Seas No Longer Divide

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Abstract: A three-part historic paper by Alan Tulip in the *Telecommunication Journal of Australia* in 1988 describes the political campaign for the connection of Tasmania to the Australian mainland telecommunications network after World War I, not completed until 1936.

Keywords: history, telecommunications, Tasmania, submarine cable, radio

Introduction

This three-part historic paper (Tulip, 1998a; 1988b; 1988c) is unusual in that it documents the political machinations surrounding the connection of Tasmania to the Australian mainland telecommunications network between World Wars I and II.

Two submarine cables already existed between Tasmania and the mainland, installed in 1909. They suffered from technical problems and were unsuitable for connection to the wider Australian telecommunications network.

This frustrated a number of Tasmanian politicians and business leaders who saw the mainland states benefiting from the latest technology advances, denied to Tasmania because of the 300 km wide Bass Strait crossing.

After World War I, significant advances were made in submarine cables and radio, and these two technologies jostled for preference to replace the current submarine cables. The Postmaster-General's department (PMG) conducted several detailed technical investigations and determined that submarine cable was a better technical choice over radio; however, it was approximately twice as costly and these were the lean years of economic depression.

The historic paper details the political pressures that were brought to bear on the PMG, as well as the agitation of the vested interest groups. When the Federal Government finally accepted the recommendations for a submarine cable around 1930, the funds were not available, owing to the Depression. Contracts were finally signed in 1934 with Siemens Bros and STC.

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So, for nearly 20 years after World War I, Tasmania was effectively not connected to the mainland telecommunications network. When the submarine cable was fully commissioned in 1936, it was hugely successful and the usage far exceeded the planned take-up. This was not surprising to the Tasmanians, who had agitated for a better connection since World War I.

References

Tulip, A. (1988a). Seas no longer divide — Part 1, *Telecommunication Journal of Australia*, *38*(1), 69-74.

Tulip, A. (1988b). Seas no longer divide — Part 2, *Telecommunication Journal of Australia*, *38*(2), 71-77.

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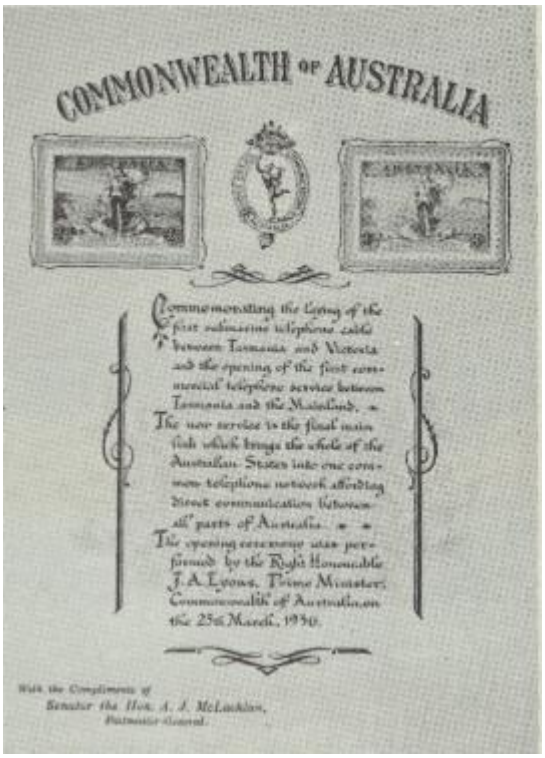
The Historic Paper

The reprints begin on the next page.

Commemorating the laying of the first submarine telephone cable between Tasmania and Victoria and the opening of the first commercial telephone service between Tasmania and the Mainland.

The new service is the final main link which brings the whole of the Australian States into one common telephone network affording direct communication between all parts of Australia.

The opening ceremony was performed by the Right Honourable J. A. Lyons, Prime Minister, Commonwealth of Australia, on the 25th March, 1936.



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Seas no longer divide

PART 1

A. Tulip

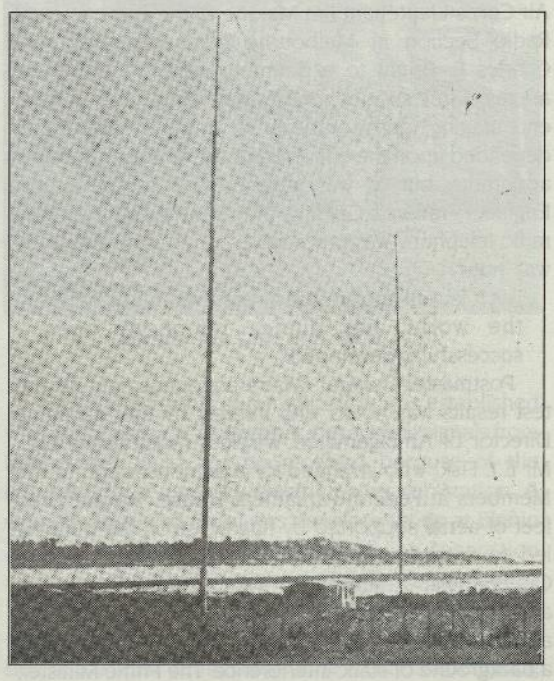
Ideas on a Tasmanian contribution to the Bicentennial Celebrations crystallized early in 1984 when it was decided to prepare a document detailing some major engineering project which had contributed significantly to our telecommunications development. The original concept was to tell the complete story of the submarine telephone cable which joined Victoria with Tasmania in 1935, for, although various aspects of the cable saga had been described in a number of technical journals, a comprehensive work was not available. Ensuing research showed that attempts to provide a "speech bridge" across the water were not confined to the 1930s, but originated from technical advances during the bitter years of World War I.

INTRODUCTION

In this and two succeeding articles, a summary will be given of the experimental work performed by engineers of the Postmaster-General's Department to provide a voice communication link across Bass Strait between Tasmania and the Australian mainland. The water barrier had caused endless problems for more than fifty years of the island's recorded history and when even today, the capricious temper of the Strait often provides a queasy journey for the sea-borne traveller in his modern, strongly built ocean transport, it requires only a little imagination to picture the fate of many small, wooden mail ships which were compelled to brave the turbulence of one of the most treacherous waterways in the world.

The magical electric telegraph which, in 1857, joined Hobart and Launceston over the first Overland Line in the southern hemisphere led to a revolutionary quickening in the island's business and social intercourse and, within two years, the first of a series of submarine cables permitted the dots and dashes of Samuel Morse's code to join Tasmanians with their mainland counterparts. When the Darwin-Port Augusta line was completed in 1872, Tasmania had telegraph connection with the world, and succeeding cables which were laid across the sea bed allowed telegraph communication to expand even into the 1930s. But at a much earlier date, Alexander Graham Bell's telephone replaced morse symbols along wires with the human voice. There were wires at the bottom of Bass Strait. Could not voices travel by that path between Victorians and Tasmanians? It was a dream destined to remain in abeyance for many years to come, for the technology was yet to be discovered.

At about the turn of the century, a young man named Marconi showed that wires were not necessary for the transmission of morse symbols, and so commenced the era of "wire-less" telegraphy. Was it possible that by some further scientific miracle the dots and dashes of wireless telegraphy could be replaced by a "wireless telephone" which would convey speech without wires? The realisation of that dream was heralded in 1904 with Fleming's invention of the thermionic valve to which a "grid" was added by De Forest. Two years later, a Canadian, Reginald Aubrey Fessenden, broadcast the world's first radio programme on Christmas Eve, astounding ship wireless telegraphy operators who, instead of receiving dots and dashes, picked up his transmission of words and music, and by 1910, the world famous tenor Enrico Caruso broadcast by radio from the Metropolitan Opera House in New York. Words without wires! Surely this was the answer to the Tasmanian problem, but there, half a world away, the tempo of events was much more leisurely.



Wireless Telegraphy Aerials East Devonport, 1906.

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In July 1906, the Marconi Company had successfully demonstrated wireless telegraphy between Queenscliff, Victoria and East Devonport, Tasmania, but there was little official enthusiasm for the new technology. There was a submarine cable — and Marconi's "wire-less" apparatus was expensive! Even the new wireless telephony which was widely regarded as the wonder of the age apparently received little consideration as a means of ending the island's isolation. Then, as with other scientific innovations, war brought about many refinements. During the 1914-18 conflict, air-borne radio transmitters reported the fall of artillery shells, the movement of troops, and assisted in the manoeuvering of battle fleets, and when peace returned, it seemed to be simply a matter of time before those in power would concede that the seas could be bridged by radio waves and that it was possible that voices could, by that medium, traverse Bass Strait. As events were to prove, it was, indeed, to be "a matter of time".

WIRELESS OVER THE WATER?

Despite the apparent lack of interest in wireless telephony by their political masters, the Post Office Engineers were well versed in the latest transmission techniques. They had seen the advantages of wireless telegraphy and now wireless telephony seemed to offer endless opportunities. What, after all, was the point in stringing up thousands of miles of wire on a multitude of wooden poles if words could be transmitted without the use of wire? Many of those who were returning from theatres of war on the western front and elsewhere had first-hand knowledge of the new technique and former Air Corps Lieutenant Jim Malone of the Departmental Radio Section in Melbourne persuaded Secretary Charles E. Bright to experiment with two borrowed aircraft wireless-telephone transmitters. Results were encouraging. Clarity of reception up to 40 miles distant depended upon the efficiency of the amateur receiving apparatus, but as was stressed by Chief Electrical Engineer Frederick Golding, the tests showed that while radio telephony was practicable, commercial utilisation was not:-

> "as it is well known that at present, in no part of the world, has duplex telephony been successfully developed."

