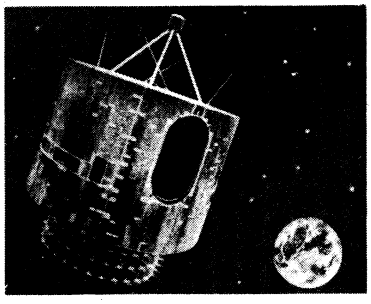


News Highlights

Chess Challenger — you play the computer!

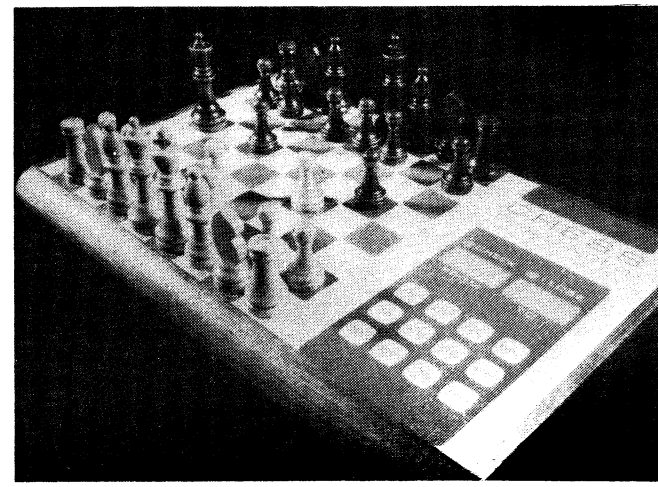
It's you against the computer! The first microprocessor based chess game is now available in Australia.

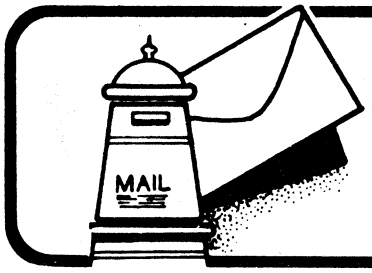
Called the Chess Challenger, the new game is based on the Intel 8080 CPU. It also utilises an 8224 clock generator/driver, an 8228 system controller, 512 8-bit bytes of random access memory to store the position of the chess pieces, and a 16,384-bit read only memory.

The firmware (inside the ROM) contains such elements as the rules of chess, the relative importance of the various pieces, and allowable moves and strategies. The Chess Challenger plays by the book, working on the weighted value of the pieces, and completely scanning the board for the best available move each time. It plays aggressively, tries to control the centre of the board, and, if it's in trouble, will try for a stalemate.

The keyboard can be used to verify the position of each chess piece at any time during the game. The player can select from four levels of difficulty at the start of the game, can choose offence or defence, and can even commence in mid-game should he wish to set up a chess problem. All the moves of chess can be made, and the Chess Challenger is programmed to castle at the first opportunity.

Chess Challenger is easy to play and, according to the manufacturer, can be beaten by an average player 25%-70% of the time, depending on the level of difficulty selected. It costs $385.25 and is available from Futuretronics Pty Ltd, 527 Tooronga Rd, Hawthorn East, Victoria 3123.





Letters to the editor

COMPUTER CHESS

It's you against the computer.

The first microprocessor based chess game, using an 8080A C.P.U. It utilizes an 8224 clock generator/driver, 8228 system controller, 512 8-bit bytes of random access memory, that stores the position of the chess pieces, and a 16,384-bit read only memory. Software contains such elements as the rules of chess, the relative importance of the pieces, allowable moves and strategies. The micro computer plays by the book, working on the weighted value of the pieces, and completely scanning the board for the best available move each time. It plays aggressively, tries to control the centre of the board, and, if it's in trouble, will try for a stalemate.

The keyboard can be used to verify the position of each chess piece at any time during the game.

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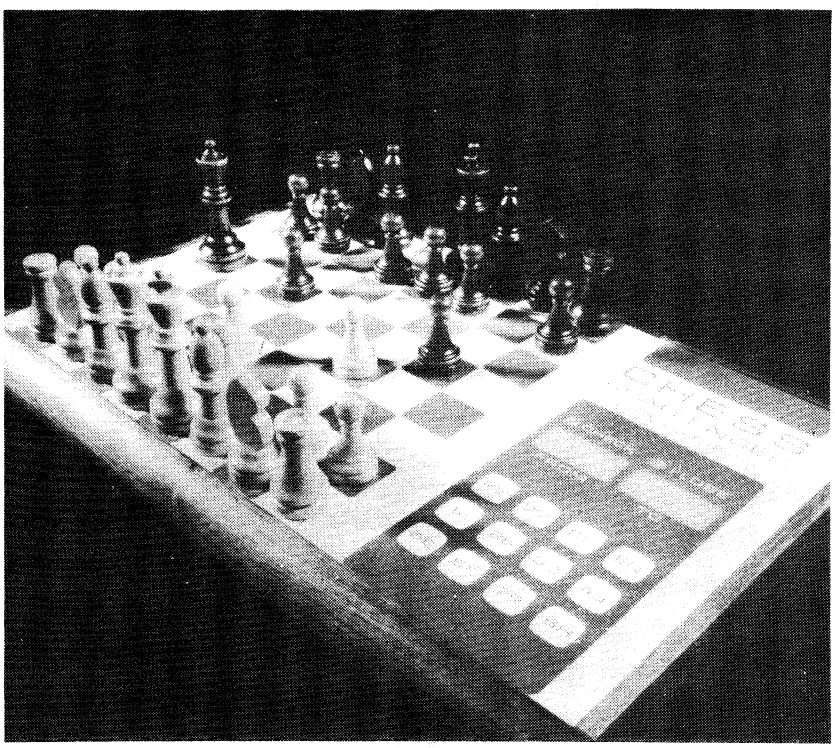

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COMPUTER CHESS

It's you against the computer.
The first microprocessor based chess game, using an 8080A C.P.U. It utilizes an 8224 clock generator/driver, 8228 system controller, 512 8-bit bytes of random access memory, that stores the position of the chess pieces, and a 16,384-bit read only memory. Software contains such elements as the rules of chess, the relative importance of the pieces, allowable moves and strategies. The micro computer plays by the book, working on the weighted value of the pieces, and completely scanning the board for the best available move each time. It plays aggressively, tries to control the centre of the board, and, if it's in trouble, will try for a stalemate.
The keyboard can be used to verify the position of each chess piece at any time during the game.
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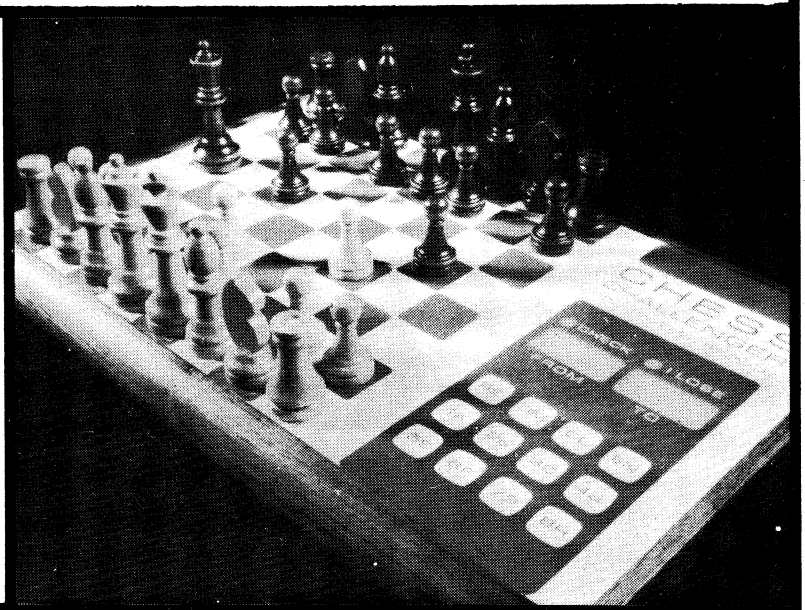

