looking through my mailbag. Quite a large one this month.

## **A Thomson 426**

"Hello Mr Bullwork!" screeched a voice. It sounded like a saw on a sheet of tin. "Just the chap! Have a look at Old Pukey's telly will you? He's my lodger. Remember 'im? Bit of a prat. He plugged 'im in wrong."

I put my letters down. "Plugged him, er, it in wrong? I said, "what do you mean?"

"Well, 'e plugged the mains into this little hole with '12V DC' wrote by it."

"Can I help?" intruded Steven, taking the set. "Give us until later this afternoon, will you?"

The set was a 10in. portable, Thomson Model 426. Steven began to open it up and reached for his meter. I picked up my letters again.

"Hm" he said a few minutes later, "two transistors, TD15 and TD20, have blown their tops. They're both W6 One 10s. And FD01 has blown too. That's the sugar fuse of course."

I stopped, put down my letters and looked at him. "W6 One 10s?" I said, "an odd number for a transistor. And whatever are you talking about, sugar fuses?"

"Don't you know them?" he asked, as though I was a slip of a lad. "They are very small, yellow and highly rated. This one's a 15A fuse."

"Well, I must get on" I replied,

picking up my letters. Steven soon had the set working merrily.

## **Carpet cleaners and local commercial radio stations**

The first two email printouts were from Martin McCluskey, who hails from Co. Durham. One referred to my trouble with a Goblin carpet cleaner. He recommends the Numatic George, from Machine Mart, as being very well made. "What's more they sell the spares" he adds, "not that we've ever needed any."

In his second email Martin comments on local commercial radio stations, saying that they are ruined by phone-ins, competitions and the childish jabbering of the presenters. "Even the BBC station plays music over the news bulletins" he adds.

"But," he continues, "while travelling through the Midlands I found a station called Saga FM, with tasteful music, well spoken English and no pulsing rhythms that drown the news. They have stations in other areas as well." Further details can be obtained from the website 'Saga.co.uk'.

## **Mr Fussie**

Steve Cook, from the Isle of Wight, keeps a few old TV sets for nostalgic reasons. He also has a huge collection of test-card music dating from the Sixties to the Nineties. I wonder whether he has the strict-tempo piece called, if I remember correctly, Sylvia? It was played in the late Fifties or early Sixties by what I assumed to be a trio or quartet. I haven't heard it for fifty years but am sure that if I did it would take me back again to that sunny and dusty workshop over the furniture store!

Steve recalls his days working for a Cirencester dealer called Ettles and Bumford. They had a customer whom we'll call Mr Fussie. He owned a massive 25in. Deccacolour console set complete with doors and, being a perfec-

tionist, had talked the BBC into supplying him with a colour slide of Test Card F. He used this frequently and religiously to compare with his set's test-card picture. "If the picture geometry drifted even slightly" writes Steve, "he would have us along to adjust it as per the slide."

"One day we had to have his set in. That evening we rested it on the workshop floor with its back off. Our shop manager, checking the workshop before he left, managed to catch the tube's neck with his backside as he leant over something else. The following day he came to us a bit sheepishly to confess. 'I accidentally gave that big set a slight tap last night' he said, 'and it went pshsssssh. I hope I didn't damage anything'."

"It took us a week or more to get and fit a replacement tube, and no fewer than four men to carry the set from the van to Mr Fussie's lounge. When it came to switching on, he hovered about squinting at his test-card slide. We were worried in case the set's test card failed to match the slide!"

## **John Berryman's Hitachi**

Our next visitor was John Berryman, who strode in with a 25in. Hitachi set. He's a big chap, and is also the undertaker from a local village. He is always looking for extra trade. After putting the set on the counter he looked over at me.

"Hello there Don" he called over, "how are you keeping?"

"Very well, John" I replied. "Just had a thorough check up, and was pronounced very fit indeed. You'll just have to wait."

His set was an Hitachi C2519T. "What's up with it?" asked Paul.

"Aw, he's terrible. Soon be ready for the long box, I reckon. You plug him in and see."

Paul did. The picture had shifted to the right by a third,

was in black-and-white and rolling, and there was little line sync – also no sound.

He took the back off and settled down to find out why. The TDA2579A timebase generator chip IC501 seemed to be a logical place to start. Scope checks at its pins revealed incorrect waveforms. Freezing the IC made no difference, but heating it did. Sync was restored, and all the troubles were cured. A replacement put the set to rights.

### Service info

I turned back to my letters. Allan Haskins had written to say that he was having difficulty getting a service sheet for a Philips K40 TV set with two scart sockets at the back. Personally I'd run a mile if someone confronted me with such a set. I reckon Allan should consult the Fryerns advertisement in the back pages of the magazine. I've used the company's services on a number of occasions, and can vouch for its speed and the quality of the service information provided. The phone no. is 01206 211 570.

### An Amstrad CTV3128

"I say!" bawled a tweedy-looking chap who had just bounded in, "which of you chaps is going to help me in with my TV set, eh?"

Paul strode forward, and the two subsequently struggled back with a 28in. Amstrad CTV3128. They heaved it on to the bench.

"What's wrong with it?" asked Paul.

"Dunno" breezed Tweedy, "if I did I'd mend the blighter myself!" At that he slapped his thigh, stamped his foot and doubled up over his great joke.

We waited patiently. When he had settled down, Paul asked him what the symptoms were.

"The picture's like this" said Tweedy, waving his arms in the air in big curves.

Paul rubbed his chin. "Picture's like an hour-glass?" he asked.

"Got it in one!" Tweedy bawled. "Now mend it and I'll be back!" At that he stomped off.

Paul reached for his tools and got to work. It didn't take him long to find the cause of the trouble. In fact we've had EW bowing

before with this model. The cause has always been the two 2kV ceramic capacitors C599 and C592 in the line output stage. C599 had cracked open, and C592 had a nasty bulge in its side. It read all right when checked with a capacitance meter, but both capacitors have to be replaced for correct operation. Once this had been done the set's geometry was OK.

### Horace Price and his Philips VCR

Our next caller, Horace Price, looked the picture of misery as put a Philips VCR on the counter.

"Ello Mr. Bullock" he said flatly, "don't feel so good today."

"What's up?" I asked.

"Think I've got the flu coming on, I've got a raging toothache and I got the screws in me arms" he replied.

"Didn't your missus leave you a while back to settle with that tall, thin man from Snoddies?" I said.

"Yeah, but 'er's come back. Reckons he's screwy. Tried to get her to go back, but 'er won't."

"Too bad" I sympathised, "what's up with the recorder?"

It turned out to be a VR6761, and was dead.

Paul knows these things inside out, and made straight for the thermal cut-out in the power supply. Once he'd fitted a replacement the VCR worked.

### Remote extenders

I turned to my letters again. Back in the May issue I mentioned my need for a remote extender to operate my Technics audio system in an adjacent room. I've received a great many emails about this, and will reply to each.

Jack Paterson recommends the Multi Link kit from Maplins, Model BV28F, at £40. You can get an extra infra-red eye. Bill Leonard of SEME mentions the One For All at £29.50 and made me a special offer. Mike McNeill of Global Communications, Essex told me about the one his firm supplies, the TV Link Plus.

Richard Schroder was one of several who wrote to recommend the Powermid. "I've used a pair of these for years" he writes, "and can thoroughly recommend them."

The choice is overwhelming!

In this connection I suppose I ought to mention my son James, who is a computer wizard. He did a search of the internet and came up with the website [www.satcure.co.uk](http://www.satcure.co.uk), which he describes as being quite astonishing in its scope.

Incidentally I welcome emails from readers – you can contact me at [donald@wheatleypress.com](mailto:donald@wheatleypress.com)

### Ristic

Finally this month, a sad note. Those who have never heard of John R.T. Davies, who died recently, are almost certainly unknowing beneficiaries of his skills if they listen to the radio. An enthusiastic and highly-skilled sound engineer, he was frequently called upon by most of the major record companies to re-master their old or imperfect records for dubbing to LPs or CDs. He also specialised in reassembling and re-mastering 78s that had been broken into pieces, using a variety of devices he had invented. Just tapping his name into Google will gain access to his website, which his wife Sue is continuing "for a few weeks".

A keen classic jazz enthusiast, he played no fewer than fourteen instruments. He was a founder member of the Temperance Seven, which actually had nine members (one over the eight!). He played with many other groups over the years, including the Crane River Jazz Band and the Cy Laurie and Acker Bilk bands.

Ristic, as he was affectionately known, re-mastered many of the early Bing Crosby 78s on the Jonzo CD series produced by a friend of his and mine, John McNicholas, so that those who were familiar with the original 78s heard them as never before.