Postmaster-General Wise's announcement of the test results was noted with interest by the Managing Director of Amalgamated Wireless (Australasia) Ltd., Mr E.T. Fisk, who arranged for a demonstration to the Members at Federal Parliament House. Two hundred feet of aerial supported by flag poles on the building led to a transmitting and receiving cabinet in the Queen's Hall. A similar unit was located seven miles away at Brighton, from where a musical selection and a short speech by the Mayor were clearly heard through a background of static interference. The Prime Minister, however, was unable to respond because rain induced electrical leakage rendered transmission impossible. But to many Members, it was a dramatic event and it appeared to them that Fisk had proved the capability of wireless telephony for commercial useage. Hansard reports were ecstatic! Engineer Golding, however, in a confidential memo to the Secretary, strongly advised caution. As he pointed out, it had originally been the intention to speak from Bendigo to Parliament House with brand new Marconi apparatus, but it could not cope with the range! Wireless telephones would not permit secrecy and electric power generators were not readily available in the outback! Added to that, as a result of cost estimates supplied by Fisk, it was quite clear that the needs of outback settlers could be provided more cheaply by land lines. Much more experimental work was strongly advised.

Jim Malone's minute to his Chief Engineer, dated 13 October 1920, gave the first indication of a scheme to provide a speech link over Bass Strait:—

> "To communicate between Hobart and Melbourne by wireless telephone would necessitate the installation of at least 6KW., and the cost would be about £5000. This practicability will be investigated further....."

Fisk elaborated upon the proposal giving costs for the equipping of stations linking Melbourne, Launceston and Hobart, and, perhaps sensing some impending lucrative contract, finalised his remarks with the observation:—

> "and furthermore, telephony by cable is impossible".

Golding expressed general dissatisfaction with Fisk's reply and suggested that as there was so much propaganda about wireless telephony, it was advisable to tie the Marconi Company down to specifics. No information was given as to the power of the stations, the type of equipment nor the means of obtaining duplex telephony. As he stated:—

> "The capabilities of a wireless telephone circuit should approximate as far as possible to those of a trunk telephone circuit, including simultaneous working both ways (duplex telephony) as is required by users of the telephone today. Until this is practicable we will not be able to justify wireless telephony for commercial purposes."

All the Department's requirements were detailed in a letter to Fisk dated 20 November 1920, and included the idea of providing a Radio-telephone circuit between the Mainland and Tasmania. His business-like reply indicated that most conditions could be met but he could not, at the time, guarantee duplex telephony, although he did know that:—

> "some very successful experiments along such lines are being conducted both by the Marconi Company in England and by the Radio Corporation of America."

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Press reports and stories of the wonders of wireless-telephony did little to enhance the Department's cautious but sensible attitude. As world-wide examples of achievements in the new science continued to proliferate from enthusiastic and often-exaggerated pens, the reaction in Australia was swift and brutal:—

"The wonders of wireless! Its chief wonder is that any human community allows a collection of government officials to sit on it in the way the Postal Department is doing in Australia."

"The handling of wireless by the Post Office is an excellent argument for private enterprise."

"The chief wonder of wireless continues to be the wonder why the Postal Department was ever allowed to take it over, in order to lock it up from the service of the people of this country!"

The relentless pressure continued until a way out of the impasse was indicated in Fisk's letter to the Secretary dated 6 May 1921:—

"I have also received a cable today informing me that the Marconi Company has successfully developed a method by means of which a wireless telephone circuit can be automatically connected with a land telephone circuit...."

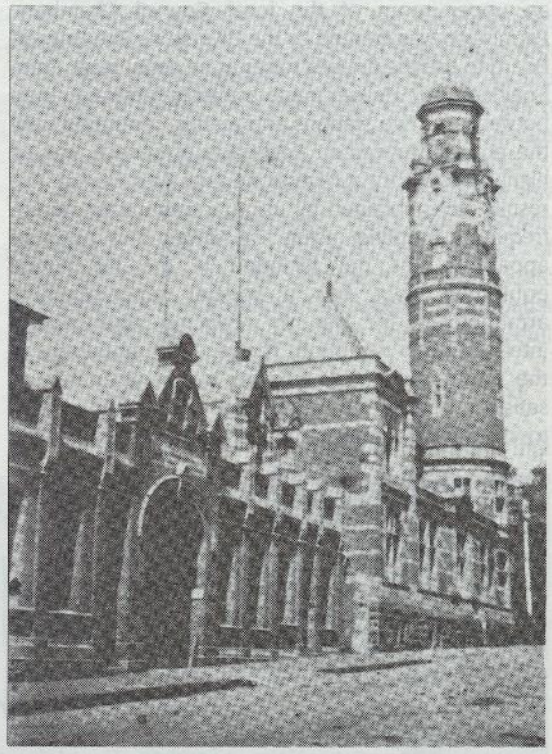
THE EARLY RADIO TRIALS

The duplex telephony breakthrough to which Fisk referred was announced in "The Times" of London and reproduced in the Sydney "Sun". It was a detailed account of the classical demonstration carried out by correspondents of "The Times" at Southwold (England) and their counterparts at Zandvoort (Holland) — the latter place now of Grand Prix racing renown. The Southwold correspondent spoke into an ordinary telephone instrument which was connected to a wireless station. His speech was carried by radio waves over the North Sea to a Dutch receiving station which relayed the spoken word to a second ordinary telephone at Zandvoort. An hour long conversation ensued without intermediate switching. The operation was automatic — duplex telephony had been achieved.

Amid renewed pressure in the House and further broadsides from the popular Press, tests were carried out on sets of Radio-telephone apparatus which had been procured from the De Forest Radio Company of America, and in October 1921, Malone reported to his Chief:—

"Preliminary trials have been sufficiently successful to justify making a test between Tasmania and the Mainland including repeaters between Radio-phone installation and land lines. The present intention is to arrange for a temporary station to be erected in Launceston — probably on the Post Office building — where speech would be repeated into the Tasmanian telephone system."

The De Forest apparatus consisted of two sets of Radiophone equipment Type OT 101, 500 watts and two of a more powerful unit, Type OT 401, rated at 2000 watts. Testing had shown that the smaller powered set could transmit speech clearly over a distance of 100 miles and it was therefore considered that the 2000 watt units would be capable of satisfactorily covering the 230 miles between Launceston and Melbourne. Radio Engineer George Apperley left for Launceston and commenced installation of the apparatus at the Post Office. A direct current generator was installed in the basement, the transmitter and ancillary apparatus in the mail fumigating chamber and an earth connection was attached to a convenient water pipe. The aerial system was suspended between the clock tower and three temporary poles on the roof of the building.



Launceston Post Office with Aerials 1921.

Radio-telegraphic communication was established with Melbourne on 22 October, but speech signals from Melbourne could not be received because of the induction from a nearby electric power sub-station. A separate receiving aerial was therefore set up at Elphin Show Ground and a 1 1/4 mile land line connection made with the Post Office transmitter. Testing continued at Launceston with the 2000 watt transmitter until early November but the strength of received speech at either side of the Strait demonstrated the futility of attempting land line relays. The failure between Launceston and

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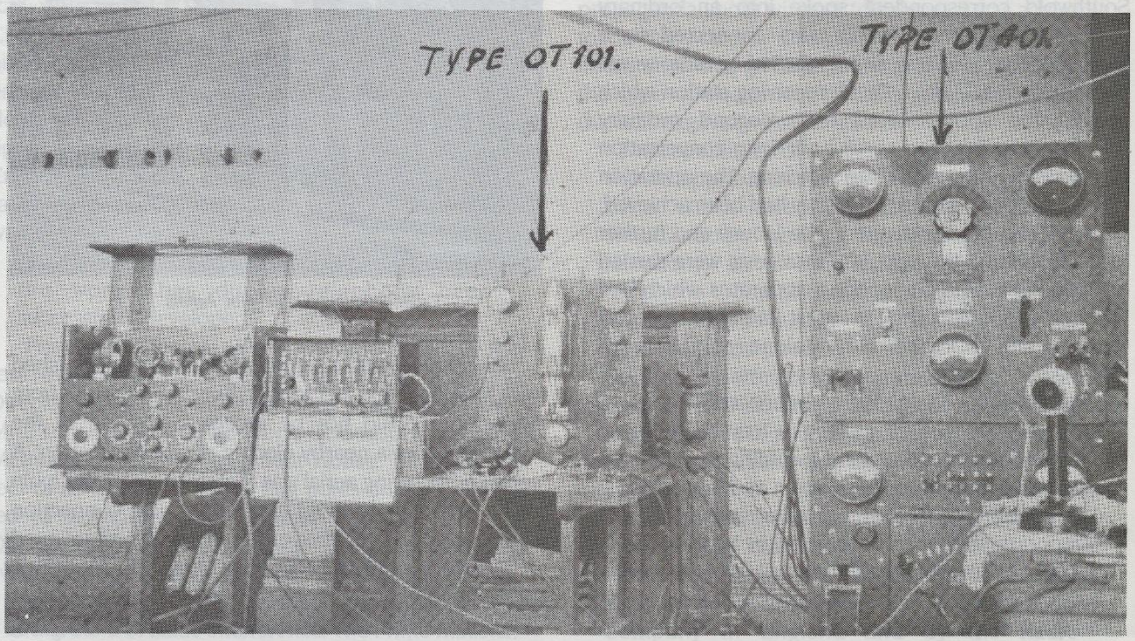
Melbourne was due, no doubt, to screening and absorption; 30 miles at either end of the transmission path was over country which, on the Tasmanian side, was particularly hilly.