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Electronic Backgammon

. . . you play the computer!

Stablemate to the recently released "Chess Challenger", the "Gammonmaster II" backgammon computer is the latest leisure item to be based on a microprocessor. It is designed for ease of play, will defeat an average player more often than not, and compete evenly with experts.

by GREG SWAIN

It's not going to be easy to write this article; not in my present depressed state of mind. After all, it's not every day that one plays 3 games of Backgammon and loses the lot to, of all things, a . . . . . computer!

Of course I could say that the computer cheated. Yes, that's it . . . . thinking back to those ill-fated games, the computer did seem to throw a lot of high doubles for itself and deal me a host of low, odd numbers. And to add insult to injury, it lit up a smug little "I WIN" indicator to announce my downfall at the conclusion of each game.

I took my revenge at the end of the third game by removing its power plug from the wall socket. What a smart alec!!

Actually we had a lot of fun playing the Gammonmaster II, a computer controlled backgammon game made by the US firm Tryom Incorporated of Cleveland, Ohio. Based on the Motorola 6800 microprocessor, the Gammonmaster incorporates 6k of memory and plays such a high standard of backgammon that it is a real challenge for its human opponent to win.

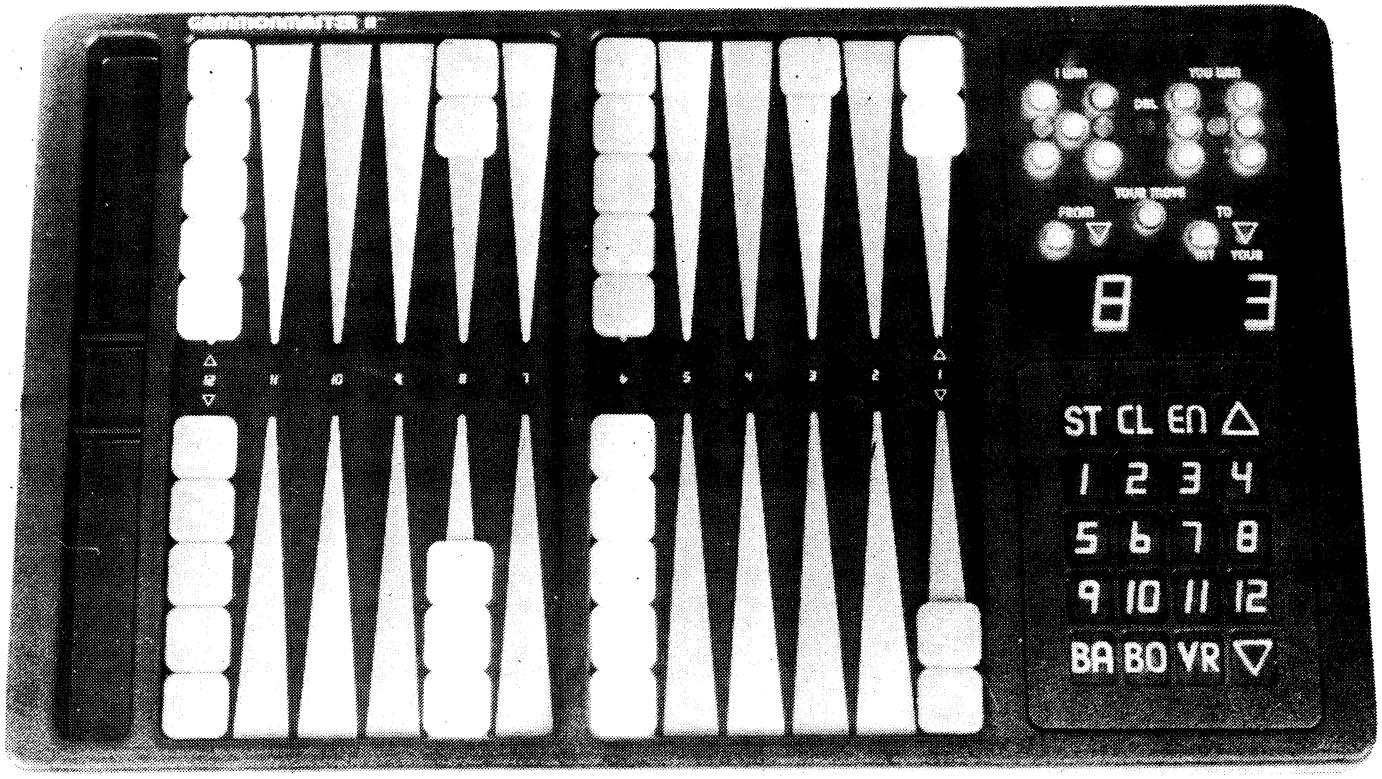
All the rules and strategies of backgammon are programmed into the computer and include running game, blocking game, hit and run game, back game, blot hitting contest, and bear-off game. Any or several of these strategies can be employed by the computer during the course of a single game, depending on how its human opponent develops his own game.

The unit itself is compact and portable. It comes housed in a moulded plastic case that incorporates all of the electronics (except for the power transformer), a control panel, and a standard backgammon board. A neat touch is the narrow channel running down the left hand edge of the case, to accommodate pieces taken off the board.

A simple numerical coding system is used to enable the computer to keep track of each piece on the board. The points are labelled right to left from 1 to 12, while arrowhead symbols are used to indicate either an upper point or lower point. ▼ indicates a lower point, while ▲ indicates an upper point.

The control panel consists of a keyboard, a 7-segment LED readout, 2 electronic dice controlled by a random number generator, and various indicator lights. The latter simply indicate such things as upper or lower point, the winner, and whose turn it is to move!

The Gammonmaster II comes packaged in a neat little carrying case. Transformer and playing chips are included in price.



How do you decide who goes first? Well, the machine decides that for you on the first roll of the dice. The game is started by pressing the ST key and if the rightmost die is the highest number, the player is the first to move. But if the leftmost die is the higher, then the Gammonmaster II moves first.