He had worked through the classic recordings of King Oliver, Jelly Roll Morton and Louis Armstrong, and produced an eight CD set of all the known recordings of Bessie Smith. When he died he was working on a complete re-mastering of his large collection of Bix Beiderbecke records. He made a huge contribution to interest in the music of the Twenties and Thirties.

I for one will sadly miss Ristic. ■



# WHAT a LIFE!

## Some fishermen call in – with TV sets. More TV faults than a return to Spain. Donald Bullock's servicing commentary

It's nice to see old fishing friends again, especially when they come in bearing gifts. Or, the next best thing, TV sets with nice easy faults. So it was when Walter and Toby called in and met at the shop the other day.

After they'd exchanged greetings I booked their sets in. Walter's was a 21in. Matsui, Model 2107R, while Toby's was a 28in. widescreen Hitachi, Model C28W511NA (A7 chassis). It wasn't long before they started swapping yarns, while Paul and Steven tackled their sets.

"I did go up to the old Brickpits the other day" said Walter, "and caught a whackin' good tench under the Old Man's Willow. Turned the scale at over nine pound, 'e did."

Toby's eyes narrowed. It was a minute before he spoke. "I chucked my line in at the same spot las' Sunday" he said, "an' straightaway I caught an old lantern."

Walter nodded wisely. "Ah, the gypsies do throw their rubbish in there at times" he replied.

"Ah yes, but this lantern's wick was alight" Toby added.

Walter paused. "Now don't thee get taking the Mickey out of I, Toby" he continued.

Toby shuffled on his feet a bit. "Tell you what I'll do" he said, "thee knock six pounds off your tench, and I'll blow me lantern's light out."

### The sets

By that time Steven had the back off the Matsui, which was dead with no standby light. Paul was having more difficulty with the Hitachi set – it wouldn't fail. Then the speaker crackled and the set cut out. "I bet it's the usual dry-joint trouble with the regulators" he commented as he made for the power supply. He was right about the dry-joints, which had caused start-up problems. The cause of the crackle on sound however was complete lack of solder at one end of R4005 (47Ω, 0.25W), which is in the left channel feedback circuit. It had left the factory in that state.

The cause of the trouble in the Matsui set was R529 (1MΩ) in the start-up circuit. When I glanced at the meter movement it didn't move.

The resistor was wide open.

In no time the two sets were working and boxed up. Their owners paid up with a grin before making to carry out their sets.

"'Ere Walter, d'you ever fish Twyford's pond these days?" asked Toby.

"Not no more" said Walter, "it'd flow too fast."

"Flow too fast? What do you mean?" exclaimed Toby, "ponds don't flow."

"This 'un did" Walter replied, "last time I chucked my line in it tore the rod outa my 'ands. And left me with a strained back."

### Hairdryers

As they went off Mrs Bellwick stumped in with a modern hairdryer. "Gotta be quick" she said, "my old man's in bed wiv his bad chest. He've had the ammonia for years."

"This hairdryer looks new!" Steven exclaimed.

"'E be that" Mrs Bellwick replied, "I bought 'im last Thursday week from Snoddies. 'E lasted a week an' when I took 'im back that tall thin chap said to take 'm to you as they don't mend 'airdryers."

Off she bowled, and Steven soon found that the mains lead was loosely connected. It didn't take him long to get it working, but I'd never heard such a clatter and yelled out.

"They all make this noise nowadays" Steven said.

"Can't think why, or how they make 'em do it" I commented. "Fifty years ago I used to get lots of Morphy-Richards hairdryers in. Always dead, because of a huge paper capacitor that was housed in the handle. Went short-circuit. Good money-spinners they were. And silent running. Just a small motor and an element. How do they make the present ones kick up such a horrible clatter?"

### A Seg

Before he could answer Walter Wingnut came in. He's a widower and ex-fishmonger, and has the most musical Welsh accent and the highest-pitched voice I've ever come across.

"'Ello Mr Bullock bach" he piped, "Walter the Fish 'ere. I'm calling for my neighbour, Mrs Digby."

"Well, she ain't here, Walt" I replied.

Walter collapsed in peals of supersonic laughter, then recovered and went out to get his neighbour's set from his car.

"Funny name, ennit?" he piped, "a Seg."

We'd had several of these sets in however, Model CT7800. It uses the Vestel 11AK19E3 chassis. When Paul plugged it in he found that it was stuck in standby. So he took the back off to check the BU2508AF line output transistor Q605.

"Boy, look at all those dry-joints in the line circuit!" he exclaimed.

He resoldered them carefully then, as expected, found that the transistor was short-circuit. After fitting a replacement Paul tried again, but the set was still stuck in standby. Further checks showed that there was no 8V supply, because the regulator IC805 was dead short. There had to be a reason, so Paul got busy with his meter. A few minutes later he found that pin 37 of the TDA8843 jungle chip IC401 was shorted to chassis. After fitting a replacement and a new regulator the set worked perfectly.

"Oh thank you Paul" piped Walter the Fish, "Gladys, er Mrs Rigby, will be pleased. I tries me best and I reckon 'er fancies me..."

### An 11AK37 Bush

"Hello there boys" said a solid and deafening voice. We span round – and saw Mr Sparrow. He's a tiny, slight fellow, but has this powerful voice.

"My misfortune is your good fortune" he continued. "I've got my telly in the car here. Went wonky last night. You should have heard the missus kicking up! Told her 'to shut up or get out'."

"Which did she pick?" I asked.

"Well, 'er shut and went. Not seen 'er since."

The set turned out to be a Bush Model WS6673SIL, which is fitted with the 11AK37 chassis. When we

plugged it in there was excessive width and severe EW distortion.

Steven went to the components rack and took out a capacitor, then unboxed the set and checked C622 (15nF, 630V). It's the earthy side capacitor in the EW diode modulator network, and was short-circuit. He replaced it with the one he'd taken from the rack.

"You, er, suspected that capacitor, didn't you?" I asked.

He nodded and smiled, then tried the set. His smile faded. The picture was the same. So he got to work with the meter and soon found a dry-joint a few inches away. It was effectively causing the same trouble. He soon had the set put to rights.

"Thanks for a good and quick job, old son." Sparrow's voice again filled the shop. "Now if the missus do come back, 'er might pay attention to it and not carry on!"

## All by myself

"Paul and I have to go out and fit an aerial this afternoon" Steven said as our dinner hour approached, "but I don't suppose we'll be away long."

So I would be on my own-ee-oh at the start of the afternoon. This was a pity, because I had no moral support to help me deal with Mrs Hargreaves-Smith when she arrived – just as I opened the doors.

"Ah, Mr Bullock!" she gushed as she entered, "ai've got mai television set in mai cah. Can you bring it in foe me? You're so kaind Mr Bullock."

Her set was a Goodmans 256NS. It was nearly the size of her car.

"It daid on me last naight" she breathed, "they can be such exasperating things, cah'n't they? And, ouh, the proggrammes!"

"I'll give you a ring" I said, pulling my face into a polite smile and willing her to depart.

But she lingered and smiled more, as if we had a secret. Then, tweaking her fingers into her handbag, she handed me a gold ring minus its diamond and a tiny packet with the diamond inside. "When you do mai set, would you repair the ring?" she asked, "ounly you're so clever, Mr Bullock."

Then, holding my eyes with hers, she backed out.

The set is fitted with the Philips L6.2 chassis. We get quite a lot of them. It was dead, so I fitted the power supply repair kit. I also checked the line output stage and replaced the BU1508AX output transistor Tr7906. Then I switched on, smiled happily when a picture appeared, and glowered when, five seconds later, it collapsed and the set died. I glowered even

more when I discovered that my nice new line output transistor had snuffed it.

Further checks in the line output stage revealed that C2912 (2.2nF, 2kV) was open-circuit. So I fitted a new one, replaced the transistor, and smiled when the picture came up. I glowered afresh when it collapsed again. I was beginning to hate Mrs Hargreaves-Smith.

I fitted yet another line output transistor, was pleased to find that the 2.2nF capacitor was all right, and checked around for further component failure. This brought me to L5420, a 15µH coil, which was open-circuit. We didn't have such a thing. But, after studying it, I was able to carry out a repair. This time, when I tried the set again, it worked properly.

After boxing the set up I had a look at the diamond ring and decided to glue the stone back in with epoxy resin. Then I phoned Mrs Hargreaves-Smith and invited her to call round to collect.

She came not long after, complete with smile. I wedged the set into her car, then handed her the repaired ring.

She glowed with happiness until her mouth began to twitch, then slipped it on to her finger. After that she plucked a small cloth parcel from her handbag.