On 4th November, a temporary inverted "L" four wire aerial was erected at West Burnie on a site at the Church of England vicarage and on the following day, a speech transmission from the Type OT 101 transmitter in Melbourne was received at maximum strength. The speech was so clear and strong that relaying it over 100 miles of landline presented no difficulty whatsoever, since it was all read with ease at Launceston. Such promising results justified the removal of the transmitter from Launceston to Burnie where the apparatus and aerial was installed in and on the Post Office. Simultaneously, the receiving apparatus was installed at Ulverstone, 14 miles along the coast from Burnie, in an upper room of the local Council Chambers. Permission was granted by the Ulverstone Fire Brigade Board to use the fire-bell tower as an aerial mast. State Engineer, W.P. Hallam made available a metallic loop between the two stations and testing continued until the end of November. Reception of speech was as highly satisfactory at Ulverstone as at West Burnie. The results were obtained by using a seven stage audio-frequency amplifier using five valves. This piece of apparatus was not included in the De Forest equipment, but was a special super-sensitive arrangement for use in reducing atmospheric interference to reception. The receiving apparatus in the Radio-phone sets proved to be incapable of satisfactory speech reception and this applied equally to the Melbourne end of the path. By use of the amplifying device, the Melbourne speech received at Ulverstone was increased in intensity to a degree suitable for relaying to Hobart where, on 20 November, State Engineer Hallam listened to the Melbourne transmission and reported that with the exception of slight atmospheric disturbances, all that was spoken came through well. The land line connection between Ulverstone and Hobart via Launceston was 215 miles of 200 lb. copper conductor. Problems of reception at the Victorian end were minimised by modifying the receiving apparatus and installing the equipment at the Sorrento Post Office, where the reception of Burnie's transmission from a smaller powered Type OT 101 panel almost equalled that obtained at Ulverstone. Testing continued at Sorrento until December 22nd. Line relaying to Melbourne met with limited success because it was not possible to obtain an exclusive trunk circuit. A service call had to be booked to coincide in time with the transmitted programme from Tasmania; thus different trunk circuits were obtained for different tests and many of the lines were very poor — even for ordinary conversation.

George Apperley's report was minutely detailed. He pointed out the limited capabilities of the De Forest equipment but emphasised that, with local improvisation, perfectly articulated, distortionless speech had been transmitted between Melbourne and Hobart, and that duplex Radio-telephony had been proved possible via Burnie and Ulverstone. Malone echoed these sentiments to Chief Electrical Engineer R.N. Partington but also noted the disappointing results at the Melbourne end of the proceedings. He stated:-

"These results, although not satisfactory in the



Burnie Radiophone Transmitter.

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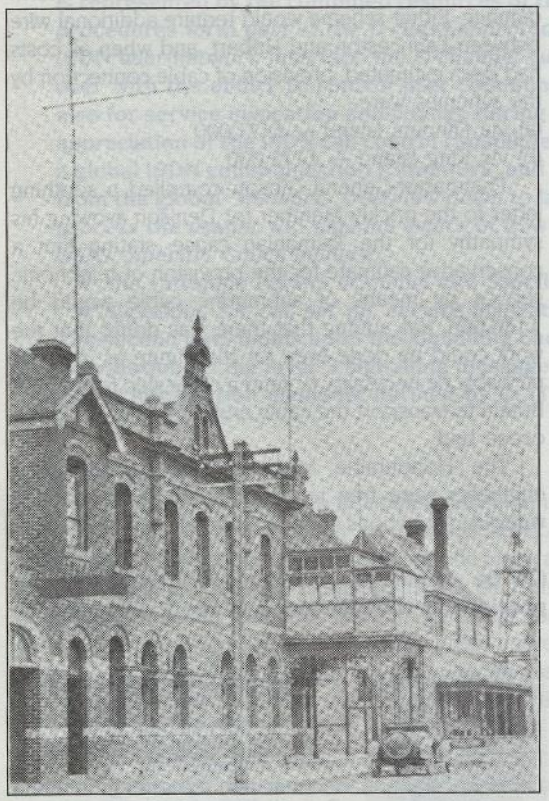
light of any expectancy of reliable communication being maintained, have been of considerable value in teaching us lessons which will be of importance, should it be decided later on to inaugurate a Wireless Telephone Service across the Straits. The tests prove again what has already been known — that Radio Telephony is still in the developmental stage; and, although more efficient apparatus than was at our disposal could be obtained from abroad, it is not safe to recommend its adoption for a commercial service to the public."

Partington agreed. A lot had been learned, the funds had been well spent, but there were to be no further tests for the time being.



Ulverstone Council Chambers with Aerial Connection to Fire Brigade Bell Tower.

RADIO OR CABLE ?

As masts and aerials were dismantled and transmitting and receiving equipment was crated for return to the mainland, Tasmanians must have experienced a bitter feeling of disappointment. The promise of a voice link seemed to have faded, but it would have been wrong to assume that, because testing across Bass Strait had ceased, the Department had gone into hibernation. The apparatus was installed at Melbourne Radio and further experiments were carried out to ascertain the reliability of the sets for wireless telegraph transmission under actual working conditions — but stations were asked to listen for accompanying speech also. The results obtained were most encouraging. Favourable reports on the volume and quality of speech were received from Brisbane and Perth Radio Stations, from ships far out at sea and from Auckland and Awanui stations in New Zealand. But it seemed that nothing was being done to promote the adoption of the system to alleviate Australian problems.

Cynical parliamentary barbs were regularly targetted at the Postmaster-General for his apparent disinterest in the provision of wireless telephones. Such attacks were unfair because at that period, the Department could not provide such facilities. The question of installing wireless telephones at isolated locations where no land line communications existed had received a lot of attention, but Amalgamated Wireless had not been successful in negotiating with interested parties because of the prices they quoted and the Company would not supply equipment which the P.M.G. Department would erect and operate because of a desire to protect vital patent rights.

In the midst of his multitudinous duties, the new Secretary of the Department, Harry Percy Brown, reminded Ernest Fisk of A.W.A. that a field of investigation lay in the provision of telephonic communication to Tasmania. Fisk's reply — six months later — indicated that he thought something useful might be done in that respect,

"although it might not, at the outset, be as good as the mainland trunk lines...."

The tenor of the response indicated clearly that there were still unsolved problems in the wireless telephony field, but Brown, assuming that the snags would be overcome as technology advanced, initiated an investigation into potential cross-Strait traffic. Superintendent of Telephones, L.B. Fanning compared the ratio of telephone to telegraph business between mainland capital cities and then applied his findings to the telegraph business between Tasmania and the mainland. 55 calls a day was the result. Estimated increasing use of the service showed a third year revenue of £7,200. In February 1925, the Western Electric Company (Australia) regaled Secretary Brown with details of their latest technology and achievements and later suggested that it might be possible to derive telephone channels on the existing Bass Strait telegraph cables. It was a fascinating prospect. If high frequency testing proved to be successful, then suitable paths for telephonic communication already existed at the bottom of Bass Strait. Heavy financial expenditure would be greatly reduced and provision of the desired voice bridge would be accelerated. Brown had no hesitation in ordering an investigation into the properties of the two cables, but Supervising Engineer (Research) S.H. Witt reported on 4 November 1926:—

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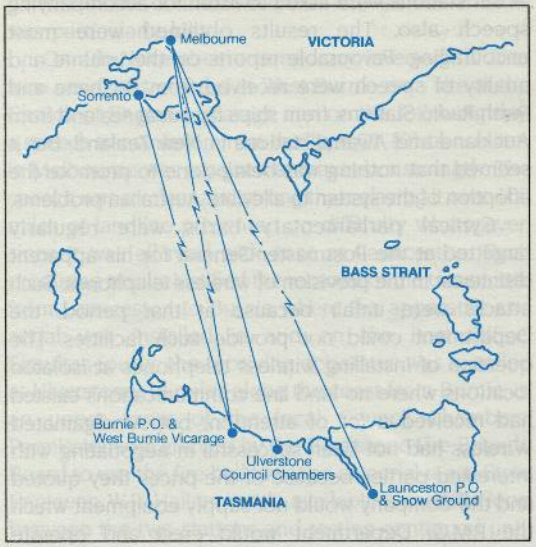
"This investigation is complete. The cables cannot be used for telephony."



Wireless Telephone Experimental Sites 1921.