Although not stated in any of the supplied literature, it is presumably impossible to throw a double when the ST key is pressed to commence the game. We certainly were not able to do so!

To play the game, the player now has to key in the appropriate moves and place the pieces in their new positions. The computer then responds with its own moves. Keyboard entry is quite logical and straightforward, as the following example will illustrate.

Let's say that the player has thrown a 3 and a 5 on the electronic dice and wishes to move one piece from upper 12 to lower 8, and a second piece from lower 6 to lower 3. All he has to do to enter his moves is key in the following sequence: ▲ 12 ▼ 8 ▼ 6 ▼ 3 EN. The dice will roll again and, after a slight delay, the computer will display its own move on the readout.

The player then moves the computer's piece to the position indicated. Further moves are indicated at each press of the EN key, until the computer has finished its turn. Pressing the EN key again then causes the dice to roll and lights the "your move" indicator LED.

Playing a piece from the bar, or bearing off, is just as easy. For example, to enter from the bar, the player simply presses the "BA" key followed by the row designation and the point number. Bearing off is carried out by first designating the piece and then pressing the "BO" key.

The game thus depends on correct use of the keyboard and proper positioning of the pieces. But what if you inadvertently place a piece in the wrong position; or key in an illegal move?

For either event, the Gammonmaster II has a trick up its sleeve. First, the position of every piece on the playing board can be verified whenever the "your move" indicator LED is lit. By pressing the "VR" key, the first point number checked will be displayed in the "from" window, with the number of pieces on the point shown in the "to" window. Subsequent points are then verified by repeatedly pressing of the "VR" key.

Only points which are occupied by at least one piece are verified.

Illegal moves are met with double zeros ("00") on the display. This situation is corrected by clearing the display (CL key) and re-entering each move, making sure that the error is corrected. The CL key can also be used to clear any unwanted moves.

The position verifier is a good feature, as it is easy to inadvertently misplace a piece. When playing a human opponent, there is no way that any dispute can be satisfactorily resolved. With the Gammonmaster, the computer keeps track of each piece as the game progresses, so there can never be any doubts.

And because it knows where each piece should be, there is no way that you can cheat. Nor will it let you inadvertently cheat yourself!

Operation of the keyboard is thus virtually foolproof. There is only one way to destroy a game in progress, and that is to press the "ST" key twice. If there is an incorrect move or a keying error, the machine simply refuses to take its turn until the situation has been corrected.

So we were very impressed with the Gammonmaster II and the way it operates. Not so impressive was the small 240VAC to 9VAC step-down transformer supplied with the unit. Both the line-in and line-out cords enter straight through the plastic case housing the transformer, ultimately risking cord breakage due to flexing.

Is it possible to beat the Gammonmaster II?

In a word, yes! Backgammon is a game of luck as well as skill, so the machine can be beaten.

In fact, since writing those introductory paragraphs, the writer has been able to regain some of his lost self-esteem by winning several games. It's very sporting about losing too — no temper tantrums or sulking here. It just sits there, waiting to take its revenge in the next game.

The only sad note is perhaps the price which, at $299.00 recommended retail, is definitely for the "well-heeled". Still, the price is probably not unreasonable — after all, the Gammonmaster II is a complete dedicated computer programmed with all the rules of backgammon!

You can buy the Gammonmaster II from Futuretronics Pty Ltd, 756 Burke Rd Camberwell, Victoria 3124. A microprocessor-based draughts game, called the "Checker Challenger", should also be available from Futuretronics by the time this article appears in print.

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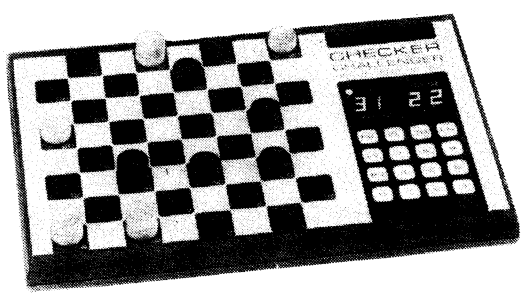

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2nd	SARGON (TRS-80)	6	5	1	8½
3rd	BORIS	7	2	3	8
4th	MICROCHESS 2.0 (PET)	3	4	5	5
5th	CHESS CHALLENGER-3	2	5	5	4½
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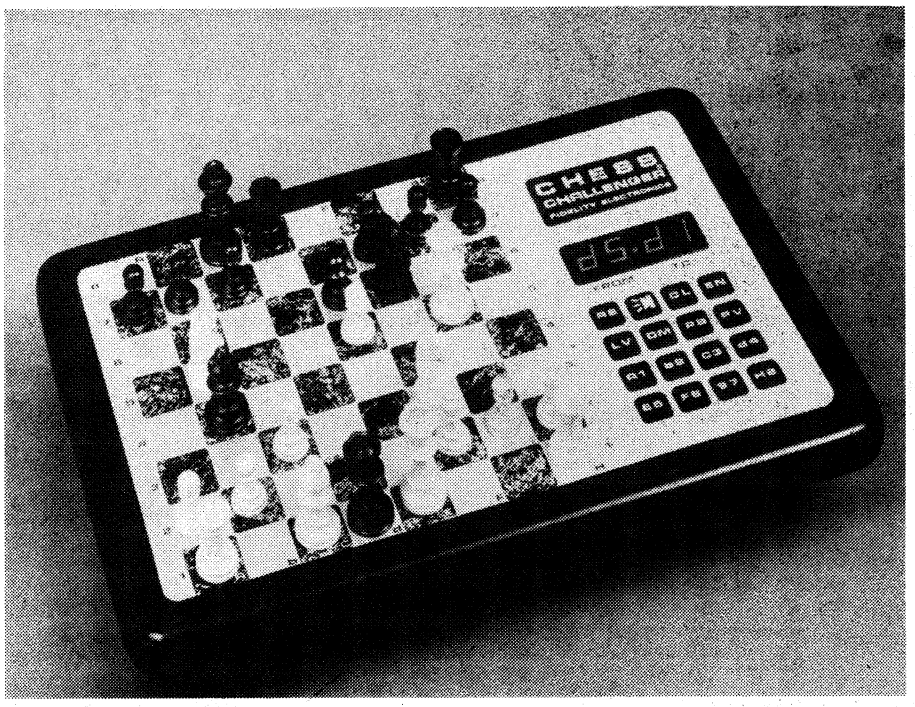
Computer plays chess — and talks!



American manufacturer Fidelity Electronics Ltd has added a voice to its now famous Chess Challenger, a microprocessor based chess game. The new game is called "Voice Chess Challenger", and takes its place alongside the earlier Chess Challenger 7 and Chess Challenger 10 games.

Voice Chess Challenger is based on the Zilog Z80A CPU and is said to include the most powerful chess program ever placed in a microprocessor. Backing up the CPU are 8k bytes of ROM to store the game program and rules, another 4k bytes of ROM to store the voice program, and 1k bytes of RAM to store the positions of the chess pieces.

