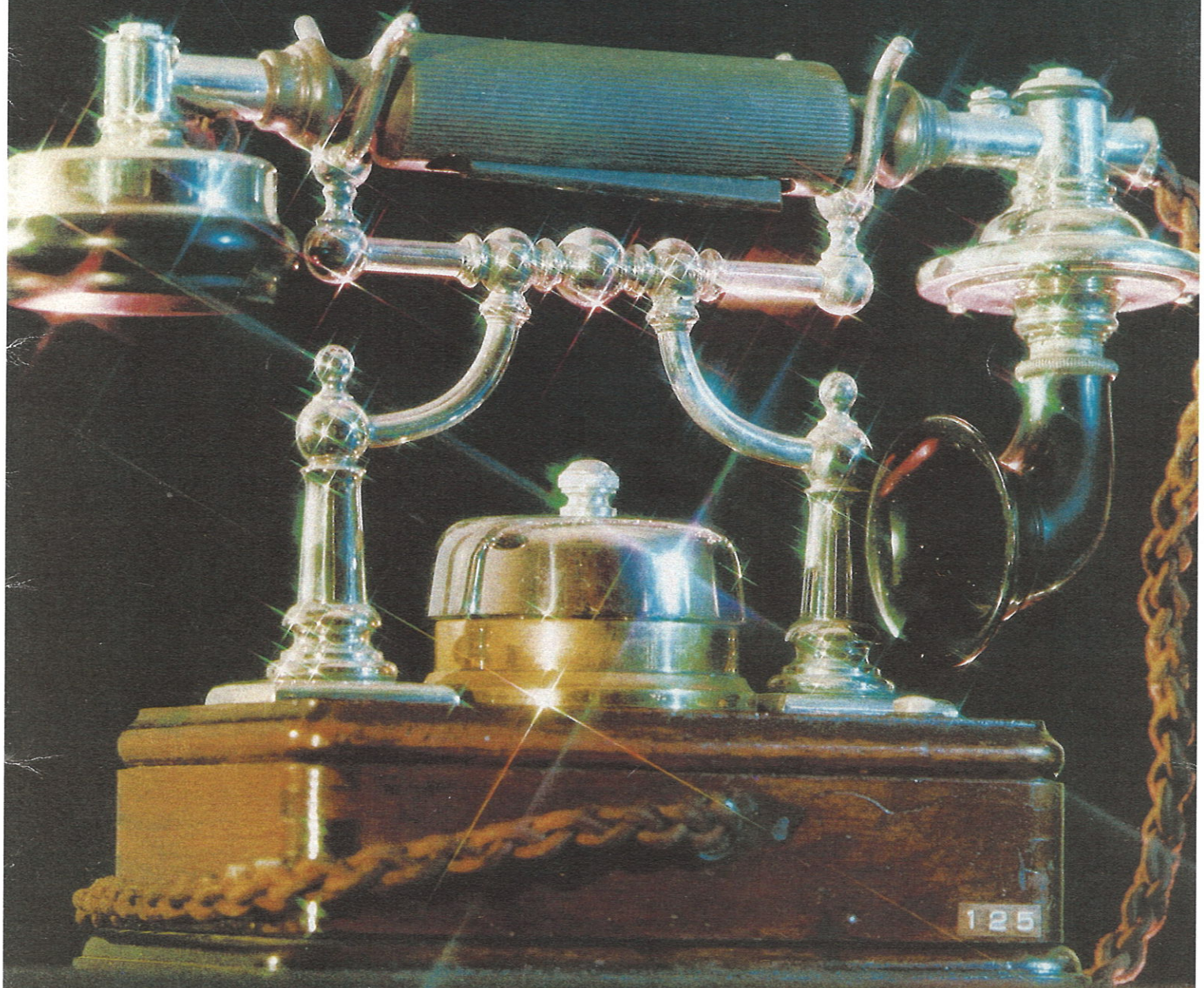
Telecommunications Museum
INAUGURAL REPORT 1980



Telecom Australia



THE COMMITTEE

K. F. WORK (Chairman)
M. J. GOOLEY
J. F. ROSS
P. M. McENTEE
B. A. TAYLOR

THE MUSEUM

Situated in Electra House, 131 King William Street, Adelaide, the Museum has been set up for the preservation of items and documents of historical interest, particularly related to communications in South Australia and the Northern Territory. It is a research facility available to accredited historians and is open for public viewing from 10.30 am to 3.30 pm Monday to Friday, except on designated holidays.

Front Cover: Inter Office Telephone produced by Gent and Company England 1895.
note: Dates shown in this publication are applicable to South Australia and the Northern Territory.

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THE CHAIRMAN'S REPORT

In launching this initial issue of "Telecommunications Museum Report", we bring to you an outline of what has been done in Adelaide, South Australia, to make a further, and we hope, interesting collection of historical items available for public viewing.

Our Museum is a technological one in which the collection traces the history of telegraphy, telephony and radio in South Australia and the Northern Territory. While the items were largely imported from other places for installation in our telecommunications system, some were indeed manufactured locally.

From Departmental sources, fine old telegraph apparatus apparently collected by the founder of the Telegraphs Department, Sir Charles Todd, starts a fascinating series. Many other thoughtful people have seen the historical value of recovered equipment and forwarded it to what is, after all, "their Museum", operated under the auspices of Telecom Australia.

The Museum gratefully acknowledges the contributions of ideas and gifts of apparatus which have come from many sources. Gifts from the public are noted as such within the respective displays. The attendants, former employees of Telecom, have contributed greatly to the public's enjoyment of the museum.