PRESSURE FOR A SUBMARINE CABLE

Since London and Paris had been joined in 1891 by the first submarine telephone cable under the English Channel, there had been great advances in both cable design and insulation technology. The latest innovations were described not only in scientific and technical journals but received a fair degree of coverage in ordinary newspapers. It may not, therefore, have been any great surprise to H.P. Brown when, in August 1926, he was approached by the sub-editor of the Hobart "Mercury", Mr Clyde Black, who made representations on behalf of the newspaper and the Chamber of Commerce for the laying of a submarine telephone cable. Brown pointed out the technical difficulties in providing a cable of such a length and stressed the exceptionally heavy cost. Because of these obstacles in giving telephone facility by cable, the Department had directed its attention to the institution of a service by wireless telephony. It seemed significant that later in the same month, Tasmanian Member for Denison, Sir John Gellibrand, also raised the question of the telephone service with Postmaster-General Gibson. The prospect of a further onslaught by Parliamentarians, the Press and the big business interests of the Hobart Chamber of Commerce indicated that up-to-date answers be prepared. Quotations and complete specifications for the supply and installation of wireless telephony plant were awaited from both A.W.A. and S.T.C., but as public interest in a submarine cable seemed to be on the increase, an investigation into the economics of that alternative was necessary. That task fell to the lot of Chief Electrical Engineer J.M. Crawford, who supplied details to Brown some weeks later. From details of cable design and performance at that time, the distance across the strait was too great to allow a cable to be run direct and two routes were available which would allow the cable to be divided and for repeaters to be installed. The first was from a point near Wilson's Promontory (Vic) via the islands of the Furneaux Group to a suitable point near Cape Portland (Tas.), and the second was from Cape Otway (Vic) to King Island and then on to Marrawah (Tas.). Of the two, the route via King Island was preferred, because the many islands along the alternative path indicated a shallow, rocky sea-bed with consequent problems of tidal abrasion. It was also considered that open aerial construction over several islands multiplied the risk of storm damage. Either scheme would require additional wire between Launceston and Hobart, and when all costs had been estimated, provision of cable connection by the schemes were:-

(a) via Flinders Island — £171,000
(b) via King Island — £173,000

Postmaster-General Gibson compiled a soothing letter to the prickly Member for Denison avowing his sympathy for the Tasmanian cause, stating that a conservative estimate for the provision of telephonic service by means of submarine cable would be £180,000, but adding that there was doubt that the work could be done even for that figure as it would probably be necessary to send a cable ship from Great Britain to transport the cable and then to lay it on the ocean bed.

The Honourable Member was placated. The engineers were free to wrestle with their problem without distractions — for a little while!

(To be continued. A list of references will be provided at the conclusion of the final segment).

Alan Tulip, graduate and diplomate of the University of Durham, served for nine years as a Royal Air Force Instructor and then taught and administered a group of schools in Central Africa. Persuaded by an ex-service colleague to settle in Tasmania, he soon decided that a change from teaching was desirable and joined the P.M.G. Department in 1971. He became Tasmanian Historical Officer two years later and has, since then, been happily researching and writing and administering the Hobart Postal and Telecommunications Museum.

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Seas No Longer Divide

PART 2

A. Tulip

The second of three articles outlining the history of attempts to provide telephonic communications between Tasmania and the Mainland States.

WIRELESS TELEPHONY PREVAILS

By the end of September 1926, detailed quotations for the supply of equipment to achieve wireless telephone service between Tasmania and the mainland were received both from S.T.C. and A.W.A. Both manufacturers acknowledged the exacting requirements of the Postmaster-General's Department and then proceeded to describe their equipment and show how the desired result would be achieved. As S.T.C. stated:—

"It is our understanding that the link is required to give one radio telephone circuit between the two terminals, the circuits to be so arranged as to link up with the existing land line telephone circuits, and to form an intermediate portion of the regular trunk line network. Such a radio circuit as we should provide would enable you to establish full duplex operation, and ringing facilities are provided so that the circuits terminate on switchboards in the ordinary manner. Privacy is secured by inverting the speech frequencies before they are transmitted over the radio channels, and re-inverting them when they are received at the distant terminal. The circuits will function exactly as if the radio link were replaced by a normal wire line. It is estimated that an antenna power of five kilowatts will be required in order to give a reasonable degree of assurance that service could be maintained throughout twenty-four hours of the day."

But then came the reservations as would be expected in any fair and open submission:—

"It is, of course, impossible to guarantee a completely uninterrupted service, as there are occasions, as for instance during violent electrical storms, or when a station with a broadly tuned spark transmitter is operating close to either receiving station, when even ten times the power specified would not suffice to maintain a continuous service. If you feel that the demand for the service is not sufficient to justify a five kilowatt installation and would be willing to consider a service which would be subject to interference, we could more than likely provide you with a one kilowatt equipment. It must be understood that with this latter equipment, we could not guarantee continuous service, but we do feel that a fair degree of satisfaction could be obtained under average conditions."

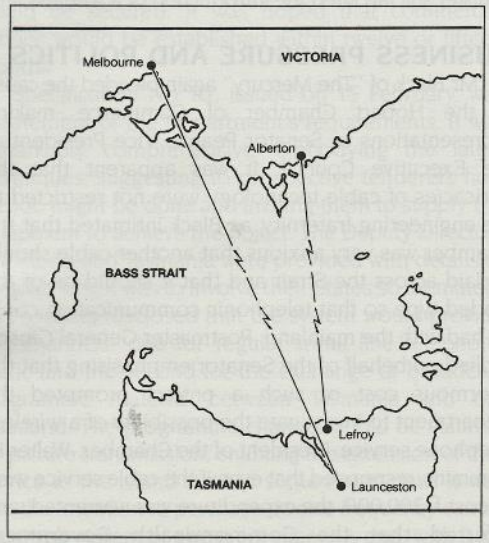
The proposal submitted by Amalgamated Wireless was equally detailed and honest in admitting the limitations of current technology. Chief Manager, Telegraphs and Wireless, Jim Malone provided an analysis of both proposals for Secretary Brown:—

"The A.W.A. quotation describes the equipment as being suitable for 200 miles, costing £22,020. The S.T.C. offer provides for alternative schemes:—

(a) Melbourne to Launceston; 275 miles; £27,866.

(b) Alberton (Vic) to Lefroy (Tas); 175 miles; £34,362

The latter case is the more expensive owing to the necessity for the installation of local power supply. In both cases the cost would be added to considerably in respect of installation costs for buildings, power supply, masts and aerial systems."



S.T.C's *Alternative W/T Terminals* 1926.

The technical details of the relative proposals were discussed most minutely and Malone concluded:—

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"The S.T.C. proposal technically is a much more satisfactory one, having special regard to the greater radio power level and the provision for reduction of atmospherics which will be severe on the wavelength proposed. The total cost of this installation — the shorter radio link — will probably be not less than £ 50,000 having regard to the cost of land, buildings, masts etc. The annual charges on this system would amount to about £ 16,000."

And then, significantly, he added:—

"It will be seen that the annual charges on the Radiophone system would not be much lower than 10% of the capital cost of a cable costing 160,000. The maximum life of the Radiophone system could be set down at 10 years as against the cable life of 30 — 40 years."

The position towards the close of 1926 relating to the provision of a Bass Strait speech link may thus be summarised. The Postmaster-General had stated five years previously that:—

"If present trials prove successful, it may be accepted that wireless telephone communication across the Strait will become accomplished fact in the near future."

According to Departmental requirements the tests were only reasonably successful and, despite great advances in radio technology, a continuous unimpeded radio-telephone service could not be guaranteed, even with the latest specifications from S.T.C. and A.W.A. Great advances in cable technology had provoked thoughts of providing a service by that means, but the cost was prohibitive and both Secretary Brown and his Minister still favoured the introduction of a wireless link.

BUSINESS PRESSURE AND POLITICS

Mr Black of "The Mercury" again pleaded the cause of the Hobart Chamber of Commerce, making representations to Senator Pearce, Vice President of the Executive Council. It was apparent that the intricacies of cable technology were not restricted to the engineering fraternity, as Black intimated that the Chamber was very anxious that another cable should be laid across the Strait and that it should be of the loaded type so that telephonic communication could be had with the mainland. Postmaster-General Gibson replied on behalf of the Senator emphasising that the enormous cost of such a project prompted the Department to investigate the possibility of a wireless telephone service. President of the Chamber, Walter H. Cummins, responded that even if the cable service were to cost £ 200,000, the expenditure was warranted, and inferred that the Commonwealth Government considered Tasmania as being in a different category from the other States and less deserving of adequate care — a charge to which Gibson took rightful exception:—

"I do not think it would be possible to sustain a charge against this Department concerning the treatment which is extended to the people of Tasmania. During the year 1924/25, the working expenses in respect of Post Office services rendered to the people of Tasmania were the third highest per 100 of the population compared with those of all other States, whereas the earnings were by far the lowest of any State in the Commonwealth. I think I have already given expression to the view that nothing would give me greater pleasure than to find it possible to establish a telephone service between Tasmania and the mainland — and I have not given up hope of inaugurating this service!"

The Postmaster-General's statistics could, nevertheless, do little to staunch the growing swell of public opinion. Tasmanians had conversed by telephone since 1883; the first trunk connection was made five years later and the major centres of Launceston and Hobart had been joined for the last twenty five years. Why, with all the latest advances, was it still impossible to speak across a stretch of water? Radio telegraphy had successfully bridged the gap more than twenty years previously! Why not radio telephone? It was done elsewhere — and over much greater distances; why not here? Why didn't the Government do something about it? Such sentiments were repeatedly echoed in the House by Tasmanian Members and although, in March 1927, they were assured that:—

Walter H. Cummins
(Courtesy Tasmaniana Library, State Library of Tasmania).

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"Consideration is being given to both alternatives" (i.e. cable and wireless), a foot-note to the paper on which that particular Hansard extract is recorded reads:—

"Please return file to Research Section so that a case may be prepared for the Radio Link."

