When I Think Back...

by Neville Williams

Father Archibald Shaw and his pioneering radio factory

Not widely known, and seldom mentioned, Father Shaw was nevertheless a true and notable pioneer of Australia's indigenous wireless manufacturing industry. But his life story, pieced together from scattered sources, reads more like a piece of improbable fiction than an actual biography. Unfortunately, few of the people who would have known him personally are still living.*

Father Shaw himself.

One is tempted, by way of a titillating introduction, to list some of the improbabilities which mark the life story of this most unusual Roman Catholic priest. But I choose, instead, to let the story unfold as it will.

The records show that Archibald (later Father) Shaw was born at Adelong, NSW, on December 16, 1872 — but certainly not into a traditional catholic family of that period.

His natural father was Charles Shaw, a protestant Scotsman from Aberdeen who came to Australia in about 1849 at the age of 17. On landing, he found his way to Adelong, NSW, not far from present-day Canberra.

Adelong, at the time, was a busy gold mining centre from which, at its peak in 1857-59, something like 60,000 ounces (1.7 tonnes) of gold were extracted annually. In those same years, the local population peaked at about 20,000, including about 2000 Chinese — a significant statistic in days when society was not sensitive about racial prejudice.

Charles Shaw apparently won his share of the rewards as a goldminer, sufficient to set himself up with a house and a bride — Catherine Scanlon, from Campbellfield, now Minto, a remote south-western suburb of Sydney.

The wedding was quite an ecumenical occasion, more commonly regarded in those days as one of those highly dubious 'mixed' marriages: Charles, a Scottish presbyterian, marrying Catherine an Irish catholic in a ceremony conforming to the rites of the Wesleyan church and conducted in Charles' house by a methodist minister, Rev Henry Pinchcombe.

At about that time, readily accessable gold began to cut out and, as often happened in that situation, independent miners drifted off elsewhere, giving place to mining companies with their large crushing mills.

Having had enough of mining, anyway, Charles and Catherine Shaw moved into the hotel business, with Shaw's Adelong Hotel winning occasional mention in the *Tumut and Adelong Times*. Charles himself wins further mention as a noteworthy citizen of the district, although less flattering comment suggests that he may well have been one of his own hotel's best customers!

Five children were born to the couple, of whom Archibald — the subject of this story — was the fourth. At age four, he had an operation at the Sydney Children's Hospital to correct an ankle problem, which left him with a noticeable limp for the rest of his life.

Poverty, hardship

Within months of the operation, young Archibald's world began to collapse; his father died at age 44 and was laid to rest by a presbyterian minister. His mother was left to run the hotel but, four years later, at age 37, she also died and was buried a catholic. It fell to the eldest daughter, aged 14 or 15, to travel to Tumut and register her mother's death.

Orphaned, the five children were apparently looked after, as best they could, by relatives and friends in the Tumut area — but exposed to more than their share of hardship and poverty. Young Archibald, it would appear, spent his early 'teens in timber country and may well have worked in one or other of the local timber mills.

Which brings us to the first unresolved question in the life story of Archibald Shaw: why would an orphaned country kid from a 'mixed' religious background, with limited education, working as a rouseabout in a timber mill, decide to enter a catholic religious order — the Congregation of the Passion, at the Presentation Retreat in Goulbourn, NSW?

The most likely answer is that he got a job in the Post office at Goulburn and, while there, was influenced by a mission held in the town by an itinerant catholic evangelist.

Lack of relevant documentation suggests that his stay with the Order was a brief and unremarkable one, probably as a probationary or a novice, and subsequently disqualified from appointment by reason of his permanent limp.

What is known is that, after leaving the Goulburn Passionists, he turned up on Yule Island in British New Guinea

in February 1894, as a lay missionary, with a group of Missionaries of the Sacred Heart.

Archibald Shaw's job on Yule was to act as a secretary of sorts to the leader of the Mission, Father Navarre, a Frenchman with a limited knowledge of English. He was also required to act as an English language tutor to French, Belgian and Dutch students who had been sent to complete their theological training at Yule Island.

In this environment, Shaw applied to join the Order and was finally allowed to begin his Novitiate on the Island. In September 1896 he began his formal studies for the priesthood.

In no sense a brilliant student, he had nevertheless learned Latin, French and the local language quite well and, if Fr Navarre had had his way, 'Brother Placid', as Shaw came to be known on the Island, would have completed his studies on the spot.