Development and expansion of displays in our home at 131 King William Street, is a continuing activity but is still far from complete. Actually, it never will be completed because it mirrors progress within the telecommunications art.

It is with pleasure that I present this first Report from our museum committee.

K. F. WORK
Chairman
Telecommunications Museum
and Engineering Historical
Committee


CHARLES TODD M.A. C.M.G. F.R.A.S.
By L.C. Upton
Presented by the Officers of the
Post & Telegraph Department of
South Australia 1886.

SIR CHARLES TODD

Sir Charles Todd founded the Government telecommunications network in South Australia in 1855. The network was begun with just one telegraph line (and two instruments) between Adelaide and Port Adelaide.

In the early days, Todd always spoke with confidence about the future links which would be established between the "seats of commerce" and indeed the remote isolated places of this vast country.

The staff were impressed by his great interest in them and the work. In 1886, he was decorated by Queen Victoria with a CMG and the staff were so pleased that they engaged the portrait painter John Upton to come from Melbourne to paint a portrait of their chief at their expense. This Charles Todd portrait now hangs in the Museum.

The portrait is the centre piece of the Telegraph exhibit looking down on the array of historic equipment there.

On his birthday in 1900, "The Register" featured a full-page report of an interview with him. There was a photograph of Sir Charles and references to his many honours. A framed copy of this report, printed on silk, hangs beside the portrait.

At the time of his death in 1910, telegraphy had been mechanized, the telephone system established, and radio telegraphy introduced. Throughout his life he had always encouraged people to learn about new techniques.



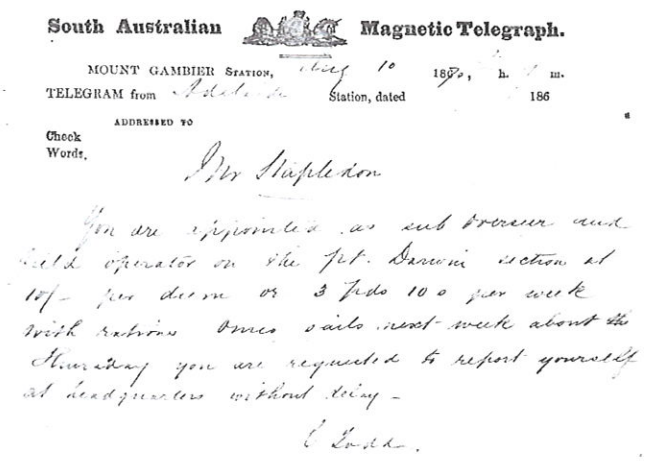
Charles Todd (striped shirt) with overseers of Overland Telegraph Line Construction at Roper River Camp.



Mr. Charles Todd 1872.



Sir Charles Todd — about 1883.



South Australian Magnetic Telegraph.

MOUNT GAMBIER STATION, May 10 1870, h. m.

TELEGRAM from Adelaide Station, dated 186

ADDRESSED TO

Check
Words.

Mr Stapleton

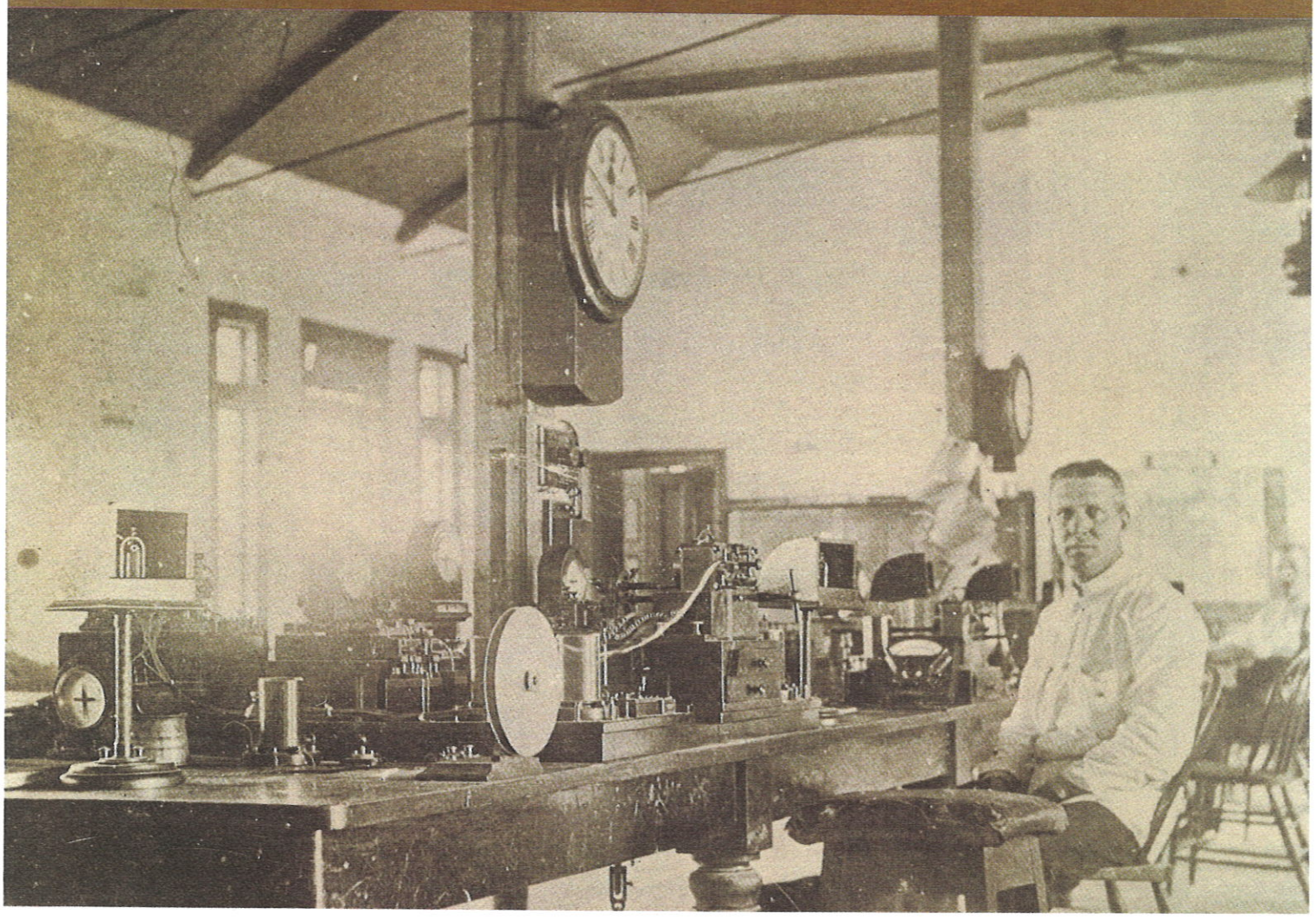
You are appointed as sub overseer and field operator on the Port Darwin section at 10/- per diem or 3 Pds 10 0 per week with rations. Omnes sails next week about the Thursday you are requested to report yourself at headquarters without delay -