"I knew you'd manage to repair the ring, you clever man!" she said. "And ai've brought you some more little repair jobs!"

She then undid her little parcel, revealing a dozen more items of broken jewellery.

"Er, we don't usually repair jewellery, Mrs Hargreaves-Smith" I stammered.

"Ai know you doun't, Mr Bullock" she gushed. "And that's why I appreciate your mending main so cheerfully." Then she backed out, again holding my eyes with hers to acknowledge our little secret...

## The return

Most UK settlers in Spain will tell you that this is no time of the year to be there. The endless heat is too wearing. Those who can head back to the UK for the moderate summer weather. So it beats me why we found ourselves landing at Alicante airport the other day, to a heatwave that even the Spanish papers were alarmed about.

We were soon in one of our favourite bars. While I was ordering a couple of beers and trying to see the news on a bawling TV set with no field sync, Greeneyes idly thumbed through that day's Spanish paper.

"Ho" she said as I was opening last month's *Television* magazine, which I'd snatched up as we were leaving Paul's

house. "This paper devotes its front page and two inside pages to the heatwave. Hospitals and the public services have apparently been alerted to expect a stream of casualties. It says that those most vulnerable are old folks, the overweight, and alcoholics. So you're in danger on all counts. You'd better call for a Joshua Juice."

"Never mind the funnies" I said, "most people who see us about together reckon that I'm your toy boy."

Then the barman came across with our drinks.

"Hace calor (it's hot)!" I said in my best Spanish.

"Yeah, and it's going to get hotter" he replied in perfect English.

I looked him up and down as he sauntered off. "Pumped-up sod" I muttered.

Looking through the magazine, I came to Michael Maurice's article on field servicing. He seems to get away with it, but I found that customers don't like paying for repairs that take only a short time to carry out. I would always get the same response when I presented the bill.

"But you were in the house for only a couple of minutes!"

And "how much is that little part then?"

Then I spotted Charles Coultas's letter "is Sky worth it?"

"I wouldn't waste time on it if it was free" I blurted.

Greeneyes put down her paper and looked at me. "What?" she asked, then "is the heat getting to you?"

I next saw A. Lloyd's letter about spares and service information availability. It reminded me of my troubles with Goblin. "Swines!" I said.

Greeneyes again put down her paper, and gave me another look.

I hurried on to Peter Nutkins's trade comments about, amongst other things, our diminished profits these days. He's dead right. Everything we sell is too low priced.

When colour first came we bought a new Commer Cob van. At the same time I bought myself a Philips G6 colour set. It cost the same as the van. Had the price of colour sets kept pace with that of vehicles (and almost everything else), they would now sell for a fortune. Not only would the sales mark-up be sensible, we'd also be able to charge properly for repairs. It's a sad fact that the more complex domestic electronic equipment becomes, the less we can charge to repair it.

Finally, as mentioned on previous occasions, I welcome your comments, particularly by email. You can reach me at [donald@wheatleypress.com](mailto:donald@wheatleypress.com) ■

# WHAT a LIFE!

**The ever-changing world of radio. Reader feedback and some reminiscences. A printer headache. Donald Bullock's monthly commentary**



It seems, according to the papers, that the days of our old faithful the transistor radio are numbered. Switch-off time could be approaching for the UK's analogue radio transmitters. The newer generation is receiving its programmes digitally, via their mobile phones. And, as everyone knows, only the young folk count these days. Funny, but those of my generation didn't get an innings at all: when I was young you didn't count until you reached twenty one, and even then you continued to be corrected and soberly advised by older folk.

A new generation of digital receivers is apparently about to hit us. They'll incorporate something called The Bug, a gadget designed by Wayne Hemingway. It manages to rewind programmes, so that those who switch on after the programme has started can wind it back to the beginning. All this and more says Chris Kimber, head of a BBC department called Radio Interactive. "Only ten years ago" chortles Chris, "radio was a one-way experience. But digital technology has now given it ears that provide programme makers with instant feedback. No need to wait for old-fashioned letters. There'll be chat rooms, message boards, text messaging and email. Our programmes will really connect with people, in a way that only ten years ago was impossible. And it's happening in Britain faster than anywhere else!"

Later this year, we are told, suitable radios will be available in supermarkets for £50. Not from across your counters, dear dealers. But why stop at fifty pounds? Why not five? Or five pence? And guaranteed for ever? Just give them time.

There's more breathtaking news. These wizard new wireless sets, er radios, will enable any tardy fellow to listen to programmes that went out a week earlier. Even now, seven million

people a month use this facility, mainly to listen to *The Archers*. It's all too magical for me. I'm so excited I could eat three steaks washed down with four glasses of Joshua Juice.

## The fives ages

As part of an inquest on radio as we knew it, social historians are drawing up the Five Ages of Radio. These are as follows.

First the spark. Guglielmo Marconi invented his spark transmitter and the first aerial ever in December 1894, in Italy. He patented it in Britain on 2 June 1896. In 1897, when he was 23, he formed The Wireless Telegraph and Signal Company.

Secondly AM broadcasting. Reginald Fessenden discovered amplitude modulation and, in 1906, became the first person to broadcast words and music, using a special HF alternator to generate an 80kHz carrier. Ships' operators were amazed to hear him over their headphones, playing his violin and reading from the Bible.

Thirdly the short waves. Frank Conrad, an amateur radio enthusiast with the call-sign 8XK, invented short-wave wireless and made the first commercial broadcast from his garage in Pittsburgh, Pennsylvania in 1920. He called his programmes 'Air Concerts'. The transmitter he built for Westinghouse later that year was given the call-sign KDKA. It commenced broadcasting on 2 November 1920, giving the results of the presidential election, and is claimed to have been the world's first non-experimental broadcasting station. It ran for fifty years.

Fourthly FM. Frequency-modulation was invented by Edwin Armstrong in 1933. It requires a wider bandwidth, but can carry stereo and has much clearer, static-free sound.

Finally digital radio, which was developed by a consortium of engineers in Germany in the early

1980s. Digital radio was officially adopted in 1994. It provides room for expansion through more efficient use of the crowded FM spectrum, with interference-free, crystal-clear listening.

So there you have it. The five ages. As my decent old science master Mr Forsey would say, "now write that down". What he'd say about the dawning radio fiasco in this country however I can't imagine.

## Prices

Alan Boyle, an old friend of this column, tells me that his local Kwik-Save branch is now selling brown goods, including an Alba CD-tape-radio at £14.99 with a twelve-month money-back guarantee. In comparison Greeneyes must have been done the other day when she called into our local Lidl store in Spain and paid 17 euros for a personal voice memo recorder. It's of German manufacture, is solidly built and performs well.

Incidentally how many of you have noticed that some of the more expensive, better-quality power tools can now be bought at a fraction of the price under alternative brand names? For anyone who is not too conversant with the originals, the returns address on the guarantee form helps with identification.

## Worldwide fame

Television certainly gets about. I receive letters from all over the world, in particular from Australia and New Zealand, many from dealers or repairmen who swear that the oddballs amongst our customers regularly call on them too! A few readers in Spain have sought me out, and the other day I had a delightful and amusing letter from Diana Harthan who lives, with her TV engineer husband, in Portugal. She tells me she's his Greeneyes!

"My technical knowledge is so

small that it would fit into a thimble and still leave plenty of room” she commented, before telling me about their oddball experiences. That thimble remark reminded me of a very formidable lady I knew years ago. She ran the lithographic department of a well-known book publisher. Some of the men she had to deal with seemed to think that, because she was a woman, her abilities were doubtful. She had a shock comment for such occasions. “You can talk to me in as much detail as you like, young man” she would say, “what I don’t know about lithographic printing can be written on the side of a blackcurrant.” That put them in their place.

## Wally

I was also reminded about Wally, who worked for me half a lifetime ago. He was one of the most capable men I ever knew, a learned man with a fearful intelligence: an excellent TV engineer and a superb general handyman.

Because he was very thin his clothes hung on him, giving an odd impression. But he was healthy, and tended to move around a lot as he spoke. One day he was called down to the shop to see a complaining oaf of a customer (no, they’re not always right!). As he was patiently explaining the situation, the oaf threw back his head and called him a fool.

“Oh, I know that” said Wally, without the slightest pause, “a complete fool in fact. How could I fail to know it? After all, people like you have been telling me I’m a fool for years!”

That poleaxed the customer. Wally thanked him for his diagnosis and graciously took his leave.

Later I went to sympathise with him. “We all suffer the same” I said, “all my friends agree that I’m a good TV engineer and a good writer.”

“Really?” Wally replied.