Priest/Procurator

Mission Headquarters had other ideas, however, and Shaw was directed to the newly founded Sacred Heart Monastery at Kensington, near Randwick in eastern Sydney. He was ordained to the priesthood in June 1900 and temporarily assigned as Chaplain to soldiers encamped on the nearby Kensington racecourse, prior to their departure for the Boer War.

Presumably because of his experience in the mission field, Shaw was made Assistant Procurator for the Sacred Heart Missions in 1900. His task was to look after the supply needs of catholic missions in the Pacific region, principally those in Pomerania (New Britain) British New Guinea (Papua) and the Gilbert and Ellis Islands (Kiribati). It was a tough assignment, which required more funding than was forthcoming from Europe.

But, again, we find one of those odd twists to the story of Archibald Shaw.
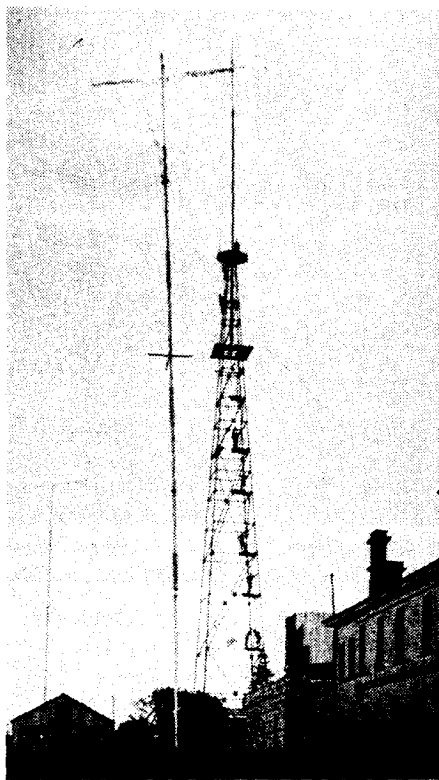
The 76m antenna tower and mast erected at the rear of 4 Dutruc Street, Randwick around 1911.

Although completely untrained in art, the young priest had displayed a natural talent as a painter. He managed to sell two of his paintings for £50 ($100) each – a lot of money in those days – and then set about painting two large religious canvasses – about 10ft or 3m square – one of which is still preserved in the Monastery at Kensington.

He soon realised, however, that as a copyist rather than a true creative artist, his work could have only limited value. Consequently he cast about for a more effective way to raise money locally for the missions.

To add to the problem, the Mission bought a property in nearby Randwick, in 1907, to serve both as headquarters

Shaw's spark transmitter circuit looks disarmingly simple, but the voltage at the spark gap was measured in kilovolts and RF power output was around 5kW.

for the Procurator and as a sanatorium for sick and convalescent missionaries. Supervised by Fr Guis, with Fr Shaw as his procurator/assistant, this more ambitious 'Procure' had to be supported in any way possible.

It was at this point that Archibald Shaw – country kid, orphan, semi-cripple, rouseabout, missionary priest, amateur artist – turned his attention to the science of wireless telegraphy, which was in its infancy worldwide, let alone in Australia.

In seeking an explanation as to how Shaw could arrive at such a decision, Archivist Fr J.F. McMahon quotes this snippet from one of Shaw's letters:

I had a knowledge of electricity and engineering before I entered the Order ... and determined to use my knowledge in the engineering line to create money for the Procure ...

In an academic sense, his knowledge probably didn't add up to all that much, but I spent enough time in the country myself to know that country people with an aptitude for mechanical things quite commonly acquire impressive skills as 'bush mechanics'. Certainly, as 'Brother Placid' in New Guinea, Shaw had won the respect of his superiors as a man 'of very practical bent'.

Added to that is the fact that, in those days, wireless telegraphy involved gadgetry that was more mechanical and electrical than 'electronic' – a word that had yet even to enter the language. It was the kind of gadgetry that could well be assimilated by a self-educated handyman.

Again, Shaw had worked for a while in the post office in Goulburn, then a busy rail centre in the southern highlands of NSW. In a large post office, he would have been exposed to the ceaseless clatter of the telegraph sounder and, according to historian Philip Geeves (*EA*, May 1974) he became a qualified PMG telegraphist, very much at home with Morse code.