C Todd.

J. L. Stapleton's appointment advice as Overland Telegraph Line Construction Sub-Overseer.



(above) *Smoky Bay Telegraph Office 1912* **(below)** *Eucla Telegraph Office showing telegraph repeating apparatus (post Federation).*



TELEGRAPHY

The telegraph display contains the oldest equipment in the museum.

It dates from the very first magnetic instruments that Charles Todd brought from England when he came with Edward Cracknell to set up the Telegraph Department in 1855. Two of those first 20 sets are on display.

The magnetic style of technology did not last long. Todd had always been interested in adapting the latest developments to the South Australian telegraph network. As soon as the network had extended beyond the capabilities of the magnetic telegraph, he introduced the first of the electric telegraph apparatus.

The electric telegraph differed from the magnetic in that it required a primary battery which worked from solutions of chemicals and metallic plates in glass jars. There were as many as 1,000 of these glass jars on wooden benches providing the electricity to operate a telegraph station. Samples of these primary batteries, which drove the second generation of telegraph apparatus, are in the museum.

From that period several types of recording machines came into vogue, machines that would record the incoming messages. Initially, the machines recorded dots and dashes, that is either short or long signals. Others recorded the signals as deviations in a straight line being marked with ink on a long paper tape. Recorders using these techniques are shown in the museum. This type of apparatus was used at the time of the Overland Telegraph Line from Port Augusta to Darwin, through the centre of South Australia and the Northern Territory. This incredibly difficult pioneering project was under the supervision of Sir Charles Todd. He travelled extensively, inspected the whole job and put his foremost efforts into keeping the project moving along to meet the target time.

The British-Australian Telegraph Company was laying cable from Timor and there was a penalty on the South Australian Government if its completion was behind schedule. Though the line was late being completed, the penalty was never exacted because the cable company also had its difficulties — the cable broke.

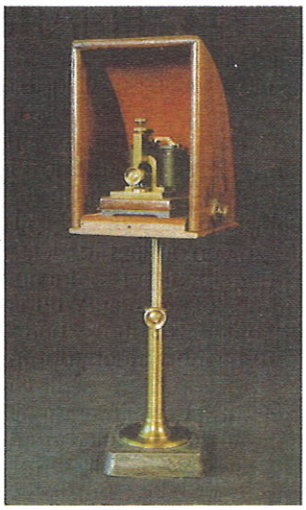
The museum has a lot of small items of equipment from that period that were used in conjunction with the telegraph service. Possibly one of the most interesting is a message ball made of leather. Messages were put in the ball and rolled along a sloping channel from one point of the telegraph room to another. It is a very old technique and was used in the 19th century.

For a long time the development of telegraphic equipment was rather modest. It was not until 1910 that machine telegraph systems were developed.

In the 1920s, the Murray Multiplex was introduced. It was the wonder of the day because it could send four messages over the one line. A full set of the Murray Multiplex equipment is in the museum.

The Teleprinter era started about 1932. Those machines were a more sophisticated version of earlier types, adopting the appearance of typewriters and working on the basis of a printout at the far end of figures and letters instead of dots and dashes.

On display, in the Telegraph Room is a bigger, more complex machine of this type from the 1950s era.

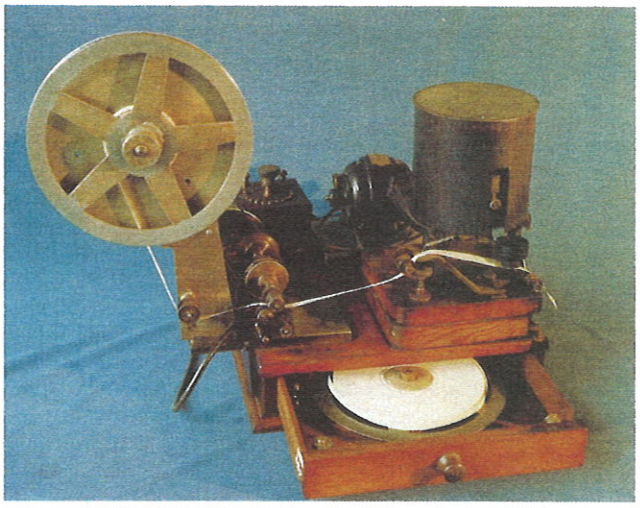


Morse Sounder and Resonator: in use to 1962.