It is clear that as far as the Department was concerned, radio was still the preferred option, and this was confirmed in a report published in November of that year by the Parliamentary Joint Committee of Public Accounts where mention of radio-telephony was abysmally brief:—

"The establishment of a radio telephone service would be most advantageous...The Postal authorities have been studying this question for some time, and the Committee has been assured that when the project is regarded as being feasible, it will be established."

The Launceston "Examiner" retorted caustically:—

"The official assurance reads rather like dope! Many years have elapsed since the first experiments were made, but in Australia we seem to be as far off anything practical as ever. It is possible to talk over the vast area of the Atlantic...Holland has talked with the Dutch East Indies. In view of such accomplishments it ought to be possible for the Commonwealth Postal Department to provide a similar facility across the couple of hundred miles across Bass Strait!"

There is little doubt that a radio-phone service could have been installed at the end of 1927, but it would not have measured up to the stringent requirements of the P.M.G.'s Department, and if, because of mounting criticism and political pressure, an inferior service had been installed and it was a failure, the political consequences for the Minister and the inevitable repercussions for his advisers can readily be visualised. Secretary Brown was not yet satisfied. The Minister, the honourable Members, the Press, and the public would have to wait!

Early in the following year S.T.C. produced a revised scheme for the establishment of a commercial short wave radio telephone and telegraph service between Melbourne and Launceston. They suggested that a 20KW set of equipment would meet all the Department's requirements and also provide additional channels for carrier wave telegraphy. The apparatus would operate on wave lengths from 45-90 metres. It was again admitted that local atmospheric conditions might arise when fading would be experienced over the transmission path, but a compensating device was offered to overcome such fluctuations in signal strength — at a cost of £3,000 per terminal. The total costs for the system were more than £65,000! Brown, nevertheless, ordered an investigation into the suitability of the 45-90 metre band width for propogation purposes, noting sombrely:—

"The cost of the proposed equipment is a heavy item to face and we must hope that further enquiries will result in a less costly quotation."

Experiments continued amid sniping attacks by the press and verbal assaults on the floor of the House, to which, on 11 September, the Postmaster-General replied:—

"The detailed technical requirements are being assembled in order that tenders for the equipment necessary to establish a telephone service may be invited. It is a subject receiving the most earnest consideration and no effort will be spared to bring about a realisation of this desire at the earliest possible date."

The assembly of requirements took, perhaps, a little longer than might have been anticipated. Christmas passed; the New Year arrived. The year — 1929!

"IT WILL BE A RADIO LINK"

The specification was prepared by S.H. Witt who may be regarded as the "founding father" of the P.M.G.'s Research Department and on 1 February, 1929, Director General Brown informed the Minister of his recommendations. In order to improve telephone and telegraph communication for Tasmanians, it had been decided to establish a wireless telephone service across Bass Strait. It was hoped that it would be possible to procure apparatus which would provide a telephone service capable of being linked up with the whole Commonwealth network and which would also derive a separate channel of such quality that broadcasting programmes might be relayed across the Strait for local transmission. It was also hoped that a supplementary telegraph service to that available by existing cables would be secured. It was hoped that commercial service would be established within twelve or fifteen months.

Specification No. R1, issued on 15 February, was a statement of the Department's requirements. It was remarkably comprehensive, embodying the latest techniques, suggesting to prospective tenderers how the job might be done and inviting them to supply the equipment to achieve the object. The Deputy Directors in Victoria and Tasmania were provided with details of the plan which was to involve their States so intimately. Witt's letters disclosed that the system would provide two channels; one for regular trunk line telephone traffic and the second for the exchange of broadcast programme material between Tasmania and the mainland. The programme channel would be suitable for picture transmission, enabling the extension of that service to the island state at some future date. It was also the intention to purchase a voice frequency carrier telegraph system of about six channels and, with it, to carry out experiments over the programme channel, having in view the provision of an emergency telegraph service for use in the event of a cable failure. Implementation of the scheme would therefore require

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the selection of four sites to accommodate sending and receiving stations in both Tasmania and Victoria. Indications of suitable localities had been provided by the 1921 experiments and it was suggested that the following areas be investigated:—

For the Victorian sending station, in the vicinity of Cranbourne;

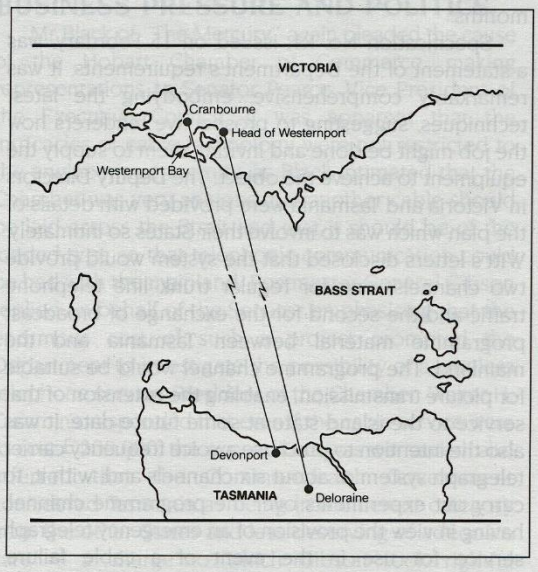
For the Victorian receiving station, near the head of Westernport;

For the Tasmanian sending station, between Deloraine and the northern coast;

For the Tasmanian receiving station, as close as possible to the coast between Burnie and Devonport.

The survey and selection of possible sites in Tasmania was performed by Equipment Engineer Eric Bowden and Line Inspector F.T. Smith. Their task was not an easy one as many points had to be borne in mind. The sites had to be elevated, surrounded by undulating country and free from houses and thick scrub. They had to be near the main trunk telephone and electricity supply routes and should have a natural water supply for valve cooling purposes. Proximity to a railway siding would be advantageous. The strictest confidence had to be maintained and no information given as for what purpose the sites were required, so, while ostensibly seeking information as to the location of certain telephone subscribers, the duo tramped the northern countryside and within a commendably short time had fixed upon two locations which seemed to be ideal for their respective roles. The transmitting site was located 1 1/2 miles from Deloraine and the receiver was to be four miles from Devonport.

Eric Bowden's report was but one document which received close scrutiny during the following months,



Suggested Radio Sites 1929.

because, in response to the Department's "invitation to tender", no less than fifteen schemes for providing the radio link were received from major manufacturers. Analysis and comparison continued endlessly. The Director-General no doubt viewed with pleasure his prospective visit to Hobart for the opening of the city's new automatic exchange, but after successfully launching the new facility, he immediately came under pressure from the proponents of the Bass Strait link. Brown sympathised with his impatient questioners but could do no more than truthfully inform them that a wireless telephone service would be installed when all tenders had been evaluated. For Tasmanians, it was a frustrating response, but then their hopes were uplifted. As a result of the General Election in that same month, the Scullin government came to power and the Tasmanian Member for Wilmot, Mr J.A. Lyons was allocated the portfolio of Postmaster-General. The reaction of the average citizen was predictable. A Tasmanian was now in control of telegraph and telephone affairs. Now there would be some progress!

Tasmanian Engineer Eric Bowden.

FURTHER THOUGHTS ON CABLE

"The Mercury" was quick off the mark in again pressing the Tasmanian cause. On 25 October 1929, General Manager Cummins wrote to Joe Lyons congratulating him on his appointment and then pointed out how badly the State was served by the existing telegraph cables.

"There are still occasions when our press messages are subjected to exasperating delays. This is because the cables are obsolete and cannot carry the traffic at anything like high speed. A wireless telephone would overcome that. The late government promised to install this, but so far it has not been done."

One might interpret Cummins' letter as a plea for improved facilities for his newspaper rather than for the

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Postmaster General J.A. Lyons

people of Tasmania, but Lyons realised that he had to do something about it. His political experience had no doubt inculcated a healthy respect for the power of the press and he was now in the "hot seat." A full report on the matter was called for and Sidney Witt provided the details. Telephone, radio broadcast and additional telegraph facilities could be provided by either a submarine cable or by wireless telephony. Cable offered the most satisfactory way of providing the desired services, but the cost would be extremely high. A radio telephone system would cost about half as much and could be expected to give a service for about eighteen hours a day, but it could be badly disrupted by atmospheric disturbances. In view of the lower cost it had been decided to proceed with a radio method. Tenders were being evaluated and it was thought that a service should be in operation within sixteen months.

The implications of Witt's report were discussed at length with the Postmaster-General, and Brown's record of the proceedings showed a significant change of thought:—

> "It was agreed that before proceeding further, the whole matter should be reviewed in order to determine whether it would not be better to provide a submarine cable, bearing in mind the recent great developments in submarine cable design."

Lyons faced the same dilema as his predecessor. He could authorise the installation of the radio telephone system with its acknowledged limitations, but it could not be provided for a lengthy period during which he would have to fend off persistent enquiries. It was, perhaps, politically expedient that while evaluation of radio tenders proceeded, he be seen to be examining the possibility of a submarine cable, which although much more costly, would provide a vastly superior service. It is suggested that he was persuaded by the arguments of his Director-General, who, at the end of November 1929, sought advice from the Chief Engineer of the British Post Office. Progress in the design of submarine cables had progressed rapidly with the introduction of continuous loading, the use of repeaters and the discovery of superior insulating materials. The modern cable was not subject to fading, it could guarantee secrecy and it did give an all round the clock service. Despite the expense, it was a possibility that had to be explored, and it is evident that provision of a service by cable was receiving considered attention at high level, as in December 1929, it was announced in the House, that:—

> "In view of substantial improvements which have recently taken place in the design of submarine telephone cables, further investigations are being pursued so that the relative merits of the two systems may be determined."