Bitten by the 'bug'

Exactly how Father Shaw came to be bitten by the proverbial wireless bug is open to speculation, however. One thing that is certain is that a fellow priest, Father Joseph Slattery, had been conducting experiments in wireless telegraphy since 1903 at St Stanislaus College, Bathurst, NSW, as part of a course in natural science. As Science Master of the College, his interest was purely academic and he was content simply to demonstrate wireless transmission over a distance of 3 miles (4.8km).
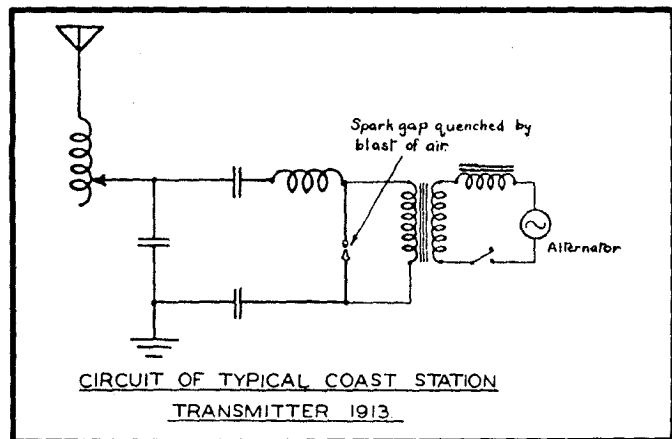
CIRCUIT OF TYPICAL COAST STATION TRANSMITTER 1913

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However, like Marconi before him, Shaw was fascinated with the idea of purposeful two-way communication by wireless, and obviously made it his business to learn as much as he could about it with a view to putting it to practical use. He obtained a wireless experimenter's licence in 1910, enabling him to operate a station of his own, when he could manage to get one together.

As Assistant Procurator, responsible for purchasing a wide range of materials for the Mission, Father Shaw had built up a circle of friends and acquaintances in the business fraternity. One such was a certain Mr Kirkby who, with his two sons, ran a small electrical appliance manufacturing business.

Shaw's interest in wireless telegraphy proved infectious, and it wasn't long before the Kirkbys became involved in making up wireless parts to Father Shaw's specifications. Since there was obviously a market for such parts, a profit sharing arrangement was worked out whereby Fr Shaw would attend to the design and paperwork and the Kirkbys would be responsible for production.

From Archivist Fr McMahon's account of what followed, it would seem that the Shaw/Kirkby team displayed a dedication and enthusiasm unique even amongst the early wireless cranks. The Kirkbys moved into the house called 'Ascot', owned by the Mission and adjacent to the Procure building, and began manufacturing wireless parts full time. Shaw's own wireless station began to take shape in another room in the same house.

It was a strange involvement for an ordained priest, but tolerated because it
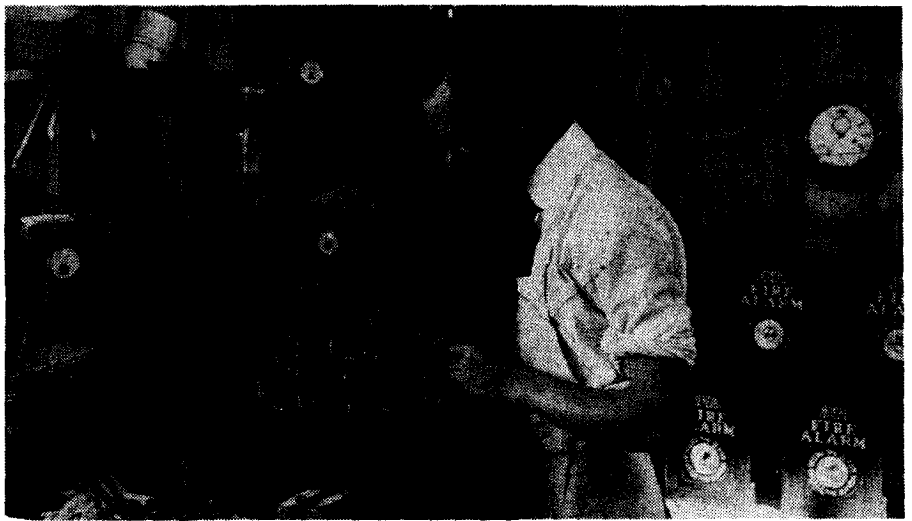
In 1913, Raymond Allsop joined Shaw's factory as an apprentice. Here he is shown assembling a spark transmitter.

was the means to a legitimate end. Rarely indeed did Fr Shaw get to perform any of the normal duties of his priestly office.