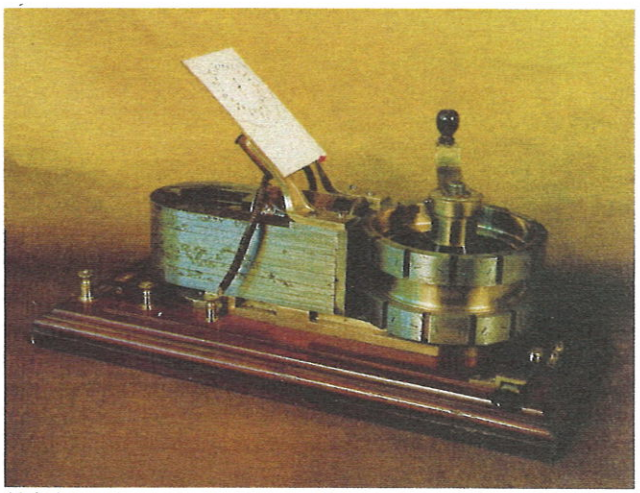




(top) *Morse key: used until 1962.*
(above) *Telegram Message Conveyor Ball circa 1910.*



Siphon Recorder— Submarine telegraph circa 1925



Alphabetic Transmitter Receiver Instrument: magnetic telegraph circa 1861.


TURN DIAL UNTIL NUMBER READ APPEARS
ZERO
REMOVE HANDSET & SPEAK
127

TELEPHONY

The earliest items of telephone equipment in the museum are hand-made models which illustrate the principles of telephony. They are based on drawings illustrating the works of designers of the early telephone systems.

Alexander Graham Bell is known as the father of the telephone, but he was one of many working on different aspects of the telephone. Bell collected ideas from many places and his assistant, a man named Watson, made the items and tried them out. Bell provided the funds and took out the patents once something evolved that worked like a telephone.

One of the earliest types of telephone in the museum is from 1882. It is a wooden box type which was mounted on a wall. It was not until 1892 that the Swedish company of Ericsson made the early table telephone — the one which is now commonly known as a "skeleton" telephone. Many of these were made and distributed world-wide. It is a magneto telephone with a hand generator but no dial. Its name derives from the exposed mechanism and magnets which look like bones.

Another interesting telephone from that era is a 1904 magneto telephone which was used in the Adelaide Central Exchange.

The exchange no longer exists, but during its operational life as a magneto exchange, this particular telephone, now in the museum, stood on the supervisor's table. It consisted of a wooden box with a nickel-plated transmitter on top. It is quite a show piece.

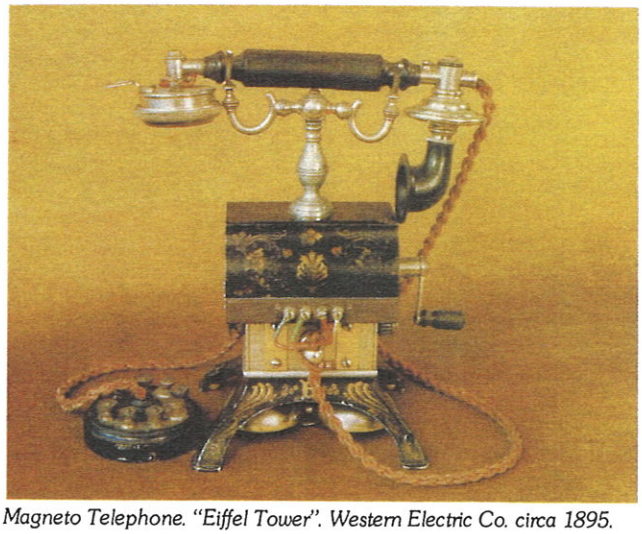
The examples in the museum illustrate the changing designs of telephone apparatus. Whereas the instruments originally were mostly wood with just a small amount of metal showing, they became metal and then ebonite and finally plastic.

The museum has on display some of the latest examples of telephones, including touchfones, to provide a good comparison showing the developments that have occurred over the years.

There are several working models illustrating the earlier principles of magneto and automatic telephony. Visitors find the model of an older type of automatic telephone exchange interesting.

They are able to see the electro-mechanical switches working as the numbers are dialled.

(left) *Inter office Telephone incorporating a 50 step extension switch 1926.*



Magneto Telephone. "Eiffel Tower". Western Electric Co. circa 1895.



Automatic Telephone "Candlestick" circa 1925.



Magneto Telephone. "Pulpit". L. M. Ericsson Co. circa 1904.



Automatic Telephone— moulded plastic. Automatic Electric Co. circa 1926.



Receiver — 5 tube battery operated 1925. Radiola Cone Speaker 1926. Carved wooden frame and base with tapestry speaker cloth. Both items made by the Radio Corporation of America.

RADIO

There is little doubt that the Adelaide Telecommunications Museum has one of the most comprehensive displays of radio sets and equipment in the world.

It has more than 1,200 catalogued items and several hundred receiving tubes. Most of the pieces have been donated by the public and other organisations.

Among the early items on display at the museum are two spark coils and four different types of coherers used up until about 1904 by local experimenters.

The invention of the crystal detector in 1907 made the wireless more practical and a range of simple crystals and catswhiskers is on display. A fully restored 1915 receiver shows the application of two forms of crystal detectors.