Based upon information supplied by Sir Thomas Purves of the British Post Office, Chief Engineer Crawford reported that the freighting and laying of some 220 nautical miles of suitable cable with the associated costs of repeater stations and terminal equipment would entail an outlay of 230,500! It was probable that a route from Lorne on the Victorian coast to Stanley in north-west Tasmania offered the best possible conditions for safe landing points, a sandy sea bed and freedom from fast running tides. A second possibility was to run a cable from the mainland to King Island and thence to Tasmania. This was a slightly longer route, but it would enable a repeating station to be placed on the island — which would considerably reduce the size of conductors in the cable and thus the expense — and it would provide telephone communication for the islanders. It would also facilitate the use of carrier systems in the cable thereby increasing its carrying capacity. Installation costs, running expenses, the advantages and disadvantages of the two systems — radio and cable — were scrutinised most minutely. The most attractive aspect of the radio link was its comparatively low cost. The provision of a submarine cable, though more costly, would give more satisfactory service and was cheaper on an annual cost basis. Crawford definitely favoured communication by cable, but as he pointed out:—

> "the scheme adopted might be dictated by severe financial restraints due to the depression period."

During April and May of 1930, Tasmanian Senator Herbert Hays continued pressure on the Postmaster-General and, as predicted by Crawford, the reply he received was not encouraging:—

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"Investigations are being continued into the technical merits of wireless and cable services, particularly in relation to the somewhat remarkable developments which have taken place in the manufacture of submarine cables for telephonic purposes. It has to be recognised, however, that in existing economic circumstances, there is unfortunately no option but to defer the projected scheme, which is one of considerable magnitude, for the time being."

The reaction by "The Mercury" was both swift and predictable:—

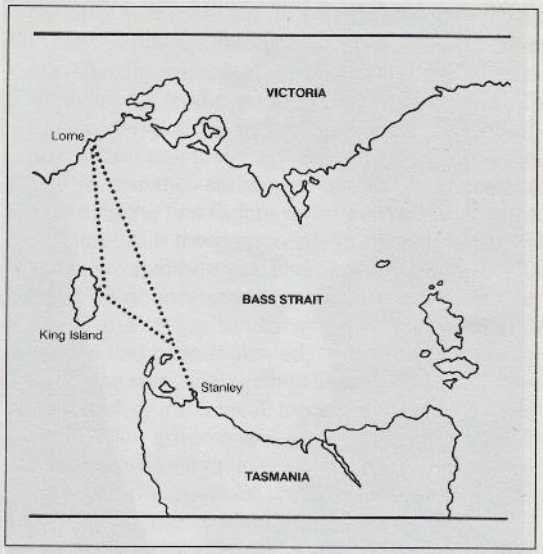
"The new Postmaster-General in his first annual report printed March 27, 1930, announced — no doubt with some pride — the advances in long distance telephone services which his department was carrying out between Sydney and Brisbane, Sydney and Melbourne, and Adelaide and Perth, and he finished up by informing us, "Tenders have been called for the provision of a wireless telephone link between Tasmania and the mainland with the object of providing full intercommunication between the two telephone systems." Excellent! And now, six weeks later, it is announced from Canberra, 'The Federal Ministry has decided not to proceed with the scheme to establish telephonic communication between Tasmania and the mainland." Of course, that sort of thing is chronic — we have learned by experience, to expect it. It helps to fill the cup!"

ABOUT FACE — AND YET AGAIN!

It was an understandable point of view but the scheme was not dead; it was simply deferred until a better economic climate permitted the Government to adopt a suitable system — a course to which it was committed. With emphasis on further exploration of cable possibilities, plans were formulated on 30 May for engineers Durant and O'Reilly of Crawford's staff to visit King Island to inspect possible cable landing sites and determine overland pole routes. But the significant event of that day was a conference between Brown and his senior colleagues who were jointly to recommend a definite course of action. All aspects of cable and radio schemes were examined and three were eventually selected for final comparison:—

(a) A submarine telephone cable of approximately 180 nautical miles length, with King Island as an intermediate point on which a repeater station would be located. The cable would have three screened pairs of conductors and would provide five telephone channels and four to six telegraph channels if desired;

(b) A radio telephone system using short wave directive transmission providing five telephone channels, at least one of which would be suitable for programme transmission;



Suggested Cable Routes 1930.

(c) A radio telephone system of one single channel capable of use either as a trunk line or a programme channel.

Capital and Annual charges were estimated as follows:—

	Capital Cost £	Annual £
Scheme A — 5 channels cable	196,000	24,110
Scheme B — 5 channels radio	321,600	72,233
Scheme C — 1 channel radio	57,700	19,307

Scheme B was eliminated immediately since both its capital and annual charges were higher than those of a cable. An examination of the record of interruptions to the existing telegraph cables showed that they suffered one interruption in 3 to 4 years and that the duration of the interruption was approximately 2 weeks. A new submarine cable would increase the submarine group and the chance of total interruption of communication would be considerably reduced. The chance of severance of telephonic communication would, however, still be of the order of one interruption in 3 to 4 years. It did not seem justifiable, therefore, to instal a radio system such as scheme "C" merely for use about two weeks every 3 1/2 years. Scheme "C", the single radio channel, was estimated on the basis of using the Victorian end as a short wave radio broadcasting station for programme service to other States when not required for Tasmanian service. It had not been possible, however, to find any other use

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whatever for the Tasmanian terminal of the link. It was therefore exclusively chargeable to reserve service in case of cable failure and would not be installed because of such small justification.

The Director-General decided that, having reviewed all aspects of such a complex problem, submarine telephone cable was the proper scheme to adopt. It was agreed that a specification of requirements be drawn up for the purpose of calling for tenders, and that the provision of continuously loaded cable be encouraged so as to permit the use of carrier systems.

The cable recommendation, from a highly professional group of engineers, was passed on to the Postmaster-General in a memorandum dated 3 June 1930, and two days later, Mr Lyons announced to the House that the Tasmania — mainland telephone service was to go ahead — by means of a wireless telephone system! It was a political solution to an aggravating problem. Ignoring professional advice, Lyons was saying in simple language, "Yes, Tasmania, you can have a radio-telephone system. It will not be perfect but it will serve as a stop-gap measure until we can give you a cable. We can then use the radio apparatus for broadcasting, so it's not a waste of money."

All activity associated with a cable service was stopped as energies were channelled into the preparation of a case for the radio project to be submitted to the Parliamentary Public Works Committee. In response to the Minister's request for information as to when the project might be completed, Crawford could give little comfort. Taking of evidence by the Committee, invitation and evaluation of tenders — assuming Committee and Parliamentary approval — delivery, installation and testing of equipment may not enable completion of the project until May 1932!

Brown discussed the problem with the Minister and no doubt emphasised the possible completion date — two years hence! The substance of that conversation may never be known, but it is suggested that because of the inevitable delay, the Director-General again stressed the claim of superior cable technology. There could be an economic change for the better and might it not be politically desirable to have both radio and cable proposals examined by the Public Works Committee? Parliament would, after all, act upon the Committee's recommendation. Whatever transpired during that interview is illuminated by a scrawled note in Brown's handwriting at the foot of the minute:—

"Discussed with Mr. Lyons. Pursue with preparation of both cable and radio schemes."

Alan Tulip, graduated and diplomate of the University of Durham, served for nine years as a Royal Air Force Instructor and then taught and adminstered a group of schools in Central Africa. Persuaded by an ex-service colleague to settle in Tasmania, he soon decided that a change from teaching was desirable and joined the P.M.G. Department in 1971. He became Tasmanian Historical Officer two years later and has, since then, been happily researching and writing, and administering the Hobart Postal and Telecommunications Museum.

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Seas No Longer Divide

PART 3

A. Tulip

The final of three articles outlining the history of attempts to provide telephonic communications between Tasmania and the Mainland States.

CABLE VERSUS RADIO

Guided by Director-General Harry Brown, the finalisation of details for the bridging of Bass Strait by either a submarine telephone cable or a radio telephone link proceeded apace. The time was fast approaching when the Department's proposals would be presented in the House by the Postmaster-General and they had to be right. Officers of Brown's staff were to visit King Island to examine possible cable landing sites and consider overland transmission routes, and a mass of detail was requested from Superintending Engineer Braithwaite of Hobart. Many of those urgent queries could not be answered until Braithwaite had visited Circular Head - and the response was required in eight days! Undaunted by the task, the Tasmanian engineer departed with all speed for the far north-west, carried out a detailed inspection and submitted his report by 4 July 1930 - one day late, but under the circumstances, a highly commendable piece of work.

Accompanied by representatives of the local seafaring fraternity, all possible landing sites were considered and Perkins Bay was finally recommended. Running into the bay, the sea bed was free from obstacles, a cable steamer could safely approach the shore, the beach was of hard sand up to the high water mark and a suitable site for a repeater building was close at hand.

A pole line and road from Stanley Post Office were within reasonable proximity and could easily be extended to the proposed repeater station. Electric power was to be extended from Wynyard to Stanley within six months and could be extended to Perkins Bay if required. There were problems with the existing transmission route from Stanley to Hobart via Burnie, Deloraine and Launceston, but suggestions were offered and costs were estimated. Problems existed on the Victorian side of the project, but a discernible cable scheme gradually emerged.