As the scale of the operation grew, they formed a limited company in 1911: the Maritime Wireless Company (Shaw System) Ltd. Some of Shaw's designs were patented, while Kirkby patented a Fire Alarm System, which was taken up by the NSW Fire Brigade.

A timber wireless mast required for the wireless station was erected in the grounds of the Procure, but was demolished in fairly short order by an unfriendly cyclone. Nothing daunted, Shaw rallied support from neighbours and the business community – both catholic and protestant – to erect a 170ft (52m) steel tower. When a new wooden mast was added, it rose some 250ft (76m) above the Randwick landscape.

1911-14 were boom years for Father Shaw. In 1911, his wireless station, according to a story in the Sydney *Daily Telegraph*, was the most powerful in Australia. His manufacturing activities in a large galvanised iron building at the rear of 4 Dutruc St, Randwick constituted the first substantial wireless factory in the nation.

Nor was there any lack of customers for Shaw's wireless communication equipment, prominent among them being local shipping companies, and planters and traders in New Guinea. Staff numbers at his factory built progressively to 170 (according to Shaw).

Three good years

Establishment of the factory also coincided with a move by the Australian Government to establish a chain of land-based wireless stations to communicate with shipping in the area. The obvious companies to tender for their
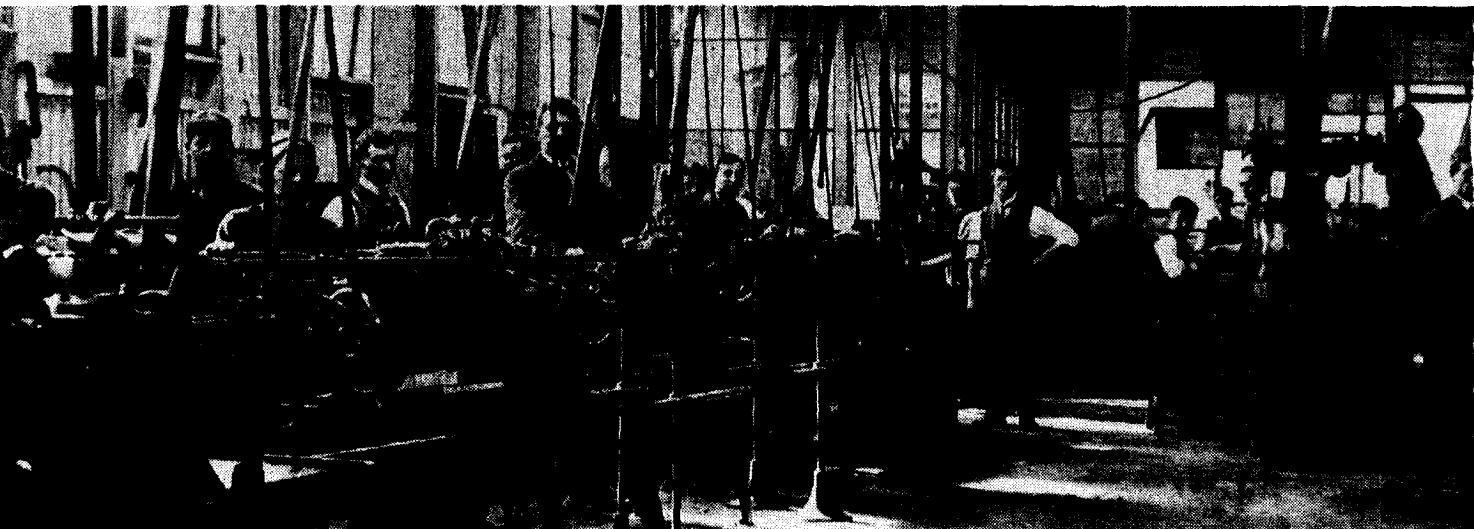
A view inside the machine shop of Shaw's factory, taken around 1912.

Another view inside the radio factory in 1912, this time showing the motor/alternator winding and fabrication area. Note the windings hung up to dry, after varnishing.

installation would normally have been Marconi, based in Britain, and a German consortium headed up by Telefunken.

Between them, the two groups held most of the key patents to do with wireless telegraphy, but the rivalry between them was bitter in the extreme – particularly in Europe. Contracts for the first two Australian stations, Sydney and Perth, had gone to Telefunken, operating through a group of Sydney businessmen who had formed a company trading as The Australasian Wireless Co.