Crystal sets, headphones and battery receivers with beautiful cabinets and ornate speakers indicate the wide range available in Adelaide in the 1920s.

Some of the transmitters used by amateur experimenters in the '20s and '30s show the uncluttered and simple methods used in construction. One transmitter operating in Adelaide in 1930 was used to switch on the lighting circuit of a house in New York, US by transmitting a coded signal.

Two tubes in the museum are of particular historical value. One was used in a transmitter in 1923 during the first music broadcast and reception experiment in South Australia. The other tube was part of a local transmitter acknowledged as the first to make radio contact with an amateur in the US in 1925.

The museum also has early water cooled transmitting tubes, microphones, aerial insulators, communication receivers, components and test equipment. A wavemeter made by the PMG Research Laboratories in 1928, was used in SA by the Radio Inspector. It was modelled on a meter recovered by the RAN during a raid on a German wireless station on Nauru, in World War I.

Equipment already on display can be divided roughly into the following classifications: early equipment; crystal receivers; battery receivers; receiver power supplies; mantle receivers; components; receiving tubes; transmitting tubes; testing instruments; amateur equipment; communications receivers; antenna accessories; Royal Flying Doctor Service equipment; microwave equipment; microphones and pickups.

Among the major contributors to the museum have been Messrs. A. J. Allan, T. O. Baird, H. W. Berry, R. J. Burt, V. R. P. Cook, A. J. Drew, T. Laidler, G. W. Luxon, R. T. Manuel, J. F. Ross, W. A. Smith, A. C. Smythe, J. A. Starr, H. S. Taylor, J. Trembath, Mrs. P. I. Martin, Australian Broadcasting Commission, GEC Telecommunications Ltd., H. G. Humphrys Pty. Ltd., Siemens Ltd. and 5AD.

The aim has been to restore radio equipment and components to their original condition. A majority of the items donated had been stored for years in sheds, barns and workshops, some were recovered from dumps, and few of these items were fit for display without some restoration. It was a slow process requiring considerable expertise and a lot of patience. In some instances it was necessary to make new parts with only a fragment of the original as a guide.



Amplion Speaker circa 1926.



Crystal Receiver circa 1925.



Crystals used for detectors (1920-1930).



(right) *Claritone Speaker 1924 made by Automatic Telephone Manufacturing Co., England. Radio Receiver 1925. Elizabethan style cabinet designed by L. Whibley, Torrens Road, Cheltenham, South Australia.*


ELECTRA HOUSE
151
MUSEUM
MUSEUM

THE BUILDING

"Electra House" is an appropriate home for the Telecommunications Museum — even the name is apt.

Electra House got its name during the time it housed Cable and Wireless Ltd. from 1940. Electra (the bright one) was a Greek legendary figure, who because of her grief at the destruction of Troy, changed into a comet, its tail representing her streaming hair. The comet was likened to messages flashing across the world by electric telegraph.

The building was constructed for Citizens Life Assurance Co. in 1901 and had a variety of tenants, including the Eastern Extension Australasia and China Telegraph Co., the forerunner of Cable Wireless Ltd., The Building was named "Eastern Telegraph Building" when the Eastern Extension Co. moved in, in 1921.

Norwich Union Fire Insurance Co., occupied the building from 1905 until 1927. Mr. F. C. Sullivan, a land agent who was also secretary of the S.A. Football Association was another occupant. Other tenants were White's Press Agency, Berryman the tailor, Underwood the photographer and three firms of public accountants.

The Telecommunications Museum had its first showing there in 1976 to celebrate the centenary of the invention of the telephone. The initial displays were in the front two rooms on the ground floor. The whole of the ground floor was used for displays from 1978.

Recently the building has been renovated enabling the upper floors to be used for presentation of exhibits. In the years to come there will be exhibits on each of the floors, of the three story building except for the basement.

The only disability then, will be that the old direct-current lift will not be working. It has been renovated because of its aesthetic and historical appeal but it can not be upgraded for modern A.C. electricity operation.



King William Street circa 1899.





(above) *Hand controller.* **(right)** *Passenger Elevator — D.C. powered.* **(below)** *Electra House 1955.* **(left)** *Electra House 1927.*
(facing page) *Electra House — home of the Telecommunications Museum.*







THE OPENING

The museum was opened by Sir Mark Oliphant on July 31, 1978 before 55 guests including relatives of R. R. Knuckey and Charles Todd and a number of retired officers.

The guests were received by Mr Ken Work, Chairman of the Museum Committee, and introduced to Mr. D. M. Coleman, State Manager of Telecom Australia.

An inspection of the museum displays followed, after which the guests attended the unveiling by Sir Mark of a commemorative plaque which is now affixed next to the entrance to the museum at Electra House. Sir Mark congratulated those responsible for organising and developing the museum, and commented on the museum's role in preserving technological and scientific history.

The Museum began in a room in the Engineering Building, Franklin Street, in 1962. In 1976, the museum was relocated to Electra House to allow greater public access to the displays and in that year the Museum committee was also established.

The first displays occupied the two front rooms of Electra House.

In early 1978, displays were enlarged to fill the whole ground floor space in the months prior to the official opening.



Sir Mark Oliphant formally opening the museum.



Sir Mark Oliphant and Mr. Jack Ross discussing the Radio display.

OUTSIDE DISPLAYS

The museum provides outside displays of telecommunications equipment at shopping centres, banks, post offices and Telecom Business Offices. These displays often are part of celebrations of centenaries or the commemoration of important events in a community's history.

Historical apparatus is loaned to dramatic societies for their productions.