The voice program allows the latest in the Chess Challenger line to be used by the blind. Each move and capture is audibly read out, and the board positions can be audibly listed on demand. At the conclusion of the game, the computer displays the number of moves played.

The Voice Chess Challenger will be released in Australia on July 18 next, and will be available from Futuretronics Australia Pty Ltd, 79-81 Levanswell Road, Moorabbin 3189. Retail price will be $495.00.

Voice Chess Challenger

You move the pieces but it does the thinking — and talks to you!

Fidelity Electronics (USA) has recently released a talking version of its now famous Chess Challenger, a microprocessor based chess game. Called the "Voice Chess Challenger", the machine is easy to use, has a vocabulary of over 50 words, and features 10 levels of playing difficulty.

by GREG SWAIN

I really didn't want to write this article — not after the battering my ego took at the hands of a smart-alec backgammon computer some 18 months back. Well it's happened again! Once more my ego has been trampled on, this time by the "Voice Chess Challenger", a talking chess computer from American manufacturer Fidelity Electronics!

I can't even claim that the computer cheated. Chess is a game of skill, not luck, and there's simply no opportunity for the computer to resort to skulduggery. So I have no excuse — except to say that I was badly out of practice.

Actually, I had a lot of fun playing Fidelity's Voice Chess Challenger. It's a fantastic product, not only because it's a complete chess playing computer, but because it also "talks" using computer synthesised speech. It's almost like playing a human opponent!

Voice Chess Challenger is based on the Zilog Z80A CPU and is said to include the most powerful chess program ever placed in a microprocessor. Backing up the CPU are 8k bytes of ROM which store the game program, another 4k bytes of ROM to store the voice program, and 1k bytes of RAM to store the positions of the pieces as the game progresses.

The unit itself is compact and portable. It comes housed in a solid hardwood case that incorporates all the electronics (except for the plugpack power transformer), a keyboard, a 4-digit 7-segment LED display, and the playing board. It fits neatly into an attractive plastic carrying case, and is supplied complete with chess pieces and instructions.

Approximate dimensions are 31 x 20 x 3cm (L x W x H).

Adding a voice to the Chess Challenger has certainly resulted in a product which is much more interesting than the earlier Chess Challenger 7 and Chess Challenger 10 games, both of which are still available by the way. The machine incorporates a vocabulary of over 50 words. It announces each key as it is pressed, tells you which pieces it has moved and captured, and informs you when your king is in check.

The cold, nasal-sounding computer voice will even remind you to "enter your move" if it thinks you're taking rather a long time to make up your mind. The voice facility may be turned off (or on) at any time without affecting the game in progress.

You approach the Voice Chess Challenger by switching on the power and pressing the reset key. The machine introduces itself with the words "I am Fidelity's Chess Challenger, your computer opponent. Select your level". By then pressing the level (LV) key, the player is able to choose one of 10 levels of playing difficulty, the unit simultaneously announcing and displaying the level each time the key is pressed.

To play the game, the player keys in his move on the keyboard, and moves the piece to its new position. The computer then announces and displays its own move. Keyboard entry is quite logical and straightforward as the following example will illustrate.

Let's say that, at the start of the game, the player wishes to move a knight from position g1 to position F3. The sequence of keystrokes is: g7, A1, F6, C3, EN (enter). That's five keystrokes in all! Simple, isn't it?

The average response time of the computer to the various levels ranges

Comment by Robert Jamieson, Australian Chess Champion

The first question most people will ask about the Voice Chess Challenger is "how well does it play?". I would classify its strength as that of a fair club player, with a rating of about 1100, which places it above 95% of social players who make up the vast majority of the chess playing public.

The computer, like human chess players, has its own strengths and weaknesses. It develops its pieces well, and will take advantage of most tactical errors on your part, ie, if you give it the opportunity to capture an unguarded piece or to win material by a knight fork, etc. However, its depth of calculation appears to be short so that it plays less well in endgames, where one must calculate a longer series of moves, and when it is being attacked it may miss some threats which are beyond its vision.

As a teaching instrument for inexperienced players the Voice Chess Challenger should be rather effective. It develops its pieces along classical lines, tells you if you make an illegal move and can let you know what it thinks is the best move for you to make, as well as having a repertoire of 40 "book" openings for you to follow if you like. Regrettably these openings are poorly classified on the instruction sheet, which makes it a little difficult to look up the line that you want.

Stronger players will be interested in the Voice Chess Challenger, not only because they want an opponent that can give them a good game, but because it is intriguing to try to work out how the computer "thinks" and to test its reaction to different types of play.

from just five seconds for level 1 up to 11 minutes for level 9. If level 10, the most difficult level, has been selected however, the response may take many hours — or even days. The player can ask the computer which move it is considering at any time, and can even halt the search effort and make the computer enter its next move.

Essentially, what happens is this: When set to level 1, the computer examines only a few of the more obvious move and countermove combinations, thus making it an easier opponent and taking no more than five seconds to respond. But, beginning with level 2, the search levels are progressively expanded, with increasing numbers of move combinations considered and corresponding increases in the response time.

Illegal moves are met with "- - - -" on the display and the announcement "illegal move". This situation is corrected by pressing the clear (CL) key and re-entering the move, making sure that the error has been corrected. The CL key can also be used to clear an unwanted move, provided it has not been entered.

At the conclusion of the game, the computer announces the winner with the words "I lose" or "I win" and, if it loses, displays the number of moves played. In the higher levels of play (above level 1), the Voice Chess Challenger may start to flash a victory and announce "mate in two", even before the actual checkmate. This feature tells you that it has set up a "mate in two" situation from which you cannot escape.

If all that sounds impressive enough, consider the following:

- the position of every piece on the board can be audibly listed (and displayed) on demand;
- the player can choose to play either white or black, and can change sides during the game;
- the computer will recognise and play En Passant manoeuvres, and can be made to play against itself;
- it's possible to set up and solve chess problems, to alter the position of pieces during the game, and to "resurrect" pieces which have been captured;
- there are over 40 book opening variations, either randomly selected or chosen by the player; and
- versions of the Voice Chess Challenger are available in German, French and Spanish!

So what's it like to play against? Well, it's certainly no pushover, even when set to the easiest level. It tries to control the centre of the board, and develops its knights, bishops and centre pawns early in the game. The king is usually "castled" into safety as soon as possible.