The radio telephone proposal received equally detailed examination. Estimates were requested for the purchase of sites and the erection of transmitter and receiver buildings in both Victoria and Tasmania; staff cottages were to be provided; equipment had to be accommodated. No detail was to be overlooked before

Captain Richard Legget of Stanley (Left) — Braithwaite's Principal Authority at Circular Head

the proposals were aired before Parliament and the scrutineers of the Works Committee. Traffic studies were undertaken, estimates of revenue from both schemes were prepared and costs were examined most minutely, but by the end of July all were completed. On 5 August 1930, Assistant Minister Beasley, on behalf of Mr Lyons, in the House of Representatives moved that:-

> 'In accordance with the provisions of the Commonwealth Public Works Committee Act, the following proposed work be referred to the Parliamentary Committee on Public Works for investigation and report:- Establishment of telephone communication between the mainland (Victoria) and Tasmania.'

Full details of both proposals were then outlined before the Members of the House. The advantages and disadvantages of both were displayed before a critical audience. The radio telephone project was cheaper but it would give only limited service; a submarine telephone cable would guarantee a twenty-four hour service but it was vastly more expensive. The document presented by Mr Beasley stated the truth. It had been compiled by teams of engineers who, being fully aware of the technicalities, could only conclude that cable was the logical answer and the document was definitely biased in favour of that method. Such bias was not

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missed by many Members who voiced their disapproval on that account and condemned the proposal accordingly. Others stated quite bluntly that, as the Commonwealth's finances were in such disarray because of the depression period, this was not the time to be airing expensive proposals of any kind. Many remembered the whirlwind advances in radio science over recent years and inclined towards that method. It was left to the Tasmanian members for Denison and Franklin to enumerate the many disadvantages suffered by the State because of the lack of an interstate telephone link. As they pointed out, the Honourable Members were not experts in the telecommunications field and it was strongly suggested that the whole matter be left to the Public Works Committee who would further consult with such experts and report their decision to Parliament. The final word was left to the Assistant Minister:

> 'The investigation of this matter can be safely entrusted to that Committee. It will collect all the facts that are available, and may bring to light a good deal of information that is not now in the possession of the Right Honourable Members who have seen fit to oppose it. The committee can be depended upon to arrive at an impartial decision. I am satisfied that the time is not far distant when the requirements of Tasmania in this direction will be met. Those who vote against the motion will be acting against the best interests of that State.'

The motion was then put to the House and as the official record briefly reports, "Question resolved in the affirmative". The matter was to be resolved by the Parliamentary Public Works Committee.

DECISIONS, DELAYS AND THE "TELEPHONE COMMITTEE"

The committee's task was two-fold. In the first instance the members were required to determine if a telephone service was really justified in view of the heavy expenditure which would be involved and secondly, if the service was to be provided they were to recommend the method of provision - submarine cable or radio. Investigations commenced in Canberra on 12 November, 1930 and, during ensuing months, continued in Sydney, Melbourne, Hobart, Launceston, Stanley and Burnie. The viewpoint and opinions of a broad spectrum of the general public and business world soon convinced the committee that some kind of service was highly desirable. There was a sense of isolation from both family members and friends, and the Tasmanian business man was certainly handicapped by being unable to contact promptly his mainland agents or customers. So a telephone service was certainly justified, but how should it be provided? The answer to that problem could only be derived from the evidence of the "experts" in cable technology and radio telephony - the evidence of Director General of the PMG Department, H.P. Brown, and that of Ernest Fisk, Managing Director, Amalgamated Wireless Australasia. Both men openly and honestly pleaded the cause of their respective technologies and patiently elucidated the multitude of questions from probing committee members. Fisk stressed the relative cheapness of a radio service and high-lighted the rapid advance of the newest science; Brown acknowledged the greater cost of a submarine cable but pointed out the greater efficiency of cable telephony and the greater income which would eventually be derived. He appeared before the committee on three occasions and was adamant that a cable would provide the only satisfactory answer to the problem.

He was quite aware of the financial implications and did not advocate going ahead with the work immediately. As he pointed out, Tasmania had done without a service for a long time:

> 'Better to wait until a cable service can be provided rather than have a radio service now.'

The final evidence was taken on 20 March 1931 and, after due deliberation, the committee's recommendations were presented to Parliament. In brief, it was resolved that:-

> 'Tasmania is entitled to enjoy the same telephone facilities as the other States and that when funds can be conveniently made available, the committee is unanimous in recommending that a submarine telephone cable be laid from Lorne, via King Island to Stanley....'

Ten years of experiment and deliberation had preceded the decision but lack of money prevented further action - and that situation was to continue for a lengthy period. But a cable had been sanctioned and Brown directed his energies into ensuring that the best possible cable should be provided. Some six months earlier he had expressed interest in a telephone cable which had been laid between Key West (Florida) and Havana (Cuba), and ensuing dialogue with Western Electric Company (Australia) was to have a profound effect upon the Department's thoughts about the construction of the Tasmania - Victoria cable. The Key West cable was made up of a single conductor insulated with a relatively new compound named paragutta. It was then enclosed with copper tapes which formed the return portion of the circuit. Channels were provided by carrier wave. The Department considered that three pairs of conductors might possibly give greater flexibility than a single core cable and Brown requested details of Western Electric's preference for single core.

The matter was fully investigated by the Bell Telephone Laboratories who recommended a cable of the same type as the Key West - Havana, and pointed out that, because of a proposed repeater station on the King Island route, a considerably smaller, and thus less expensive cable could be used. It was also stressed that the Key West cable was proving capable of furnishing more circuits than was originally contemplated!

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These pronouncements obviously provided the Director-General and his team with much food for thought, but they had ample time for deliberation. The financial situation was still gloomy; the King and Flinders Island settlers squabbled about claims for a cable to traverse their respective shores, while the vexed question, "When can we have our cable?" was repeatedly asked, only to receive the same frustrating response, "When it can be afforded." Not even Tasmanian Joe Lyons, who became Prime Minister in January 1932, could do anything to help. By the end of the year, Federal finances showed a small surplus, but Lyons had many more immediate matters of urgency to consider before thinking of his native State's telecommunication problems.

Early in the following year an organisation was formed with the object of applying pressure for the laying of the cable. "The Bass Strait Telephone Committee" was a strong pressure group which boasted members from the field of politics, the legal profession, tourism, the complete spectrum of Tasmanian business and the general public. Groups were formed on a state-wide basis and their persistent clamour was widely reported in the Press. Postmaster-General Parkhill and the Prime Minister, mindful of the upturn in the Federal economy, must have realised the dangers of further prevarication. In answer to "that question" Parkhill replied on 21 March, 1933 -

> 'Financial difficulties preclude the Government from undertaking the expenditure this year, but it will be considered in connection with the Estimates for the next financial year.'

The announcement triggered a further spurt of activity. It seemed that funds might be available in the near future and Harry Brown further exhorted his colleagues:-

> '..it is important that all preliminary steps be taken so that the Department is able to go forward with full recommendations at short notice.'

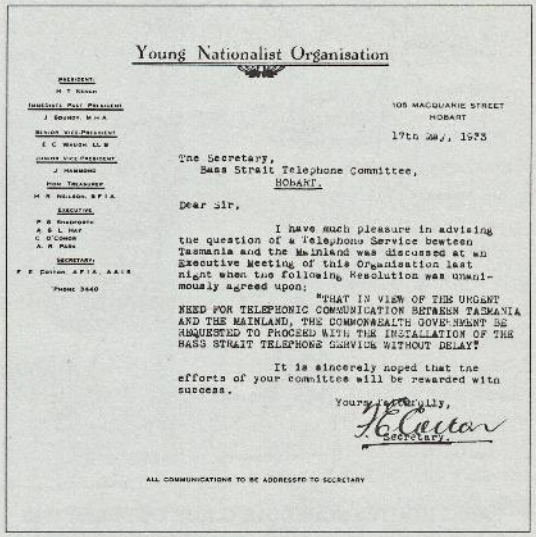
The Telephone Committee, far from being appeased by the promise of "consideration" stepped up their pressure! The support of every organisation of consequence in the State was sought to a resolution which read:-

> 'That in view of the urgent need for telephone communication between Tasmania and the Mainland, the Commonwealth Government be requested to proceed with the installation of the Bass Strait Telephone Service without delay.'

An avalanche of positive responses duly reached the desk of the Postmaster-General. Their message was clear. Such a depth of feeling could no longer be denied!

Members of the new Cabinet were reassured of the superiority of the cable service and, on 5 October 1933, Tasmanians noted, no doubt with great satisfaction, one simple sentence in a "Mercury" report on Federal expenditure approvals:-

> 'An amount of 180,000 is put down for a cable across the Strait.'



Young Nationalist Organisation

105 MACQUARIE STREET
HOBART

19th May, 1933

The Secretary,
Bass Strait Telephone Committee,
HOBART.

Dear Sir,

I have much pleasure in advising the question of a Telephone Service bewteen Tasmania and the Mainland was discussed at an Executive Meeting of this Organisation last night when the following Resolution was unanimously agreed upon:

"THAT IN VIEW OF THE URGENT NEED FOR TELEPHONIC COMMUNICATION BETWEEN TASMANIA AND THE MAINLAND, THE COMMONWEALTH GOVERNMENT BE REQUESTED TO PROCEED WITH THE INSTALLATION OF THE BASS STRAIT TELEPHONE SERVICE WITHOUT DELAY!