Loans of historical artefacts are made available to Telecom Australia for use in publicity releases and commemorations of Telecom's own heritage.

Some displays have travelled widely — to Mt Gambier, Hawker, and to Eyre Peninsula. Displays are specially packed by the museum staff to protect the equipment during transit.

THE ARCHIVES

The archives of the Telecommunication Museum have not been formally constituted yet, but even so more than 40 researchers have used the facilities during the last two years since establishment commenced.

The archives comprises books and other material which has been collected by staff since the foundation of telecommunications in South Australia in 1855.

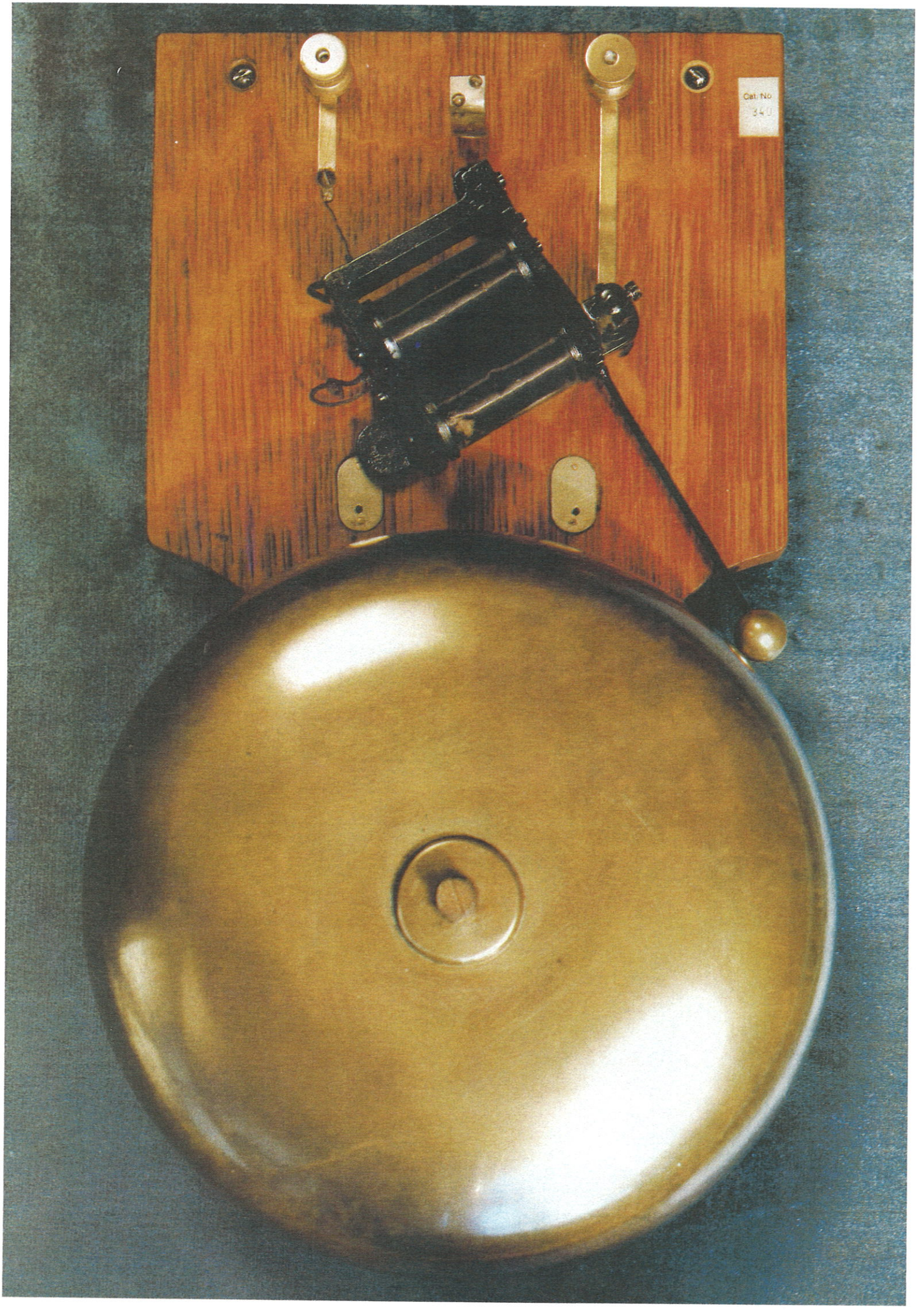
The books range through engineering, science, telephony, telegraphy, and radio. The archives has more than 800 volumes, overflowing the fine old bookcase which Sir Charles Todd had in his office for many years.

Technical reports, pamphlets and photographs provide links with Telecom's past in South Australia.

The collection of telephone directories extends back to 1883 when there were 58 customers listed for Adelaide.