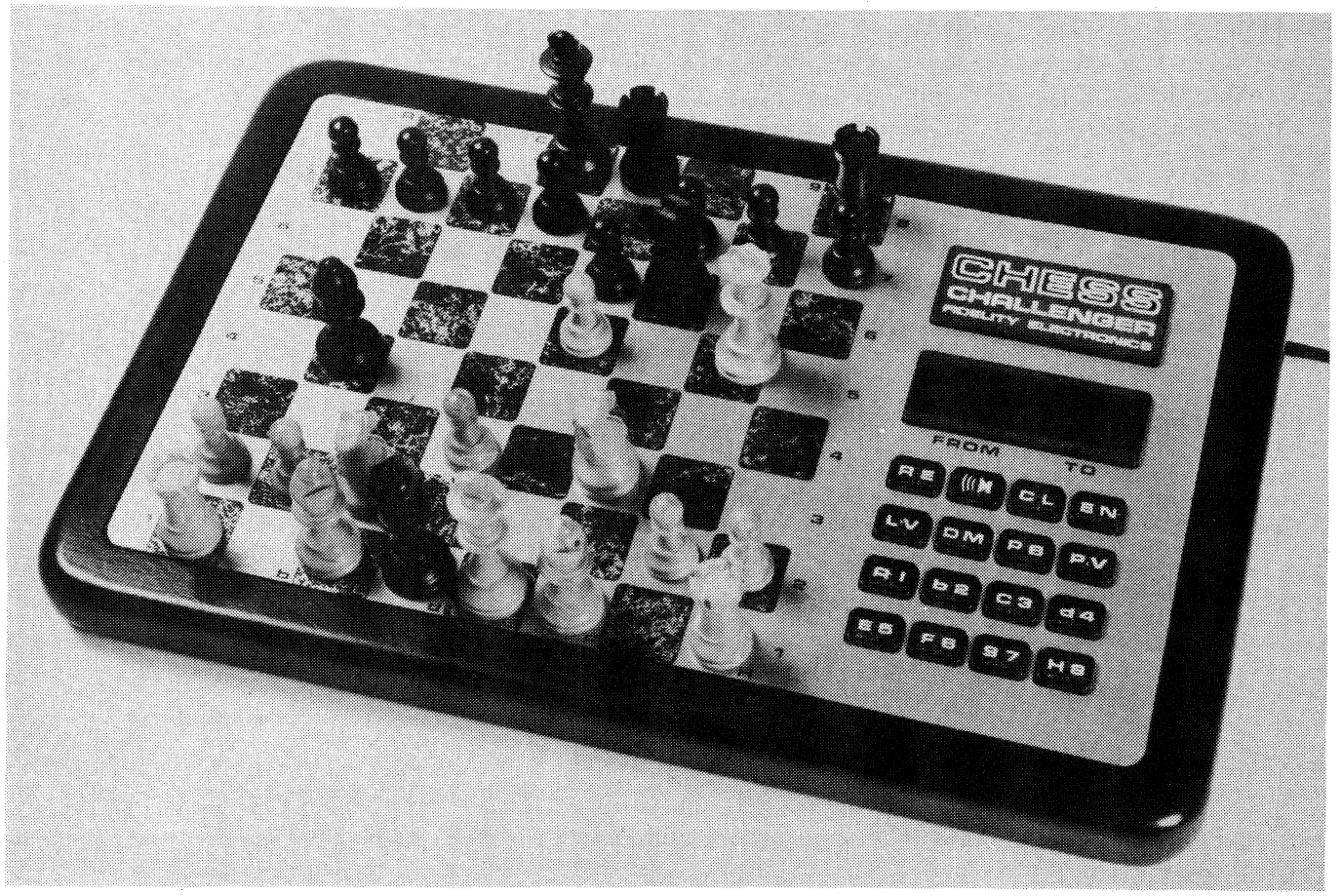
The machine is also very quick to take advantage of human blunders, such as leaving the queen or some other valuable piece unguarded. And once it's got you by the throat, it doesn't let go!

In case you're wondering, I did manage to beat the Challenger — eventually. The game took just on 1½ hours to complete, this with the machine set to the easiest level. It's very sporting about losing too — no temper tantrums or sulking here. It announces the result without emotion, and sits there waiting to take its revenge in the next game.

The only sad note is the price, which, at $495, seems likely to be beyond the means of many people. Still, the price is not unreasonable, especially when one considers what the unit does. Perhaps I could console myself with one of the lower priced non-talking models!

You can buy the Voice Chess Challenger from large department stores (Grace Bros, Myers, etc), and from specialty games shops. Further inquiries to the importers Futuretronics Pty Ltd, 79-81 Levanswell Rd, Moorabbin 3189.

The Voice Chess Challenger has a vocabulary of 50 words and 10 levels of playing difficulty.



Deluxe Chess Computer —moves its own pieces

by PETER VERNON

"The most exciting computer chess game on the market" is one way of describing Milton Bradley's "Phantom". It is not only a world class chess computer — it actually moves the pieces on the board, as if you are playing an invisible man who also happens to be a chess Grand Master.

Phantom provides a 26cm square playing area in a console measuring 54 x 46 x 8cm (W x D x H). The board is in brown and buff and is plastic coated, which together with the sealed membrane control buttons makes the chess computer reasonably moisture resistant. A removable perspex lid covers the top of the console when the unit is not in use.

At the right side of the console is the power switch and a socket for a 3-pin connector from a plugpack adapter providing both 6V and 12V AC. The manual states that the plugpack should not be left connected to the mains when the unit is not in use.

We see robustness and convenient operation as important considerations because the Phantom chess computer will be the centrepiece of many a family entertainment area and possibly come in for some hard use. To see why, let's take a look at what the system offers.

Operation of the chess computer

Quite apart from the uncanny independent movement of pieces in response to a move from a human opponent, the Phantom chess computer has a full complement of features, sufficient to retain the interest of beginner and veteran alike. Self-education is one important aspect – if you don't know how to play chess the Phantom will quickly teach you the game.

More experienced players will be challenged by the "skill" of the Phantom. The levels of play range from level 1, at which the computer actually strives to let you win, to level 12, at which the computer continues to compute the best move available until the "Stop" button is pressed. Level 2 is sufficient to defeat run-of-the-mill players, with the computer taking an average of five seconds for each of its moves.

The front panel of the Phantom chess computer is an array of pressure-sensitive membrane switches, giving 16 play options in all. Illuminated indicators on the left show which side is to move (Black or White), which piece the computer is about to move, Check or Mate, and other operating modes.

The user can select the level of play, set up a new game or a chess problem, change sides at any point during the game (handy if you're losing!), take back a move or a sequence of moves, ask for hints or set Automatic or Manual modes of play.

In the AUTO mode the chess computer will play both sides of a game, making an interesting conversation piece, chess tutorial or demonstration. Since the user can intervene in the game at any stage then return to the AUTO mode, the Phantom makes an excellent teaching machine.

To enhance the teaching potential there is a "hint" function which can be called up at any time during a game, and a "legal move" option which will indicate the moves which are available to any particular piece in any location on the board.

The Phantom will also allow the player to take back a move or to force the computer to take back its move. Using these functions the game can be played back to any desired point and then re-played, with or without alteration.

All of these functions are also available in the Manual mode, which allows two human players to compete using the Phantom as an "intelligent chess-board". Play proceeds as normal, but the chess computer will still indicate illegal moves and give hints as required. In addition the computer will remember the location of each piece on the board, so that if the game is upset it is only necessary to stand the pieces along the side of the board and press a button to restore the positions.