“Yes” I continued, “but my writer friends say I’m a good TV engineer while my engineer friends say I’m a good writer!”

Wally’s wife’s birthday was about to come up at the time. It was typical of Wally that instead of buying her a present off the shelf he decided to make her an oak,

quilt-lined needlework cabinet. It was in the early days of small, private DIY shops. I was about to pay an outside call and would be passing a good one, so Wally asked me to pop in and buy him a small sheet of wood.

“The proprietor is helpful but quaint” Wally said, “he sells oak and elm in small sheets. Just ask him for a sheet of elm.”

“OK” I said as I walked towards the van. Then I stopped and turned round. “Elm?” I questioned, “I thought you said you wanted oak!”

“I do” said Wally, “but if you go in and ask for oak he’ll say ‘why not have a piece of elm instead?’ So ask him for a piece of elm and, when he suggests oak instead, say ‘what a good idea’. He’ll feel good that you took his advice, you’ll get what you went in for, and it will all be fine.”

I did, and it happened just as he said!

## Another headache

My Epsom Color 680 printer has been driving me mad. It seems to have brain trouble. Before I settle down to write an article I like to run through my emails and print those I want to refer to. But when I try, the printer won’t play ball. Sometimes it does nothing but blink at me. Sometimes it jumps into life and zips and zaps endlessly with no results. On other occasions it prints me yards of budget airline tickets for flights that left years ago.

Son John had an identical printer. The other day he threw it out and bought one of another make. Steven also had one. He put up with it for a week or two then dumped his one. They’ve proved to be a headache for all of us. At one time it was worse, when we had no choice but to buy their own ink cartridges at unbelievable prices.

So, Epsom, if you want to stay in business try making a simpler printer that isn’t a smart-alec spoilt brat. One that ordinary people can work easily. One that doesn’t endlessly gobble up ludicrously tiny thimbles of ink. One whose mechanism doesn’t keep zipping and zapping about but instantly prints what the user wants printed. And make it sensibly box-shaped. You’ll make a fortune!

## Remote control

Doug Carson has written again, this time about a TV service call he had from an 82-year old chap who lives at a remote farm in the Coniston area. His caller explained that he had suffered a slight stroke and could no longer operate the remote control he had been using to switch the set on and off and change channels.

“When I got there” says Doug, “I found that the ‘remote control’ was in fact an eight-foot long bamboo cane that he used to press the on-off and programme-selection buttons on his ancient Decca set – one fitted with the hybrid 80 chassis. The set still produced excellent pictures however.”

“I sold him a nice reconditioned Mitsubishi set with a more conventional remote-control system” Doug concludes.

## A phone call

The phone rang while I was reading Doug’s letter in the workshop. The caller sounded out of breath, but I felt I somehow recognised the voice.

“I got telly trouble, Mr Bullock” he rasped.

“Good!” I said, in my happiest and most assured voice. “What’s it up to?”

“Well, when we watches ITV we gets BBC sound, and the other way round. And the picture keeps rolling slowly from the top left-hand corner to the bottom right-hand corner.”

“Anything else?” I asked.

“Yes, the picture’s sorta diamond-shaped, and everything moves backwards, like a film going the wrong way. By the way, do you do long-distance calls?”

“Where are you?” I asked

“213 Montana Road.”

“Where’s that?” I enquired.

“Mexico” he replied, and burst into laughter.

“I see” I said, “and I daresay the name’s Ellis. Ribby Ellis the practical joker.”

“Dead right!” he guffawed. “Har har har cyuk cyuk . . .”

## Keep it up!

Finally, as mentioned on previous occasions, I welcome your comments – particularly by email. You can reach me at [donald@wheatleypress.com](mailto:donald@wheatleypress.com) ■



# WHAT a LIFE!

**The boys take a late holiday, so it's back to guard the fort. A wet day at the shop brings a mixture of different types of faults and customers. Emails welcome. Donald Bullock's servicing commentary**

**T**he boys had wanted to take a few days' late holiday. So Greeneyes and I were driving towards Alicante airport to return and guard the fort.

"Did you lock the front door?" said Greeneyes. "I hope Rebecca remembers to feed the dogs . . . Hope Flashie won't miss us too much . . . Look at the row of windmill ruins along the top of that mountain ridge. How did they get the grain up there? Did you check the car for oil? And water? I hope Flashie will be all right . . . Why can't we get the BBC on Sky any more? Did you bring some beer for yourself and some juice for me? I wonder what Flashie thinks when we go away?" You know how they go on.

I pondered. "Because the powers that be decided to aim the transmissions well towards the north of Spain" I said. "We could pick up enough of the scant signal if we really wanted to. Dealers are offering to install eight-nine foot dishes for £1,000 or so."

## Travellers

We arrived at the airport a few beers later and took our place in the queue, behind a scruffy, overweight, sunburnt pair of holiday Brits. Hearing us speaking English, they turned round.

"What joo do fer a livin' mate?" beer-gut asked.

"Nothing" I replied.

"He's a very good TV engineer" said Greeneyes, "but he's retired now, really."

His wife studied me as if I was a smear on a slide. "He don't look old enough" she declared. Only then did I realise how very intelligent she was.

Meanwhile beer-gut was also looking me up and down. "Had our set so-say mended before we came over" he said. "Kept 'im a week and charged us thirty quid. Lasted two days. Reported 'im I did."

"You thinks it's the valve, don't you dear?" she said to him. "But our daughter's chap says it's the condenser."

"Can't be the tube, cos 'e's only four year old" he said. "But these telly people says anythin', don't they? What was on when 'e went wrong, Flor?"

## Back at the ranch

We landed in England to a terrible patch of weather, rough and rain-drenched. It was even worse when we reached the shop the following morning. But it didn't stop Greeneyes from going shopping. What would? As she left I saw that there was a 21in. Toshiba set on the bench, with a note from the boys asking me to do it first. It was a Model 2173DB (C7S chassis). "No pix, no function, no on-screen display, no audio" it said on the card.

I dismantled the set and let my eyes dawdle on the power supply, which was under a carpet of bird seed. It seemed a good idea to check the fuses and fusible links. When I did so I found that Z830 (1A) was open-circuit. A replacement restored normal operation, and the results were very good.

I had barely got the set back together again when its owner blundered in, ready for battle.

"I'm Mr Belcher, mate" he growled. "Ah, I see me Toshiba's done. At last. You new 'ere?"

"More or less" I replied.

"They said it 'ud be ready Sat'dee night" he continued. "'Ad 'im all weekend, you 'av. No telly all weekend. Didn't know what to do with meself. Made me bloody mad it did. I was comin' in to wipe the floor with that smiley young chap, Paul innit? But that was before my tragedy." His lip started to tremble.

"Tragedy?" I echoed.

"Caruthers 'ad a convulsion and died. Just afore opening time yest'y. Had to 'av nine pints. 'E

was my best friend, the prettiest budgie there ever was. 'Bugger off, bugger off Cyril' 'e'd shout. Then he died. Just like that."

I adopted my best undertaker's expression as I worked out his bill.

## A turntable fault

Shortly after he left a lovely young lady came in with a Technics record deck, Model SL-QX200. I gave her all my attention.

"The pick-up doesn't lift" she said.

At that the phone rang, just as I wanted a bit of peace. "Hello" I bellowed.

"Donald!" a voice said, "nice to hear you again." It was the Reverend Goode. "Could you pop along and have a look at our lady organist's set? Her name's Miss Hewitt. It's a Beko or something. Not like the days when they were all Pyes and Ekcoss, what? She lives in one of those little places in The Mews. Everyone there knows her! She'll be back in ten minutes or so and will wait for you."

I booked the call, then put a record on the turntable and started it. Sure enough the arm didn't lift. I knew why, because I'd come across the problem before. The rising lever on its underside had slipped out of the slot. It took only a moment to fix, and I showed her that it now worked.

As she reached for her purse I said "no charge for a little thing like that".

"Oh, my husband will be pleased" she replied. "He knew it wouldn't be much. He's so clever you see."

Clever enough to send you here I thought as she left. I'd have charged him plenty.

At that Greeneyes returned with her shopping. Most of it was in big, slim expensive-looking bags with Next, New Look and Stead and Simpsons all over them.

"I found a lovely pair of shoes to match my new lipstick" she announced, "only forty five pounds. I wanted another pair to match my green skirt but . . ."

"Just park yourself behind the counter, dear" I said as I strode over, "only I have to go look for a woman."

## The Beko TV

I found Miss Hewitt's place and saw the set, a Beko Model 2842NDS. It didn't produce a picture but there was a band of fly-back lines on the raster, the top ones being red, green and blue.