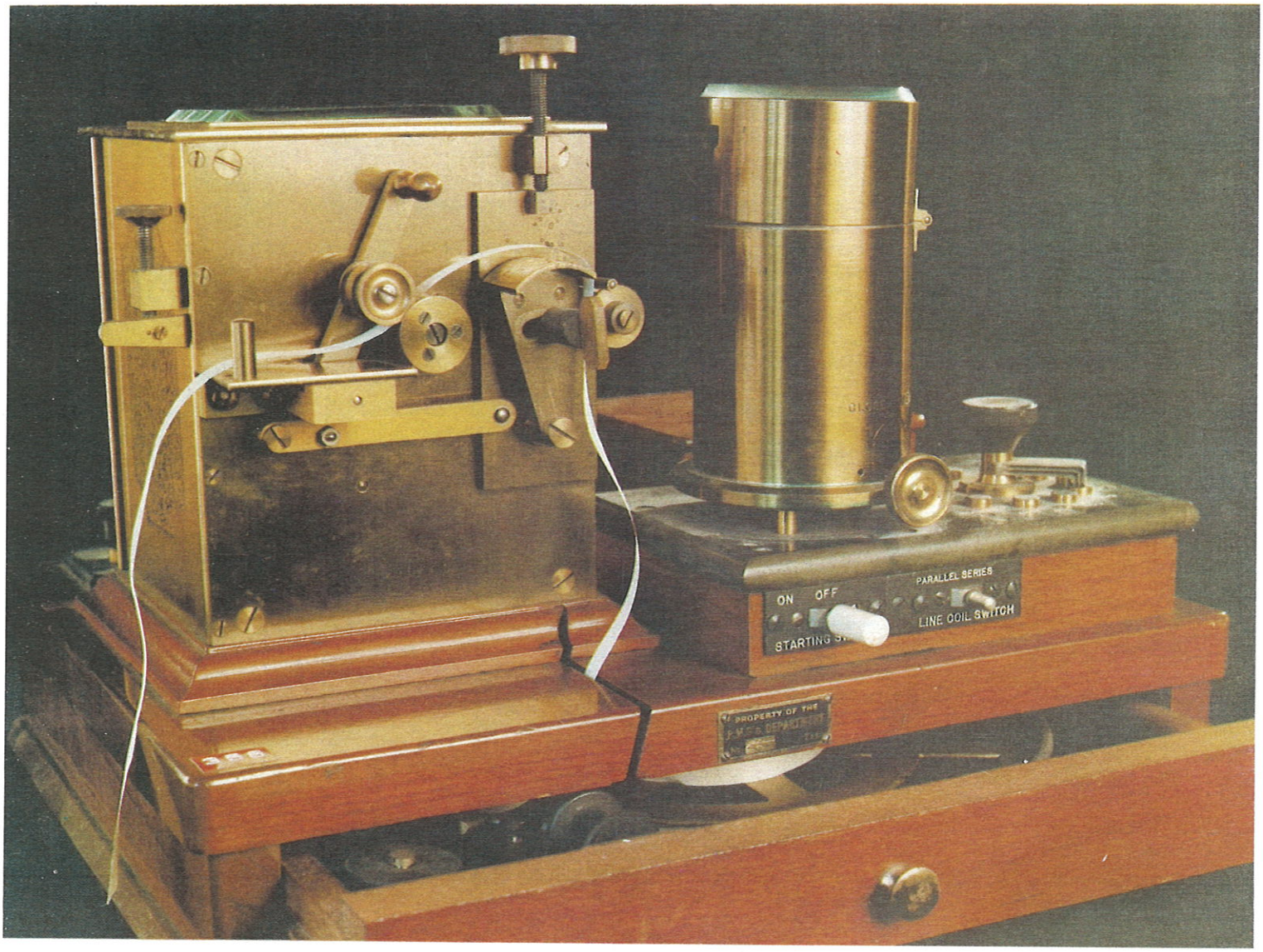
(left) *Museum Opening 31st July, 1978. Left to right: Mr. J. F. Ross, Sir Mark Oliphant, Mr. G. Josephs, Mr. D. M. Coleman (State Manager Telecom Australia).*


Cat. No
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(above left) *Mirophone: Double button carbon type with two granule chambers and single diaphragm used until 1927.* **(above right)** *R-type tubes made in England (clear glass) and in France (blue glass) during the first World War. General purpose tubes.* **(below)** *Undulator: Submarine telegraph receiving instrument circa 1925.* **(facing page)** *Trembler Bell: Loud sounding alarm (300 mm dia.) 1930.*



MUSEUM IDENTITIES



KEN WORK

Ken Work is the Chairman of the Telecommunications Museum and Engineering Historical Committee. His role is the Administration and general organisation of museum activities including staffing and arrangements for distribution of display material. In this regard he is concerned with material displayed by Telecom and distributed for display to local government, private organisations and National Trust Branch Museums. He also oversights the historical work which is undertaken by other people with special talents appropriate to our communications heritage.

Ken sums it up this way. "Since I have been involved in the museum I have become increasingly aware of the value of historical items, and the need to preserve material and documents for posterity. I have developed a philosophy that items should be obtained for the museum at the earliest opportunity after they have been introduced into service. This ensures that the items are to hand for historical evaluation in the future when working examples become scarce or non-existent."

Ken has been particularly active in acquiring old long-line carrier equipment for the museum, and hopes that equipment of this sort can be displayed in the future, as part of a steady rotation of items on show. In addition, priceless documents relating to such communications milestones as the construction of the Overland Telegraph Line which are part of the archival collection, will be displayed from time to time.

He considers that the museum has a very bright and interesting future as additional space in Electra House becomes available following the completion of building works currently in progress or planned.