In addition the entire game between two human players can be re-played, with the computer reproducing the moves made by both sides to allow close study of the situation.

However, while the "Phantom" is capable of storing the moves of a complete game, this memory is not permanent. Turning the chess computer off will erase any stored moves as there is no battery back-up for the memory.

How does it work?

Beneath the playing surface of the "Phantom" are two sliding rods driven by separate motors with opto-interrupter revolution counters. When the motors are powered one rod moves across the board and the other from back to front.

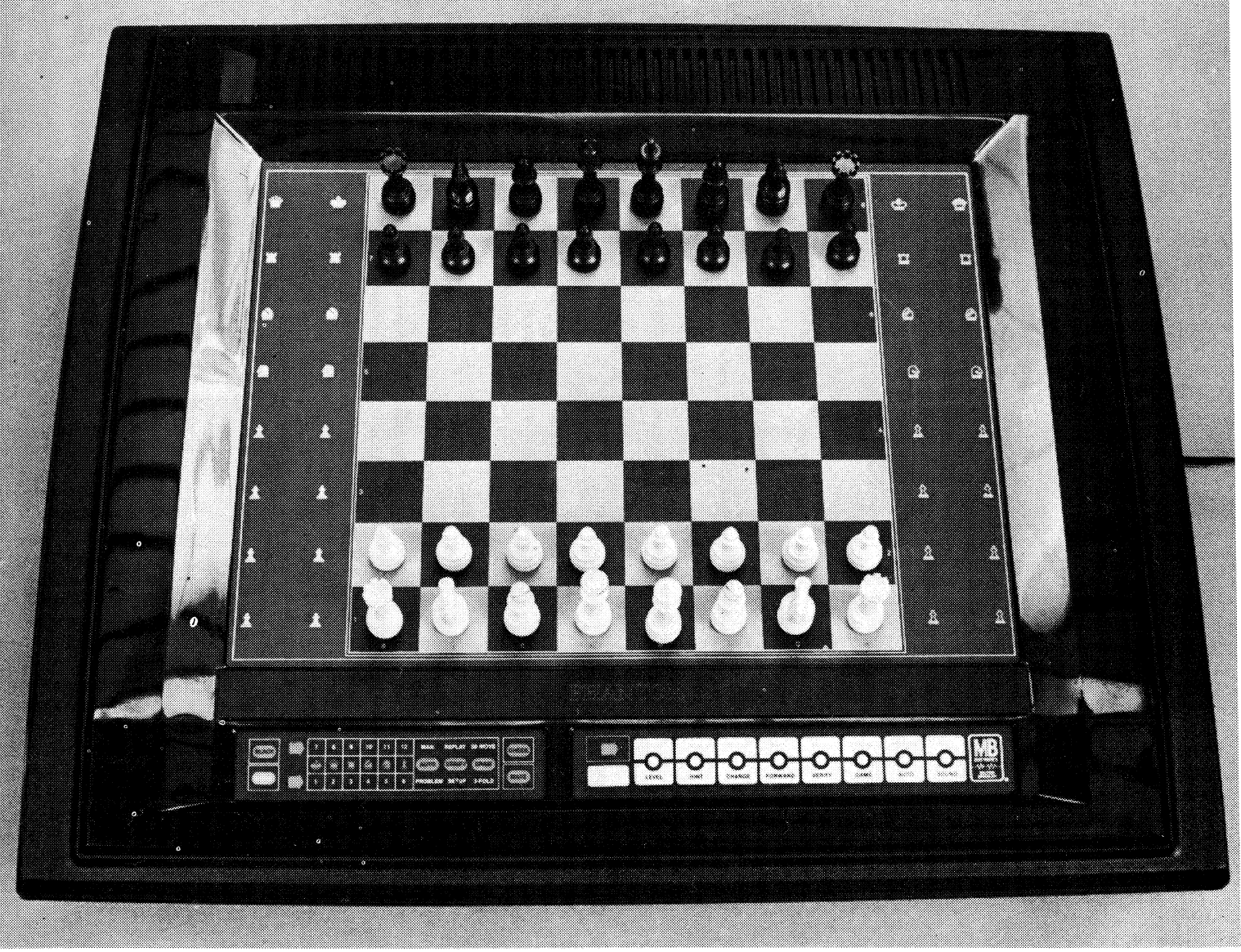
An electromagnet is mounted at the junction of the rods and is energised to attract and move the chess pieces, which have metal inserts in their plastic bases.

The computer does not recognise individual playing pieces, but assumes that they are set up correctly along the sides of the playing board at the start of the game. From these designated locations the chess computer will move the pieces into their correct positions on the board.

"Phantom" will not recognise an incorrect initial disposition. If the human player perversely sets up the game with a king, for example, taking the place of a pawn, "Phantom" will play the game on that basis, treating the king as a pawn. The machine is easy to confuse, if that's what you want to do!

The human player's moves must be "registered" by first pressing the playing piece on the centre of its square and then on the centre of the square to which it is moved. A soft "beep" indicates that the computer has detected the move.

The entire playing surface of the chess



An electromagnet under the board moves the pieces according to instructions from the computer opponent.

computer is in fact an array of membrane switches, with a switch for each square of the chess board and each initial position of the playing pieces at the sides of the board.

The electronics are mounted on a circular board in the base of the unit. Tactics for the chess game, movement of pieces and keyboard scanning is performed by a 6502 microprocessor under the control of a program in Read Only Memory. The human player's moves are stored in 2K of programmable memory for as long as power is supplied to the computer.

In conclusion

The "Phantom" is an attractive, full-featured chess computer. Its array of teaching functions, skill levels and operating modes are exceptional, even apart from the unique method of moving its own pieces. It should appeal equally to those who want to learn how to play chess or improve their game, while the higher levels of play will challenge an expert.

Two booklets are provided with the unit, one covering the operation and functions of the computer, with illustrations for each facility, and the other a straightforward illustrated list of the rules of chess for the newcomer.

"Phantom" carries a recommended retail price of $899 and is available from most department stores.

COMPUTER CHESS! by SciSys.

SciSys computer chess games are endorsed by Garry Kasparov, world's highest rated chess player, and are available from Rod Irving Electronics!

ELECTRONIC CHESS MK10

- Streamline design tabletop chess.
- New 8 level program from beginners to experts.
- Ideal teacher or strong opponent.
- Turn on/off any time. One year memory.
- 1,000 hours play with 3AA batteries.
- Optional mains adaptor available.
- Take back moves, verify, solve problems to mate in 3 and beyond.
- Player vs. player mode, thinks on opponents time, built in opening library.
- Beginner to expert; Estimated 1,500 Elo.

MK10 offers so much for so little!

Cat. C30002 **$149**

TRAVEL MATE

- Worlds most compact sensor chess.
- Ideal teacher or strong opponent.
- Turn on/off anytime. It remembers positions for up to one year.
- Plays for over 6 months on 3AA batteries.
- Knows all the rules and will not accept illegal moves.
- Low cost. 4 powerful skill levels. Estimated 1,400 Elo

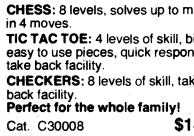
Cat. C30000 **$99**

COMPANION 11

SciSys No.1 selling full size computer!