Reacting to this, a young and ambitious Marconi operator named Ernest Fisk had set up an office in Sydney, in 1911, to promote the products and services of the Marconi company (see 'Sir Ernest Fisk', in *Electronics Australia* June, 1989).

In fact, the Fisher Labor government, elected a few months previously, opted for the local manufacturer and Shaw's Maritime Wireless Company won contracts to install the next 17 land-based stations. While this coincided with the Fisher government's 'buy Australian' policy, Fr Shaw also had a keen supporter in Cabinet in the person of Senator James Long, who greatly admired what he was doing, and whose son was employed in the Randwick wireless factory.

In his paper 'A Quarter-Century of Radio Engineering in Australia' (*IRE World Radio Convention*, 1938) AWA Chief Engineer A.S. McDonald gives details and photographs of Telefunken's powerful Pennant Hills (Sydney) transmitter using a 400ft (120m) lattice steel

antenna support tower and powered from a 500-cycle alternator driven by a 75hp diesel engine.

Circuit-wise, the transmitter circuit looks no more complex than that of a crystal set. But the actual equipment, as pictured in McDonald's paper, occupies a room with a 20ft (6m) ceiling – a reminder that the ostensibly simple circuit operated with a spark gap breakdown voltage of 60kV and delivered a nominal RF power output of 8kW in the range 300 to 3500 metres (100 to 11.7kHz).

At Pennant Hills, according to McDonald, the receiver was a crystal type using a zincite/boronite, steel/carborundum, steel/galena or electrolytic detector. At the time (1912) coherers were obsolete, magnetic detectors were no longer used in land stations and Fleming thermionic diodes were still few and far between.

(Crystal type receivers served the purpose mainly because they were normally used with the large transmitting aerial and, since there were few signals on air at any one time, sensitivity did not need to be compromised in the interests of selectivity.)

Patents trouble

McDonald notes that stations supplied by the Australian Shaw Company operated at somewhat lower power level than the Pennant Hills transmitter (5kW instead of 8kW), using a quenched spark gap which relied on a blast of air for de-ionisng that in the immediate vicinity of the spark gap. (See circuit). Seventeen such stations were installed

around the Australian coastline, including Melbourne, Adelaide, Geraldton, Broome, Port Darwin, Thursday Island, Port Moresby, Cooktown, Townsville and Brisbane.

The Marconi and Telefunken companies, alike, were exasperated at being effectively shut out of the Australian market, and instituted court proceedings in respect to patents which they claimed were being infringed by the local manufacturer. Incredibly, the Federal Government made available the Crown Solicitor to represent Shaw and even guaranteed to meet his liabilities, should he lose the case.

In the long run, both companies withdrew their action. But Shaw still had to face action by John Graeme Balsillie, who claimed that Shaw had stolen some of his inventions. Balsillie, a young Australian, with considerable overseas experience in wireless, had been appointed by the Fisher government as an 'expert adviser' on wireless to the Postmaster-General.

To this point, Father Shaw's biography reads like a classical success story. The partially crippled orphan from the bush had taken an idea, a hobby, and turned it into Australia's pioneer wireless works. He had developed successful locally designed wireless telegraphy stations and set them up around the Australian coastline.

His idea of supporting the Sacred Heart Missions had succeeded beyond his wildest dreams. And if his brother priests were critical of his technical and commercial rather than parish/pastoral commitments, Fr Shaw had the enthusi-

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astic support of Cardinal Moran, who felt that the priesthood should be seen to be responsive to social and scientific change.

Wide interests

In fact, the boy from the bush seemed better able to cope with hard work at a modest level than with runaway success and the publicity that went with it.

An archive photograph shows a husky Fr Shaw, Mr Kirkby and a dozen or more apprentices grouped near the base of the Randwick transmitting tower. With the Government's concurrence, the party was to take wireless equipment to New Guinea to assist in the search for the British Administrator Stanford Smith, who had become lost in the jungle. As it turned out, the wireless equipment was not required — but the emergency served to emphasise the need for effective communication facilities with mission stations in the territory.

Shaw was also consulted about supplying wireless equipment for Mawson's expedition to the South Pole, and commissioned to install a wireless station on King Island in Bass Strait. More than that, he was invited to become official Technical Adviser to the Federal Government on matters to do with wireless.