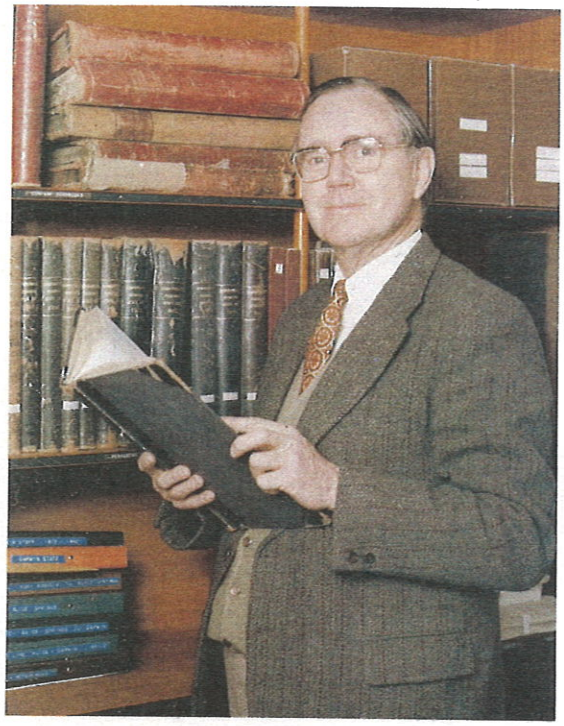
JACK ROSS

Jack has been involved in radio for well over 40 years and brings a great deal of expertise and knowledge to the development and running of the radio section of the Museum. He has been instrumental in acquiring, renovating and reconditioning hundreds of items of vintage radio equipment, components and historical records to make the collection one of the finest in the State.

To achieve this he has spent well over 2000 hours during the past three years working at night and at weekends on the collection. Hardly a week goes by without someone's discarded heap of old radio bits and pieces being delivered to Jack for attention.

In addition to putting his years of experience to work in putting life back into a receiver that may have been a home for generations of mice in an old shed for 50 or 60 years, Jack does all the research and arranges the preparation of the catalogue cards describing each item. One old timer commented that it took him three visits to the Museum to read the descriptions on all the cards.

He is a prolific author with published works on Philately, Radio History in South Australia, and a HANDBOOK for RADIO ENGINEERING MANAGERS. He is presently a member of the Australian Broadcasting Commission's Program Committee for South Australia.



MILTON GOOLEY

Milton Gooley is a fund of knowledge about telecommunications history in South Australia. He doesn't claim to know everything, but he certainly knows a lot.

There was a time when he would not have made such a bold statement, Milton traces his historical interests thus: "Who would have imagined that out of a simple start about 15 years ago. I should be involved in such a consuming occupation," he said.

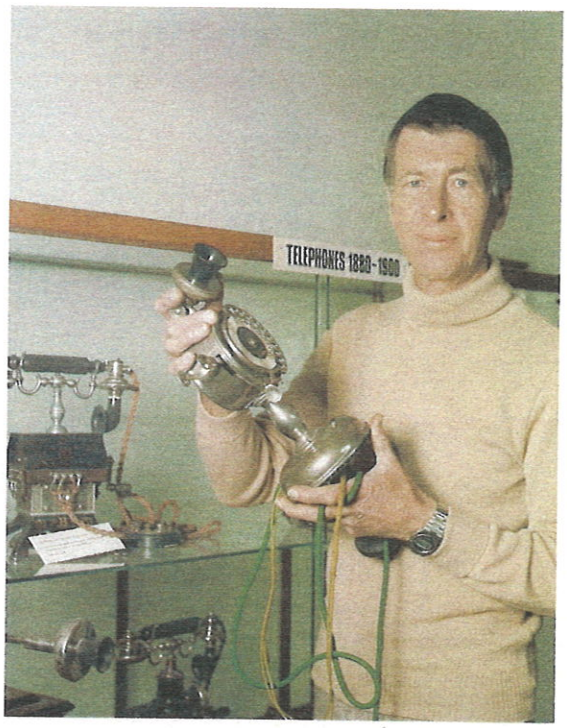
"Steve Jeffries, the public relations officer at the time said, 'Can you tell me anything about the history of radio?' And I said, 'No, Steve, but there could be some files in the Registry that might help you.' He said, 'You obviously know how to go about researching the subject. Will you help me by writing a few notes?"

"I wrote a few notes, but rather than leave it at that, I prepared a pamphlet of about 10 pages — 'Early Wireless Telegraphy in South Australia.' I later presented it as a formal paper at the annual dinner of the Institute of Radio Engineers.

"Since then in response to many questions, I have researched and produced several historical papers."

The cataloguing work in the archival section of the museum has helped Milton to develop a tremendous fund of knowledge, which when combined with 46 years mostly as a telecommunications engineer, provides an ideal background for his historical work.

Milton sees his work at the museum as a long way from finished. There are vast amounts of material still to be catalogued in the archives section and the museum continues to attract new items.



BERNARD WOODROW

The Telecommunications Museum had its first beginnings with men such as Bernie Woodrow. In fact, Bernie virtually was the museum during its infancy at the Engineering Building in Franklin Street.

Other officers had over the years kept various items, probably seeing their potential, but it was Bernie who removed them from an old lift-well storage in 1962, cleaned off the dirt and grime and put them on display in a room selected by Vic. Reeves, the Assistant Director, Engineering. It was a far cry from the museum of today, but it was a start.

The second stage in the development of the museum was a fine display of telephones tracing their development from Bell's US patents to the modern instruments. It was staged in "Electra House" in 1976 to mark the centenary of the introduction of the telephone.

Bernie now takes care of the technical research for the museum on items it receives. This is an on-going occupation to which he devotes several hours each week. After research, items are catalogued and stored. That is also part of Bernie's involvement in the museum. He stores items in common groups and where items are out on loan, keeps track of their whereabouts.

He selects items of equipment suitable for restoration, but he has reservations about whether this is desirable. Perhaps items should not be too shiny and fresh looking, he says, but have a patina of age.

And how does Bernie see his contribution? "It's not glamorous, but it is an important part of keeping the museum going. The museum cannot function unless there is someone looking after my side of things."



Telecommunications Museum Inaugural Report 1980