- Very strong chess program.
- 9 levels with special zero level for beginners.
- Ideal teacher or formidable opponent.
- Turn on/off anytime. one year memory.
- 6 months play on 3AA batteries or optional mains adapter available.
- Take back moves, verify, solve problems to mate in 4 and beyond.
- Player vs. player mode, thinks on opponent time, built in opening library and strong end game.
- Beginner through club player to expert. Estimated 1,650 Elo.

Cat. C30004 **$199**



3 IN 1 GAMES

CHESS, TIC TAC TOE, AND CHECKERS!

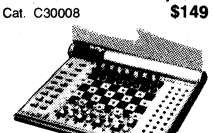
CHESS: 8 levels, solves up to mate in 4 moves.

TIC TAC TOE: 4 levels of skill, big easy to use pieces, quick response, take back facility.

CHECKERS: 8 levels of skill, take back facility.

Perfect for the whole family!

Cat. C30008 **$149**

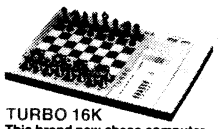


EXPRESS 16K

Instant response hand held chess computer.

- Instant response - uses opponents thinking time to prepare instant replies to several alternative opponent moves.
- Strong program beats 90% of all chess players (estimated SciSys-Elo 1800.)
- Automatic Display Move function
- Extra flat. High-value metallic finish.
- Fast 8 MHz 16K chip.
- 17 playing levels: 1 beginner, 8 casuals, 6 club, 2 special (analysis and problem to Mate in ten moves)
- Very long battery life, 1000 hours playing, one year memory.

Cat. C30006 **$199**



TURBO 16K

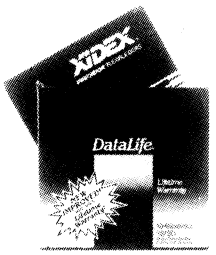
This brand new chess computer sets new standards in user convenience, and beats 92% of all chess players with its powerful 16K program.

Features:

Instant response

- Solves mate in 10 moves
- Internal clock with 2 LCD displays
- Displays moves considered
- Thinks in opponent's time
- Takes back
- 17 Levels
- 2 Year memory
- Mains adaptor socket

Cat. C30010 **$295**



5¼" FLOPPY DISK SPECIALS!

	1-9	10+
XIDEX S/S D/D Cat C12401	$31.00	$29.00
D/S D/D Cat C12410	$38.95	$36.50
VERBATIM DATALIFE S/D D/D Cat. C12501	$27.95	$26.95
D/D D/D Cat. C12504	$39.95	$37.95
VERBATIM VALULIFE S/D D/D Cat. C12421	$24.95	$22.95
D/D D/D Cat. C12425	$31.95	$29.95

3½" XIDEX DISKETTES!

Yes, that's right, we now have 'hard to get' 3½" diskettes!

Cat. C12600 S/S box of 10 **$65.95**

Cat. C12602 D/S box of 10 **$89.95**

DELUXE 5¼" DISK STORAGE UNIT

Features...

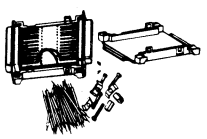
- Clear smoked plastic lid
- Diskette fan display system elevates the disks for easy identification and access.
- Lockable lid (2 keys supplied)
- High impact plastic base
- 45 diskette capacity

Cat. C16050 **$49.50**

MINI DISK STORAGE BOX

Holds up to 30 x 5¼" diskettes.

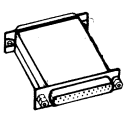
Cat. C16020 **$16.95**



RS232 MINI PATCH BOX

- Interface RS232 devices
- With male to female 25 pin inputs
- 25 leads with tinned end supplied
- Complete with instructions

Cat. X15654 **$25.95**



RS232C NULL MODEM ADAPTOR

- Male to female connections
- Pins 2 and 3 reversed
- All 25 pins connected

Cat X15658 **$19.95**

MODEM PHONE

Check the features and the value for money of this stylish new modem phone...

- Auto/Manual Answer, Manual Originate, Auto Disconnect.
- Speaker Phone with Built-in Amplifier for Detecting Busy Signal during communication.
- Carrier Detect Indication.
- 20 Memories (each with 18 Digits Capacity) for Auto-dialing.
- BELL 103 CCITT V21 Compatible.
- 300 BPS Full Duplex.
- Last Number Redial.
- Pushbutton Keyboard.
- Volume High or Low Control.
- "In-use" Dialing Indicator.

Cat. X19105 **only $174**

(Not Telecom approved)

RITRON MULTI PURPOSE MODEM

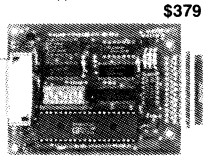
Our New RITRON Multi Purpose Modem has arrived and has all the standards you require.

Just check the Ritron's features:

- CCITT V21 300 Buad Full duplex
- CCITT V23 1200/75
- Bell 103 300 Full duplex
- Bell 202 1200 Half duplex
- Auto answer, auto disconnect.

Telecom Approval No. C84/37/1134

$379



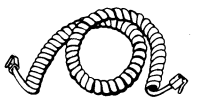
1200/75 BAUD RATE/BIT CONVERTER

For computers not capable of split baud rates. Buffers characters at 1200 and converts to 75 baud

Cat. X19105 **$99**

NEW PHONE PLUGS & SOCKETS

We hear on the grapevine that all future installation will use the U.S.A type of plug and sockets for communication lines.



TELEPHONE CURL CORD

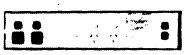
- U.S. plug to U.S. plug
- Replacement hand set cord
- Length 4.5 metres
- Colours: cream, dark brown.

Cat. Y16022 **$7.95**

TELEPHONE ADAPTOR

- Australian plug to U.S. socket
- Length 10cm
- Cream colour cable

Cat. Y16026 **$6.95**



MAINS MUFFLER

Sudden mains distrubances can seriously affect your computer equipment, and stored data. Why risk it when you can have a Mains Muffler, particularly when the cost of one failure is likely to be greater than the purchase price! So Vanish these dangerous clicks and Voltage spikes forever with the Mains Muffler.

Specifications:

Maximum total load: 1000w 4 AMP 250v 50Hz

First Stage- Single PI Section Attenuation - 150KHz - 40dB, 500 KHz - 65dB, 10 KHz - 80dB

Second Stage- Dual T Section Attenuation - 150KHz - 20dB, 500 KHz - 60dB, 10 KHz - 70dB

VDR Transient Suppression

Surge capacity 2000 AMP 8x20 uS

Cat. **$249**

IC SPECIALS!