"I do hope it isn't the tube" she said.

I gave her a reassuring smile, while being a bit worried about the possible cause. I suspected field timebase trouble, but it took me a while to find the culprit. This was a short-circuit electrolytic capacitor, C126 (100 $\mu$ F, 100V).

"Does it seem to be the tube?" Miss Hewitt asked.

I managed to produce another reassuring smile and, while putting the back on the set, I straddled the coaxial flylead across the top.

Miss Hewitt was looking at it. "Is that the tube?" she asked.

## A DVD/VCR combi unit

When I returned to the shop I found Mr Flighty chatting up Greeneyes. She was lapping it up.

"At it again Flighty!" I declared as I strode in, "what's your trouble this time, apart from the usual?"

"Oh, er, hello Don" he spluttered, "actually it's your lucky day. I've brought you my new Sanyo DVD/VCR combi unit to look at. It's dead."

"You're kindness itself" I replied

It was a Model HVDX1E. Once he'd departed I opened the unit up and carried out a few checks in the power supply. It struck me that I'd had trouble of this sort before, with a Philips model. The cause of the fault turned out to be a 1N5822 diode, D111.

"Would you do a bill for Flighty, dear?" I asked Greeneyes as I boxed the unit up. "You can

fill the total in first if that makes it easier. Comes to fifty five pounds fifty."

She shot me a look. "What? For one diode and a few minutes time?"

"Sure thing" I replied, "remember it's for Flighty. Oh, and you're getting to sound like the customers!"

"Itemise it" she challenged.

"Right!" I said brightly. "One diode, fifty pence. Time, labour and expertise, twenty five pounds. Aggravation and pratness factor, thirty pounds."

I noticed that the rain had become heavier. At least he would get wet.

## A camcorder

Our next customer, Mrs Crabbe, was soaked when she came in. She was carrying a camcorder wrapped in a plastic bag. The weather and her appearance reminded me of an item I'd seen in an early *Two Ronnies* programme, in the days when some BBC programmes were worth watching . . .

"I didn't want to get this thing wet" she said as she handed me the package, "there's a note inside".

I smiled and drew up a job card. "Tickle your bum with a feather" I mumbled.

She stiffened and glared at me. "What?" she said sharply.

I carried on smiling calmly. "Particularly nasty bit o' weather" I commented.

She relaxed and looked a bit happier. "Oh, er, yes, I suppose it is" she said.

The camcorder was a JVC GRDVX707EA. When she'd gone back out into the rain I put it on the bench. It didn't seem to work. The accompanying note mentioned two faults.

First, the unit continuously displayed the message 'operation paused due to condensation'. As expected the cause was the dew sensor. It's connected via a flat ribbon cable that plugs into connector CN201, which is on a small PCB below the lens assembly. The cable also connects the loading motor. As the securing clip hadn't been pushed home, the cable had

worked loose enough to disconnect the dew sensor. Hence the message displayed.

The other fault was very intermittent camera-lens drop-out, leaving the unit with no image when recording. This was also caused by an unsecured plug-and-socket connection that had allowed the ribbon to work loose. It was still in the socket, but had partially pulled out and was at an angle.

Pushing these two connectors home and securing them properly put the camcorder to rights. Lucky I didn't have to delve any deeper!

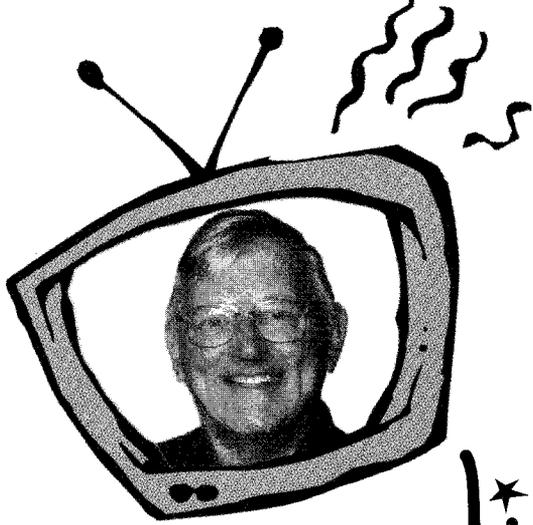
## Emails

Later on I had an opportunity to read a print-out of an email I had received from Steve Burgess, who controls a crew of ten technicians at Channel 4. Their job is to keep the whole technical operation going twenty four hours a day, seven days a week. The total staff there, including commissioning, advertising sales, legal, finance and so on amounts to some eight hundred.

I've always felt that Channel 4's programmes can be outstanding, providing proof that commercial television doesn't have to be cheap and nasty. While criticising present British programmes as a whole, he agreed with me on this latter point. Steve, who is clearly a fount of wisdom, points out that television today has become a highly competitive, multichannel, commercial business, with roots going back to Murdoch. The traditional broadcasters feel that they have to respond to this situation. For commercial stations, he reasons, this means chasing the lucrative eighteen to thirty-four year olds, who are the big spenders.

"A new generation's culture and values have to be embraced" he says. "Sponsorship, a commercial by another name, is a big earner and is the biggest blurring factor in the once sacred programmes/adverts divide." Then, mercifully, he added "as long as they don't start messing around with Radio 4!"

Don't forget, emails are welcome. Send them to [donald@wheatleyexpress.com](mailto:donald@wheatleyexpress.com) ■



What a life!

## Donald Bullock's servicing commentary

**Hire-purchase protection** ▶ **A collection of Dysons** ▶ **Shopping in Spain**  
**The Sony KVX2962** ▶ **That record-player deck** ▶ **Emails**

Years ago when we used to sell a £65 monochrome TV set on three years' hire-purchase (and suffer the financial consequences if, during that time, the financial company deemed the purchaser 'bad') we used to fill in a Proposal Form then relay the information, by phone, to the local branch of our Trade Protection Society – to get the low-down on the proposed buyer. The phone was always answered, to the melody of others ringing in the background, by a mature, fruity-sounding, deep and round-voiced eccentric who always seemed to be in a hurry, to answer the other phones I expect. His name was Eustace Manning, and he was also a lay preacher.

"What is it m'dear?" he would boom at me, "tell me now, quick as you can!"

"Oh!" I'd say, "can you tell me if Mr Ransome of 1, Nut Lane, Pleabury is good or bad?" Or it might have been Mr Brownett or Sally Springer of Sunnyside Avenue or whoever. He never once had to refer to his files. He knew all about everybody, and his response was always immediate.

"Hoo-hoo! Ho-ho-hahh!" he might laugh, "don't touch him with a barge-pole m'dears! Ho-ho! Old Ransome trying it again! I say, whatever next!" Or "Hah!, I see old Sally is back out!" Or "Poor old Mr Brownett. Best of intentions, but he just never manages to pay anybody a penny!"

Other times, he would be optimistic and complimentary. "Oh, a most wonderful fellow! Built his business on credit and paid every penny on time.

Even when his wife ran off with his partner and cleared his account of every penny. Worked tooth and nail and paid everything back. Wonderful chap!"

### Another Manning

Even farther back in time, when I was a boy, I used to make my own fishing tackle. I would cadge pieces of cork, for making floats, from Corky Manning's dusky little cork-cutting workshop down by the river. Corky, who was noted for his kindness, lived on fistfuls of coarse brown snuff, which he frequently grabbed from a huge wooden box. Much of it would lace the air or join the thick layer on the front of his waistcoat. You would start wanting to sneeze as soon as you entered. And, because you could hardly speak, he would get impatient and rasp at you "Come on now, speak up! I haven't got all day you know!"

Then he would slap his waistcoat with both hands, sending a cloud of the concentrated stuff up into the air. This would make one's eyes stream and you'd have to grope out through the door. You'd be sneezing and spluttering for a hundred yards or more.

It was only when I mentioned Eustace to the editor that I recalled Corky as well. Two Mannings. Both eccentric. Both kind. I must try to discover whether they were related.

### Spanish finds

In our part of Spain there are no milkmen and no postmen. Nor are there any household refuse collectors. Instead we

have to deposit our rubbish in the large, plastic bins that every village or area provides in a frequently-cleared walled-off compound. There is also an area for dumping anything that's too large for the bins, like old wheelbarrows or broken furniture or TV sets. There is often an assortment of large-screen sets. I've often remarked that one could open a reconditioned TV shop here, getting one's stock from the tips.

Anyway about two months ago Greeneyes saw a yellow-and-grey Dyson 04 vacuum cleaner that had been dumped and brought it back to my workshop here (our own Dyson at the time had been one of the much inferior 03 models). The one she found was crammed solid and the mains lead had been snipped off flush at its point of entry. I cleared it out, cleaned and oiled it, replaced the mains lead then tried it. The machine worked perfectly, and I was able to present Greeneyes with a mint and efficient Dyson 04.