As if such diversions were not enough, a prototype of an electric car was built at the rear of the Procure, and an experimental windmill that would hopefully generate a useful amount of electricity. Even an aeroplane reached the drawing board stage, in response to a current competition offering a prize of £10,000 ($20,000) for one designed and built in Australia.

The Group even dreamed up a remote controlled submarine which could conceivably be launched in Sydney Harbour and be directed out through the Heads to attack a lurking enemy warship.

Had the affairs of Shaw's company been under close scrutiny and control, such diversions of interest might not have mattered all that much — but they were not well controlled, and the diversions did matter! Moreover developments, both commercial and political, were taking shape which were destined to put an end to the company's brief dominance of the wireless field.

New company

In 1913, Ernest Fisk pulled off what appeared to be an startling coup by forming a new Australian company, partly government owned, which would acquire and administer the patent rights for Australia and New Zealand of both the Marconi and Telefunken groups.

Perhaps it was that, having failed to make any headway against a government committed to Australian-made products, the two companies had realised that their only hope lay in co-operation rather than rivalry, and in establishing an Australian identity. The Fisk proposal provided exactly that opportunity and AWA (Amagamated Wireless A'Asia Ltd) came into being, with Ernest Fisk as its General Manager and, later, Managing Director.

No less to the point, the Fisher Labor government was replaced, in June 1913, by a Liberal government under Joseph Cook, which switched its support to AWA for the provision of wireless communication equipment.

In an impassioned speech, in the following year, Senator Long praised the contribution that Shaw's Wireless Works had made to Australian communications during the previous administration. He also complained that the Cook government had totally boycotted them since then, even to preferring equipment from an enemy country (Germany) and leaving idle a well equipped factory and 250 young Australian workers in Sydney.

By that time, Fr Shaw was becoming chronically tired, and was often racked with pain and disabled from what he described in his letters as 'sciatica'. He was being challenged in the courts in respect to patents and, with little opportunity to perform priestly functions, was thinking of seeking release from his vows.

Worst of all, his once prosperous company was facing a liquidity problem, in part because he had been too easily persuaded to accept shares in various enterprises rather than actual cash repayments. More to the point, Fr Shaw was not a good business man and managing the affairs of the Wireless Works and its off-shoots, plus the Procure accounts and his own affairs proved too much for him to handle.

When news of the crisis reached Rome, a special Visitator, Fr Robert Linckens, was despatched from the Society headquarters to sort out the financial affairs of Fr Shaw's enterprise. Ironically, while a native of Holland, he was also a naturalised German citizen, and found himself trapped in Australia for six years following the outbreak of war.

The financial affairs of the Wireless Works, the Mission and of Father Shaw personally proved to be hopelessly interwoven, with cheques sent from Europe to support the Missions having been diverted to buy machinery for the factory with which Shaw could earn more money to donate to the missions!

Technically, it amounted to embezzlement and a 'scandal', although it is doubtful whether Fr Shaw's diversion of the monies was motivated by personal gain. In the long-run, the Visitator demanded that Fr Shaw sell his patents and the factory and use the money to
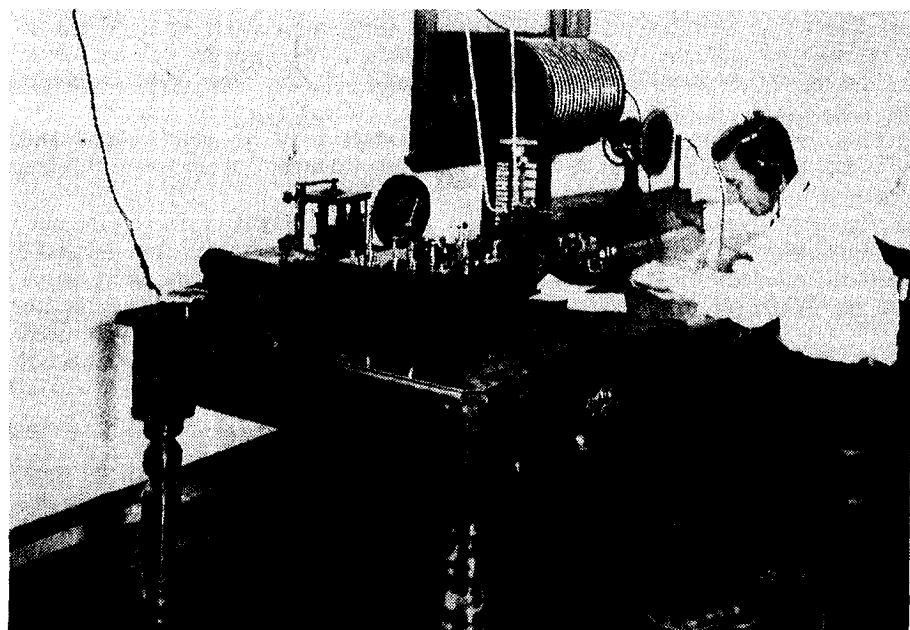
Father Shaw's transmitting station, in a room at the rear of the house called 'Ascot'. The operator may well be Raymond Allsop.