	1-9	10+	100+
4116	$1.80	$1.70	$1.60
4164	$1.95	$1.75	$1.70
2716	$5.90	$5.50	$5.50
2732	$5.25	$4.95	$4.50
2764	$6.25	$5.95	$5.00
27128	$7.00	$6.50	$6.25
6116	$2.50	$2.25	$1.95
41256	$7.00	$6.50	$6.00
6264	$7.00	$6.50	$6.00

MSM5832 BACK IN STOCK!

1-9	10+
$12.50	**11.50**

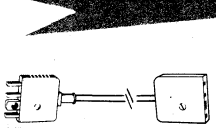
NEW IC's

	1-9	10+
MCS2400	$ 4.90	$ 4.75
41256	$ 9.00	$ 8.00
27128	$ 7.00	$ 6.50
74LS169	$ 2.50	$ 2.40
AY-3-1050	$12.50	$11.95
WD2791	$69.00	$67.00
WD2793	$69.00	$67.00
WD2795	$69.00	$67.00
WD2797	$69.00	$67.00
LM11CN	$ 2.95	$ 2.75
LM1871	$ 5.95	$ 5.75
LM1872	$ 5.95	$ 5.75
Z80ADART	$13.50	$12.95
LM338K	$10.60	$ 9.50
AMI53530	$24.95	$23.95
AM7910 (World Modem Chip)	$49.50	$45.00
UPC1031 R.F. Module	$19.50	
57716	$64.95	$59.95
27256	$69.00	$59.00

IC SPECIALS! 8000 SERIES

	1-9	10+
8085	4.50	3.50
8212	1.50	1.40
8216	1.50	1.40
8226	1.70	1.50
8243	4.50	3.90
8251	3.90	3.50
8253	3.50	3.30
8255	2.90	2.50
8257	3.50	3.10
8259	3.50	3.10
8279	3.50	3.10
2532	7.50	6.90
2764	5.50	5.10
27128	7.50	6.90
1488	.55	.45
1489	.55	.45

Rod Irving Electronics, No.1 for peripherals!!



TELECOMMUNICATION EXTENSION LEADS

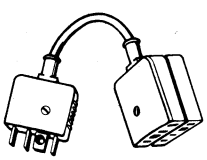
Cat. Y16010 5 metre **$12.50**

Cat. Y16012 10 metre **$14.95**

TELEPHONE EXTENSION CABLE UNIT

Allows 15 metres of telephone extension cable to be neatly wound into a protable storage container The reel sits on a squared off base and the reel has a handle to wind cable back on to it after use. No tangles - no mess! Ideal for the workshop, around the house, office, pool etc

Cat. Y16013 **$24.95**



TELECOMMUNICATION PLUG TO 2 SOCKETS.

Ideal for modem connections.

Cat. Y16014 **$12.95**

RS232 GENDER CHANGERS

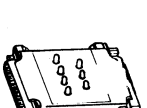
- Saves modifying or replacing non-mating RS232 cables by changing from male to female to male
- All 25 pins wired straight through

Male to Male

Cat. X15650 **$19.95**

Female to Female

Cat. X15652 **$19.95**

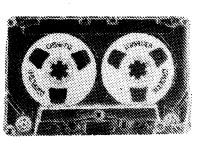


RS232 MINI TESTER

- Male to female connections
- All pin wired straight through
- Dual colour LED indicates activity and direction on 7 lines
- No batteries or power required

T.D. Transmit Data
D.S.R. Data Set Ready
R.D. Receive Data
C.D. Carrier Detect
R.T.S. Request to Send
D.T.R. Data Terminal Ready
C.T.S. Clear to Send

Cat. X15656 **$39.95**

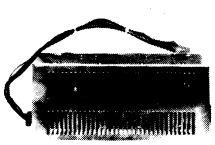


COMPUTER CASSETTES

Quality 20 minute tapes.

Cat. D11141

1-9	10+	100+
$1.50	**$1.40**	**$1.20**

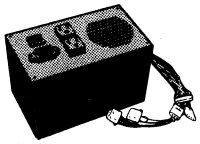


QUALITY SWITCH MODE POWER SUPPLY FOR APPLES

INPUT: AC. 240V

OUTPUT: DC. +5V. 5A +12V. 4A DC. −5V. .5A −12V. .5A

Cat. X11095 **$139**



130W IBM COMPATIBLE SWITCH MODE POWER SUPPLY

DC output: +5/13A, -5V/0.5A +12V/4.5A -12V/0.5A

AC input: 240V AC +−15% 1.5A 47Hz - 63Hz

Cat. X11096 **$239**

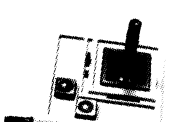
5¼" DISK STORAGE

Efficient and practical. Protect your disks from being damaged or lost!

Features...

- Smoked plastic cover
- Lockable (2 keys supplied)
- High impact ABS plastic base.
- Dividers/spacers

Cat. C16020 **$29.50**



JOYSTICK FOR IBM

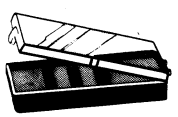
Features Selectable "Spring centering" or "free floating". Electrical trim adjustments on both axis. 360 degree cursor control

Cat. C14205 **$39.95**

APPLE JOYSTICKS

Ideal for games or word processing. Fits most 6502 "compatible" computers.

Cat. C14200 **$29.95**



IC STORAGE CASE

Electro static charge proof plastic IC case with conductive sponge. Dimensions: 75 x 130 x 19mm.

Cat. H10095 **$5.95**

UV EPROM ERASER

Erase your EPROMs quickly and safely. This unit is the cost effective solution to your problems. It will erase up to 9 x 24 pin devices in complete safety, in about 40 minutes (less for less chips).

Features include:

- Erase up to 9 chips at a time
- Chip drawer has conductive foam pad
- Mains powered
- High UV intensity at chip surface ensures EPROMs are thoroughly erased
- Engineered to prevent UV exposure
- Dimensions 217 x 80 x 68mm

Cat. X14950 **$99.50**

COMPUROBOT

Simply key in a list of commands to the amazing Compurobot and watch him go about performing even your most complex manuevers - up to 48 steps! Forward, backward, left/right turn, left/right curve, robot noises, flashing lights and a multi speed gearbox!

Cat. **$49.50**

Computer chess from Dick Smith

If you thought that chess was a game that took two to tango, think again! The advent of computer-controlled chessboards means that the game can now be played alone.

Dick Smith Electronics Pty Ltd has two new advanced computerised chess games which are suitable for players of all levels — from novice to tournament level.

The low-cost "Piccolo" is a compact, lightweight portable chess game that makes an ideal travelling companion. It features eight skill levels and, unlike many computer chess games, Piccolo is programmed with international chess rules: en passant moves, castling and pawn promotions, check, stalemate and mate announcements.

The second game, the "Allegro", has the appearance of a traditional chess board. It has all the features of the Piccolo plus a 24K memory for storing and recalling past moves.

The Piccolo retails for $69.95 and Allegro for $139.95.

For further information contact Dick Smith Electronics Pty Ltd, PO Box 321, North Ryde, NSW 2113. Telephone (02) 888 3200.