A month later we saw another 04 that had been dumped in exactly the same place. This time it was a purple and grey one called a Zorbster, with a dry-powder carpet-shampooing facility. This machine was also crammed full of impacted dog hair but was otherwise in mint condition – and the mains lead was intact! Was I going to go on finding a Dyson a month? Maybe it should be a reconditioned appliances not a TV shop.

Yesterday I found a third one, at a different but equally nearby site. This one was a Model 01. It had been carefully emptied, cleaned and polished,

then deprived of its life-taking mains lead. So I decided to take it home to check over. Because the latest one was so immaculate, it occurred to me that the cleaner might have been taken somewhere for a quote, been condemned then dumped. Perhaps it had a burnt-out motor. When I inspected the stump of the mains lead I saw that the inner cables had burnt where they take the strain.

A mains lead later, we have a third mint and working Dyson cleaner. I've always thought that I seem to lead an interesting life, without really trying! Previously, Greeneyes had come back with a compact silver and mint-condition Matsui VP94061 VCR she'd seen there. It worked when tried, and is still working merrily.

## Shopping in Spain

Here's another thing that happens to me, whenever Greeneyes and I go out shopping together. Last time was typical. I wanted a hardened-steel five-eighths metal drill to help me make my latest dog-restraining grill to stop Greeneyes' pack of hounds from streaming out under the front gates whenever anyone dares to walk along the road outside. So into the ironmongers we went.

"I want a hardened-metal drill please" I said to the fellow there, in my best Spanish.

He looked at Greeneyes. "What size, madam?" he asked.

Greeneyes turned to me and I told her. "A half-inch one" she repeated to the fellow.

He took a long one and a short one from a drawer. "Are either of these suitable?" he asked her.

I looked at them, then at him, and pointed to the short one. "This one will do" I said.

He held it up and looked at Greeneyes. "This one, you think?" he enquired.

"Yes please" she smiled.

From there we went to a bar. "Two beers please" I said.

The woman looked at Greeneyes. "Draught or bottled?" she asked.

I looked at her, then around the place. "Bottles please" I replied.

She looked at Greeneyes. "Bottles?" she asked.

I don't know why this is. Could it be because she looks as if she might be Spanish, while I don't?

## A Sony KVX2962 (AE2 chassis)

My correspondent Grantley Best of West Norwood has asked how to get his Sony KVX2962 into the tuning mode. He also mentioned that it's dead, with the LEDs flashing. I asked Steven, who's the Sony expert around here. His

advice is as follows.

Once the set is working again access to the tuning mode is via the remote-control unit. There are two LEDs side-by-side at the front of the set. The number of flashes indicates the fault area. The first LED flashes up to thirteen times, then the second one flashes once to indicate that the sequence will restart with the first LED. Usually the first LED flashes thirteen times then starts again, indicating a fault in the field output stage or, less likely, a line output stage fault. It could be the line output transistor, but the usual cause is undetectable dry-joints around the TDA8179S field output chip IC501. Try resoldering every pin. If this doesn't cure the fault, replace the IC and the small number of associated electrolytic capacitors.

While on the subject here's the flashing fault code for the set:

- (1) I<sup>2</sup>C bus SDA line low.
- (2) EEPROM IC072 fault.
- (3) Fault in tuning PLL.
- (4) TDA9145 colour decoder chip fault.
- (5) CXA1587 jungle chip fault.
- (6) TDA6612 sound processor fault.
- (7) CDX2018 digital deflection processor fault.
- (8) CXA1545 AV switch chip fault.
- (11) SDA5248 text chip fault (applies only when there's a separate text PCB).
- (13) Vertical protection in operation. Field or line output stage problem.

## That Sony PS-LX50 fault

Many thanks to the readers who have emailed me about the fault I have with this record-player deck, which uses electronic speed control instead of a stepped drive wheel. The two motor leads are connected to the first and fourth legs of a semiconductor output device that had been running hot and is well cooked. One problem is to identify this device. The printing on it is faint and microscopic, and has been affected by the overheating.

Martin Pickering, who has vast knowledge of and technical data on semiconductor devices, suggests that it might be a uPC1470. This looks like a four-legged BD131 and is described in the data as a motor-speed control IC. Looking again at the original, with the aid of a magnifier, I am convinced that he is right. I have a pair of them winging their way to me now!

But I still don't have a circuit diagram, though the ever-helpful Colin of Fryern's (FES) is making enquiries for me. He advertises most months in the Service Data section at the end of the magazine.

## Adverts

Talking about advertisements, I was

pleased to see that Pete Hill was in the magazine recently (P.J. Hill Components of Tewkesbury). I remember Pete from more years past than I care to recall, when he first started in business from his home. During his calls all workshop activity would cease. We would perch on the tops of a couple of sets for an hour, laughing like loons as Pete spun me the latest trade funnies.

Pete gave me the following couple of jokes at the time. Remember, they've had several years to do the rounds.

First:

Patient: "Doctor, I feel insignificant."

Doctor: "Next!"

Second:

Elderly patient: "I used to think I was undecided, now I'm not too sure!"

If they still make you cringe, call Pete not me! He's available for your complaints (and TV/VCR spares orders) on 01684 296 902.

## Emails

Terry Robinson of Woodend, Victoria, Australia comments that the TV programmes there are worse than those in the UK. "Thank goodness for our video machines and DVD players" he says.

Ron Bravery, who hails from closer home, asks me to keep up the column and keep taking the tablets! He mentions an old customer, Mrs Blabber, who had been on the phone about her TV. Not having seen her for ages, he asked about her health.

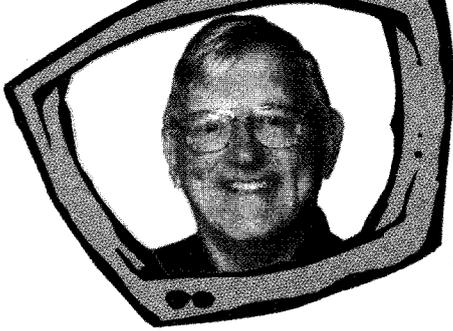
"Terrible!" she replied, "just exploded with a terrible noise! Me heart's all a flutter and there's a peculiar smell. I'm telling you straight, I need a good man right away!"

Bill (of aerial fame) and Hillary Wright have written again, referring to my compilation of a video library of TV-transmitted films. He mentions an old customer of his who also built up a vast collection of televised films. Then, one day, Bill fitted a new array for him. This provided much improved reception. "It'll be lovely to enjoy the improvement when we watch our old tapes" was the comment as Bill tip-toed away.

Two years later Bill called to cheer him up after the death of his wife. He laughed at his earlier gaff, then went on "Never mind, it's given me something to do - I'm recording them all again!"

Referring to my bit about early video recorders, Bill says "I too had an early Panasonic. It cost me £711, then! But it lasted a lot longer than today's machines. One day, in 1981, Hillary thought she had broken it. The Channel 4 test transmission had begun on its output channel!"

Emails are always welcome. You can reach me at [donald@wheatleypress.com](mailto:donald@wheatleypress.com)



What a life!

## Donald Bullock's servicing commentary

▶▶ A session at the shop with some audio and TV repairs ▶▶ Email summary  
▶▶ And a warning about the prospects for LCD TV repair ▶▶

Ossie Onions didn't look too pleased as he elbowed the shop door open. "I'm giving that little swine one more chance" he growled.

I looked through the glass door anxiously to see who he was talking about, but there was no one that close. "What's eating you?" Ossie, I asked.

He twitched his mouth towards his right ear and switched on the sweetest smile. "The wife's Sony. On the back seat he be. Fetch 'im in, will you? You're younger than I, and I got a terrible bad foot." He twitched his mouth again and switched off his smile. As he's fifty odd and reckons I look younger, I decided he was OK.

Meanwhile Paul had popped out to his car to collect the offending item, which turned out to be a Sony mini hi-fi Model HCD-CP101.

"What's up with it?" I asked him.

"Stubbed it against our step" he replied.

"The set, Ossie" I said gently.

He moved his mouth again and switched on the smile. "You could possibly just about hear it if you was an ant what crawled into the speaker thing" he said.

I made a note and busied myself at the battery stand until he departed.

Paul decided to tackle the unit. Ossie had been right. If you listened at full volume you could just about hear some sound.

"We've had it before with this model" Paul commented. "If I recall correctly the cause was a transistor in the muting circuit. I must have made a note of it somewhere."