A group photograph of the employees at Father Shaw's radio factory, around 1912. The department managers are also visible. At its peak, there were around 170 employees.

make good his indiscretions, including £8700 ($17,400) owed to the island Missions.

The final chapter

Disposing of assets in wartime proved no easy task and, when Fr Shaw offered the factory and patents to the PMG Department for £60,000 ($120,000), they turned them down.

Talk of selling his patents also reawakened his differences with Balsillie, who regarded Shaw not only as an embezzler but a thief and a liar, who had stolen his ideas and claimed them as his own. The confrontation took up two or three months of Shaw's time, most of it spent in Melbourne.

Finally, with the assistance of Senator Long, Shaw approached the Federal Government, with a view to offering the enterprise to Senator Jensen, the Minister for the Navy. With the outbreak of war, the Navy had assumed responsibility for the administration of wireless communications in Australia.

After considerable haggling, a deal was finalised for £55,000 ($110,000) and the Wireless Works became a Naval establishment, under the Command of the nearby Garden Island Naval Base. For some years thereafter, it continued to produce a wide range of wireless, telephone and other communications equipment — plus engines and generators for the armed forces.

The purchase money was duly banked and much of it used to discharge liabilities identified by Fr Linckens. But one major withdrawal in August 1916, in notes of large denomination, was never accounted for.

At a subsequent Royal Commission (1918) into the Navy's acquisition of the Wireless Works, Senator Long admitted having received a payment of £1290 from Shaw 'for services rendered', but Senator Jensen denied ever having received anything at all personally from Shaw. Even so, following the Commission, Long resigned and Jensen was dismissed.

Unanswered questions

What happened to the missing money remained a mystery.

Shaw himself was not able to testify. Having made the withdrawal on Saturday, August 19, 1916, he booked into Melbourne's Coffee Palace Hotel, in mufti, as plain 'Mr Shaw'. On the Monday, he was found unconscious in his room, was taken to a private hospital and died in a coma five days later, reportedly from 'apoplexy'.

His death could have been accidental, due to heart seizure and a fall. Suicide was also mentioned, but considered unlikely because a Miss Evie Hoad testified that Shaw had proposed marriage to her, conditional on his being able to leave the priesthood. He had already made overtures with this objective to the Apostolic delegate, saying that he planned to leave Australia and seek employment in America.

A post-mortem examination gave the cause of his death as: 'chronic nephritis/-cerebral haemorrhage/indefinite'. Having in mind his earlier complaints about sciatica and chronic back pains, his death could well have been due to kidney failure, therefore to 'natural causes'.

But the large amount of money that was withdrawn and never accounted for also suggested that he could have been the victim of robbery and murder — a theory favoured by the Administrator of St Patrick's Cathedral, who ministered to him on his deathbed.

Father Shaw was buried after a solemn Requiem Mass at the Randwick Parish Church, followed by a funeral procession to the Randwick Cemetry formed by employees of what had formerly been the Shaw Wireless works.

After the war, the Randwick workshops passed from the Navy to the Dept of Repatriation, where they provided employment and training for returned soldiers. But the machinery began gradually to become obsolete, or simply wear out, and work ceased in 1922.

After that, the former factory was used to build the Wackett Widgeon trainer plane. The houses which Shaw used, 'Ascot' in Dutruc St and 'Archina' in Avoca St, are still occupied by Government personnel.

The role of Australia's prime indigenous wireless manufacturer was taken over by AWA, along with the training of marine operators in AWA's Marconi School. Father Archibald Shaw is but a dim memory. His body was transferred in the 1940s to the MSC community cemetery at Douglas Park NSW, a few kilometres south of Campbellfield/Minto, his mother's home town.

How he died remains a mystery, as also does the question of who got the £5000-odd ($10,000) that remained of his assets — money that might otherwise have paid for a new start in life in America! ⊕