He had. The transistor was Q330 and, in addition to fitting a replacement, you have to replace wire link JW370 with a 470Ω resistor. Once this had been done the unit produced normal sound.

### A Sharp GA10

Shortly afterwards Steven humped in a Sharp TV set from Ed Bigg's car. Ed is a window cleaner. Drives the largest BMW I've ever seen.

"Look at the state of your windows" he commented, "you could have 'em sparkling clean all the time for just twenty quid a week. I'm sure you could afford that rather than have 'em dirty!"

Paul looked at the windows. "No need for that Ed" he com-

mented, "they're sparkling clean as it is. Did 'em myself only yesterday – for now!"

"You ought to see the state of the baker's windows up the road" I said, jerking my thumb over my shoulder. "Talk about needing a clean . . ."

His eyes narrowed. "Gotta go" he said as he flew out.

"There's no baker up the road" Paul commented. "The one who was there closed ten or more years ago. Shop was demolished to make way for the roundabout."

"Quite so" I said.

The set, Model 66GS62H (GA10 chassis), was stuck in standby. A check on the BUH515D line output transistor showed that it was short-circuit. We've had the fault before. Q602 (2SK2843) goes short-circuit as well. It's best to fit a heavier heatsink, with plenty of compound, and you'll find a dry-joint at C619. This is the basic cause of the trouble.

Once we'd followed this procedure the set worked all right. We put it aside to wait for Ed's return.

### A phone call

Just then the phone rang. "Is that Bulger's Television?" a female voice drawled.

"More or less" Paul replied.

"Well look hyah. Our set's quaitte dead. It's big and hevai, a good wan, Loewe Xelos. Onlah pretty flashing lights. Ohh, and a ticking noise. Need someawaan to collect it. Can you come now?"

"That was Lady Lloyd-Cranbrooke" Paul told us, "only person in these parts who talks like that. Local magistrate. Certainly puts yobs in their place."

"Better watch out then when you call" Steven commented. "Loewe Xelos, it'll weigh a ton. We'd better both go."

Ages later they returned with the giant set, and it took all three of us to get it on to the bench. It was Model 5381ZW, the one that costs a bomb.

There was no start up, with the red and green LEDs on and a tripping noise every ten seconds. We decided to isolate the line output stage and try again. This made no difference, so we started to carry out checks in the power supply. Or at least Paul did. After checking quite a few things he found that R622 (820kΩ) was open-circuit. It's on the primary side. Once a replacement had

been fitted the set worked normally, with a very good picture indeed. He couldn't find anything else amiss.

"She'll be pleased" said Steven, "even though you look like a criminal. Probably let you off with a caution and a couple of coppers for the poor box."

"Never mind the funnies!" Paul replied, "let's get it in the van in one go, shall we?"

And off they struggled with it.

## Emails

I've had a hefty wad of emails this month – thanks!

K. Knopov of Samsung has a story with a moral to tell. A man was driving up a steep and narrow mountain road when an attractive woman came driving towards him in an open-topped car. As they passed, she leaned towards him and shouted "pig". "Bitch" he shouted back and, as he rounded the bend, crashed into an enormous pig in the middle of the road. If only men would listen, K comments.

A while back I mentioned to the editor the enormous kindness and helpfulness of readers of our magazine. "It's like belonging to a friendly club" I added. He agreed, and said it was part of the pleasure of his job. I wonder how many readers appreciate that John and Tessa alone organise the editorial contents and maintain friendly liaison with the many regular contributors? It doesn't happen by chance!

To return once again to my ancient Sony PS-LX50 turntable, I had become convinced that there was no such thing as a manual. Sony in Ireland declared no knowledge of it to a supplier there who tried to help. Then, all at once, several readers responded with advice, technical help and servicing data. I am especially indebted to Alan Bray, Mike Wall and Ray Smith and, thanks to them, have been able to listen to my vinyl records again as well as the CDs. I am beginning to sympathise with those who maintain that vinyl has the edge on CDs when it comes to bringing the sound to life. As a buff once said to me, "natural sound isn't digital, it's continuous, not sliced up segments at different frequencies".

I don't wish to get involved in yet another controversial subject just now. However I'm by no means convinced that the headlong rush to digital TV is a good thing. I much prefer analogue UHF transmissions and, if that means fewer channels, it would be all to the good. My view is that there's enough talent to keep only one part-time programme going.

Incidentally Ray Smith runs his own repair shop at Pedmore and has promised me some customer stories. Let's have 'em, Ray! Others who have provided help include David Smith of Leigh in Lancashire and James Horsley of Horsley Electronics. Emails are always welcome. You can reach me at [donald@wheatleypress.com](mailto:donald@wheatleypress.com)

## Help requests

Tony Agar has a problem with a Bush Model 2037T (11AK30 chassis) which is dead. When powered up the LED glows red, then green when the channel buttons are touched. He's also been unable to locate a remote-control unit for it. Can anyone help?

M. Joshi complains about a patterned, disturbed picture, worse on some channels, with a 14in. Grundig set (CUC7303 chassis) when operated with an indoor aerial. With an outdoor aerial the picture is perfect. Bridging the electrolytics in the IF strip and in the LT supplies made no difference. This looks like normal performance to me. The set is working at full gain with a poor signal so everything gets amplified, noise and all. M. Joshi doesn't give his first name or locality. I prefer to know – because I'm nosy!

## Friends

I've had another letter from an old friend, Peter Nutkins, who has

visited us in Spain. "Christmas time used to be the busiest of the year" he writes, "but this last one brought only a couple of calls. A friend who is also in the trade found the reason when he visited the local recycling centre. There was a skip overflowing with used sets. Previously he'd done good business reconditioning large and widescreen sets he had found at the tip. Now, because new sets are so cheap, people are dumping working sets and buying new ones."

I've also had a welcome email from my old friend Steve Beeching. What he doesn't know about servicing camcorders and video cameras could, as they say, be written on the side of a red-curtain. In his latest email he mentions an ancient Revox audio tape recorder he decided to tackle after reading my recent reference to a Grundig TK830.

"It uses 10in. reels of tape" he says, "and still works well. I tried to change a chip in it but couldn't get through the hot glass thing. It unplugged however, so I put another one in. These old things don't have enough legs on them for my taste, and there are too many high voltages flying around them."

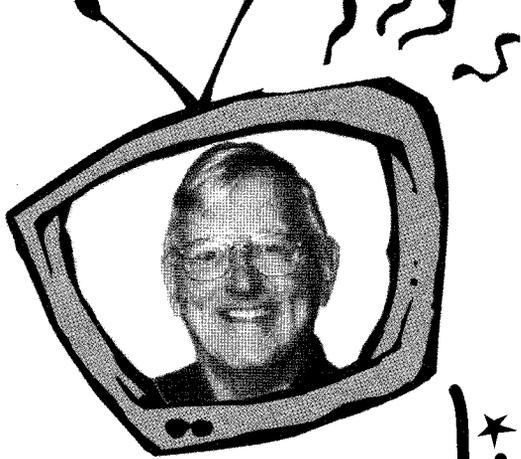
I'd never known much about Revox tape recorders, and couldn't figure out what the "hot glass thing" was. "Here's a clue" Steve replied, "they work by thermionic emission, and some people remember them as valves!"

## You've been warned!

He then told me about his attempts to repair a 26in. LCD TV set with a red level instead of the correct black level. "The LCD is driven by four differential-drive pairs as well as a clock pair. I wondered why there were four pairs for three drives (red, green and blue) and asked the manufacturer's Technical Department. They said they had no idea, because the factory 'doesn't tell them', but that the cause of the fault was 'most certainly' on the digital processing board. So, after replacing a couple of suspect ICs to no avail, I sent the board to them for testing. I subsequently ordered a replacement board at over £200, but it made no difference. They wouldn't accept it back for credit because they said I had used it!"

"Meanwhile I had found the cause of the trouble, and am still waiting for the original board to be returned."

"So" Steve concludes, "you can tell any other service technicians who may be contemplating LCD or plasma TV repairs to beware. Spares are going to be very, very expensive. New LCD screens come complete with peripheral units – power supplies, backlights, drive boards etc., and the cost ranges from about £800 to £1,200. You've been warned!"



What a life!

## Donald Bullock's servicing commentary

**Radio and TV faults and a laptop problem ►► Are consumer electronic products going the right way? ►► Emails and moans**

It's not often that I get a good laugh before the customer has actually reached the shop. But it happened the other morning. Old Sam Crust was bringing us his radio for repair, with his dog pulling him towards the shop. As usual, Sam had his head in the clouds. When his dog stopped abruptly to battle with another one Sam fell over the pair of them, also the other dog's owner, a surly looking lady. It took several passers-by to sort them all out. A couple more ran after their hats. All very amusing I thought, and I was still laughing when Sam came in.

"That Matilda Cresswell set 'er nasty dog on mine, Mr Bullock" he exclaimed as he put down a Sony radio, Model STR-DE495.

"Good" I thought. Then I realised I had said it as well. "Er . . . ha ha . . . This radio of yours . . . it's er . . . good?"

He looked at me thoughtfully. "No Mr Bullock, 'e's bad."

When he'd departed Paul opened the set and blew through his teeth. "Boy, what a mass of dry-joints" he said. He then spent the next twenty minutes on a resoldering operation. When he had finished the set worked very well.

"Never seen so many bad joints before" he commented, "all over the place and particularly around the function control chip IC201."

### Stinger Short's Black Diamond

Just then a huge pile of dried mud and straw pulled up at the front. When I looked closer I saw that it had a wheel at each corner. Then a piece of it swung open and a scruffy old-timer rolled out.

"Blimey it's old Stinger Short the pig-farmer!" I said, "I thought he'd seized up thirty years ago!"

Meanwhile Stinger was negotiating himself and the farm smell through the front door. "Gotta Black Diamond in there" he croaked, jerking his thumb at the pile of mud.

"Must be worth thousands" I said.

"E's a big 'un. Twenty eight inches" he said, "and he's chirping!"

"Good god, some diamond!" I replied, "millions, never mind thousands!"

"Never mind the funny stuff. Get 'im out" Stinger commanded.

Remembering the days when he lashed us kids off his land with his long, stinging cane, we complied.

It was a Black Diamond Model MD2850PFS, a widescreen set fitted with the 11AK33J3 chassis. Steven started to take the back off.

"Dead as a doornail" said Stringer. "Fresh from Snoddies. But I ent gonna back there, 'cos if I do I'll clout that tall thin chap. Told me to get out because I stunk!"

"Never!" I said.

Steven went straight to the line output stage, which was the logical thing to do. But the problem was that its supply was missing. Checking back to source he found that the HT reservoir capacitor was bulging and short-circuit.

There's a modification for this chassis that is recommended whenever trouble is experienced on the primary side of the power supply – increase the value of R101 in the start-up network from 1k $\Omega$  to 4.7k $\Omega$ . This prevents damage to the MC44608 chopper control chip by reducing the amplitude of spikes and dirt from the mains supply. It works, so we carry it out with all sets that come our way with the 11AK33 chassis.

### A monster Hitachi

Our next customer, Edgar Mange, struggled in with yet another monster 28in. set. This time it was an Hitachi Model C28WF560N, which is fitted with the 11AK45B5 chassis.

"The set looks new, Edgar" I said.

"It's only four months old, but it's dead" he replied. "Got it from Snoddies, and the tall thin chap remembers selling it to me, 'cos it was his wife's birthday. But he won't repair it because I've lost the receipt."

Paul had a look at it and found that the primary side of the chopper power supply had broken down. He had to replace the chopper FET Q102, the MC44608P40 control chip IC106, D104 and D105 (both type BA159) and the surface-mounted 1k $\Omega$  resistor R112.

Edgar ended up with a tidy bill. When he came to pay it he made a few bitter comments about the tall thin chap at Snoddies.

"Some might say he needs his snout lifted a couple of inches" muttered Paul.

I looked at him aghast.

“Don’t you mean four inches?” I said.

## Another laptop

The phone rang and Steven answered it.

“That’s Steven” said a foreign-sounding voice.

“How do you know?” asked Steve.

“Because I’m psychic” the voice said.

Steven looked up and saw that Ribby Ellis, the practical joker, had just come into the shop. He was laughing insanely as he stowed his mobile phone away.

“Sorry about that” he babbled as he wiped his eyes dry. Then he put a Toshiba SA30-203 laptop on the bench.

“It’s only the power-socket thing” he continued. “Can you pop another in while I wait?”

“Sorry Ribby, but it’s a custom-made part that has to come from Toshiba.” Steven said. He then made a phone call to Toshiba and found that a replacement socket on its own couldn’t be supplied. A main board would be required, at over £400.

For once Ribby couldn’t muster a laugh when he was told the sad news. He left with a longer face than the one he’d come in with.

## Resistor problem

Percy Paltry brought his set along in a gleaming new Jaguar. It was a Naiko Model N2850W, which is fitted with the PT92 chassis.

“It’s got a very funny fault on it” he said, giving a little laugh. “Very funny indeed!”

“Seems almost a pity to mend it” I said, “but what’s up with it?”

“Well, the picture sort of tears and twitches sideways, and an upright black band comes on the screen. And there’s a soft arcing noise, especially with bright scenes.”

“Sounds like corona sparking being picked up in the RF circuits and upsetting the line sync” said Steven.

Paltry looked anxious. “Don’t forget I’m an old-age pensioner, and my wife’s been ill” he added.

“Worry not!” declared Steven, “we’ve had the problem with these sets before. It’s simply because of a nasty little 330kΩ resistor on the primary side of the power supply.”

He was right. But note that there are different versions of this chassis.

## A satellite receiver

An email from Ian Campbell of Warwickshire mentions a Toshiba satellite receiver, Model PRO 6100, that had shut down for no apparent reason. “After cleaning the ventilation slots and reapplying thermal compound to the processor’s heatsink” he writes, “I am convinced that the cause of the trouble is in the power supply. The only problem is that, having tried to get into it several times, I’ve still not managed this. I’m going to try again, following the detailed steps in a previous article.”

Best of luck, Ian. Let me know how you fare.

He also mentioned that he managed to get only one job interview when, in 1980, he emerged from the Swindon SkillCentre with his City and Guilds certificate. “This was at a small shop where, as a test, I was asked to repair a line timebase fault in a Decca Bradford chassis and converge a Philips G8 set. Having passed these tests I was interviewed by the owner. This didn’t go too well and, although I was offered the job, I didn’t feel able to accept it.”

He went on to say that, being desperate for work, he hung around the local Co-Op service centre, trying to persuade customers that he could repair their sets equally well at a cheaper

price. “Naughty, I know, but it paid off – and I was self-employed for fourteen years, with a large customer base.”

## Consumers’ problems

A recent survey concludes that of all the modern devices consumers have difficulty with, the bulk of them are supplied by our trade. Top of the list came difficulty with programming VCRs, despite three decades to get used to this. Most people said they find VCRs unnecessarily fiddly and complicated. Second came the operation of digital TV sets, third the installation of a child’s car seat, then the operation of digital cameras, washing machines, dish washers and electrical tin openers. Opening the wrapping on CD discs, batteries and DVD discs also came high on the list.

“It’s amazing that, with all the technology at our disposal to make products easier to use, so many everyday items still manage to frustrate customers” says Chris O’Rourke, a director of User Vision. He added that while VCRs have been superseded by more advanced technology millions of people still own and use them, and that some of their poor interfacing has been inherited by newer innovations such as digital cameras and set-top boxes. “Manufacturers should be looking at their basic design mistakes and listening to their frustrated customers” he concludes.

I’ve long been saying this!

## The mobile phone

While introducing a device that makes phoning on the move even easier – and more annoying – Comet’s divisional managing director Simon Turner announced that “the days of old-style fixed-line telephone calls are numbered”. If he’s right, more is the pity.

I am writing this in my peaceful garden hut. Before going to the shops Greeneyes dumped a radio-linked phone here. When she’d gone a frantic ringing started. I couldn’t find the phone of course. Never can. So I jumped about patting everything in sight to locate it. When I did, it had ceased to ring. I eventually found that it had been the mobile phone in my trouser pocket, and a wrong number at that.

How nice and peaceful it was when the phone was a fixture and was always in its place!

## Moans

Nor am I convinced that the digitalisation of our radio and TV services is a good thing. The problems with digital TV are the plastic and pixelating images and the stuttering sound. Those in favour admit that there can be reception difficulties, and that the cost to all concerned will be enormous, but point to the vastly increased selection of channels.

This is surely the best case against digital TV however! There are already far too many channels on offer, with less and less talent available to support even the main ones.

And finally, is the DVD such an advantage? People just get confused by the complex and unwanted features with recorders, while most players are now cheap, rubbishy, troublesome and don’t last. They either develop a software fault or the laser fails prematurely. And a new laser is often more expensive than a new machine! No wonder some people are going back to their fiddly old VCRs. Sales of the older, reconditioned ones we offer are more buoyant than ever!

Well that’s it for this month. Letters and communications are always welcome. You can email me at [donald@wheatleypress.com](mailto:donald@wheatleypress.com)