It is sincerely hoped that the efforts of your committee will be rewarded with success.

Yours faithfully,

Secretary.

ALL COMMUNICATIONS TO BE ADDRESSED TO SECRETARY

A Typical Response to the Telephone Committee Resolution

CABLE SPECIFICATIONS AND EVALUATION

The green light was signalled and the outcome of thorough Departmental planning was shown when, one week later, tenders were invited for the supply of:-

> 'Submarine Cable and Associated Equipment to provide telephone and telegraph channels between the Mainland of Australia and the Island of Tasmania.'

All aspects of the cable proposal were outlined in Schedule No. C.1086 and its accompanying specifications. Alternative cable routes were suggested, and broadcast, telephone and telegraph channel requirements to the year 1940 were clearly delineated. The Schedule sketched out the project, suggested ways of doing the job, specified exacting standards, but invited the most modern innovations so long as the cost was not prohibitive.

The best "deal" was required - within budget limits!

Of the three routes suggested (see map), Cable Route "A" was that suggested by the Parliamentary Works Committee. It would enable a repeater station to be built on King Island and would provide telephone service to the islanders. Route "B" direct from Lorne to Stanley was shorter - and therefore cheaper, while Route "C" from Waratah Bay to Low Head, was even shorter. The latter closely followed the path of the East Telegraph Cable which had given little trouble since it was laid 25 years earlier.

The closing date for tenders was 13 March 1934, and while the manufacturing giants were left to plan their proposals for the ultimate designs in cable and terminal equipment, thoughts were urgently directed to a multitude of tasks which must be undertaken on

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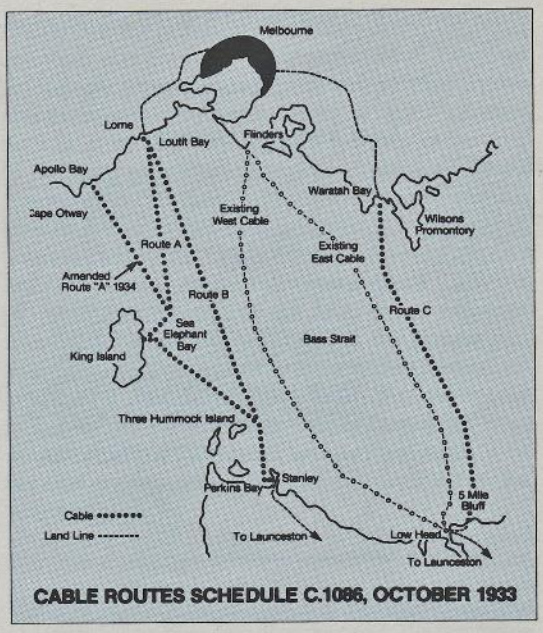


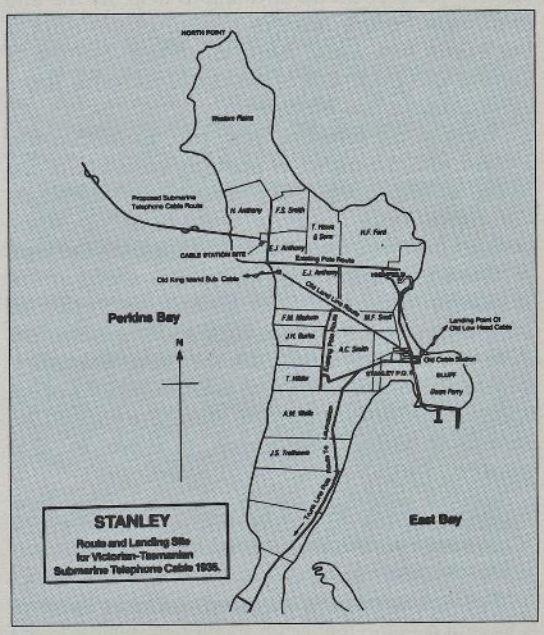
Cable Routes Schedule C.1086 *October*, 1933

both sides of the Strait. The cable would provide high quality channels across the sea bed, but equally efficient land-line trunk networks would be necessary to conduct successful conversations from terminating points to and from the respective State capitals in Victoria and Tasmania. Extensive upgrading and renovation of land lines would be necessary whatever cable route was selected, but all had to be costed beforehand.

Further surveys of the sea bed were carried out along the King Island route and Superintending Engineer Braithwaite was required to produce a plan of the Perkins Bay area showing the proposed landing point. The pressure was undoubtedly on but there is no evidence of any major set-back. There was a slight delay in the planning and preparation of tenders when it became necessary to modify the suggested cable Route "A". The northern section of the cable had to be shortened to make it compatible with the length of its southern counterpart, and after urgent consultation, all potential tenderers were informed that a further alternative route was available with Apollo Bay as the mainland point of contact.

No less than twenty-nine schemes were offered by seven manufacturers, but many were quickly discarded on grounds of expense or failure to meet the Department's exacting standards. The evaluation of tenders was a lengthy process but negotiations were finalised in August 1934 when a joint contract was awarded to Siemens Bros and S.T.C. The total value of the Siemens cable, including the charge for laying it across Bass Strait, was £127,504. S.T.C's equipment totalled £77,227 and was guaranteed to provide on the cable:-

> 'One broadcasting channel, Melbourne to Hobart, with Launceston intermediate - all stations capable of originating a programme. Three telephone channels with terminals at Melbourne and Launceston.
>
> One telephone channel with terminals at Apollo Bay and Stanley, with King Island as an intermediate station.
>
> Five telegraph channels which could, when necessary, be superimposed over one of the three telephone channels.'



Stanley Cable Route and Landing Site

CABLE AND EQUIPMENT

The announcement of the acceptance of tenders produced the first request for a telephone call via the new facility. The cable was not yet constructed nor the terminating equipment assembled -yet a booking list was already commenced. That minor event perhaps served as a reminder of the tasks which had still to be undertaken before the cable-laying operation was finished, and, according to the contract provisions, that date was only fifteen months ahead! The Deputy Directors in Hobart and Melbourne quickly became aware of the parts they would play in the implementation of the grandiose scheme. The cable would be laid from Apollo Bay to a repeater station at Naracoopa on the east coast of King Island and thence to Perkins Bay, Stanley. It would consist of a central conductor weighing 500 lbs per nautical mile with paragutta insulation of 670 lbs per naut., and a concentric return of five copper tapes weighing in all 840 lbs per naut. - all to be enclosed within steel armouring wire. S.T.C's equipment consisted essentially of:-

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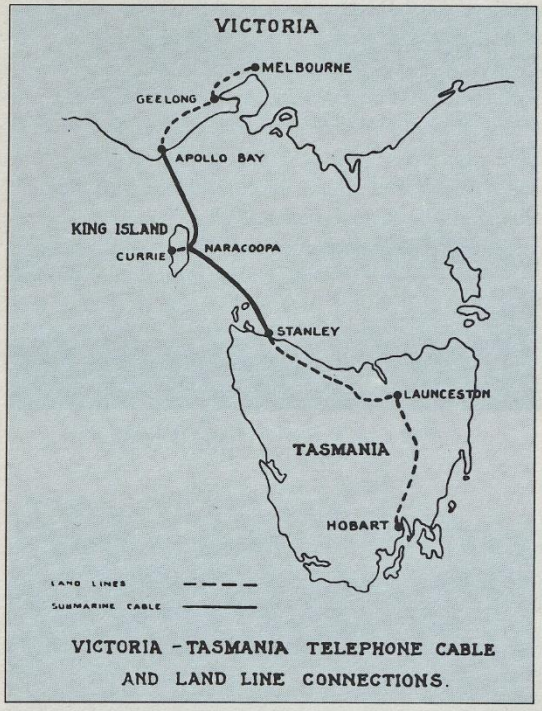


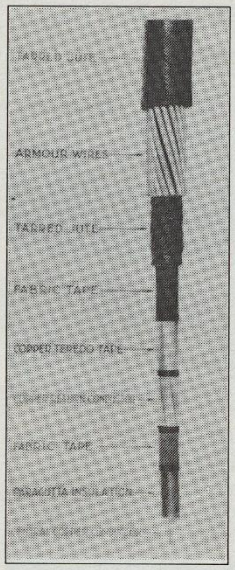
Vic-Tas Telephone Cable Route and Land Line Connection

(a) a 3-channel carrier telephone system between Melbourne and Apollo Bay;
(b) a 6-channel carrier system on the cable with a repeater station at King Island;
(c) a 3-channel carrier system between Stanley and Launceston;
(d) a broadcasting programme transmission channel operating between Melbourne, Launceston and Hobart with repeaters at Apollo Bay, King Island and Stanley

and

(e) a voice frequency carrier telegraph system with terminals at Melbourne and Launceston, and the necessary equipment for providing two composite telegraph circuits between Launceston and Hobart.

The contractors would lay the cable and install terminal and repeater equipment at respective stations, but the Department was committed to supply labour for an ominously long list of supporting tasks. Repeater houses and staff residences must be built; concrete foundations for machines and plant were required; lighting, heating and other building services were essential. Power plant, fuse panels, battery supply, test boards, distributing frames, filter and transformer racks, cable runways and wiring - all were to be provided by the expenditure of thousands of manhours of work. A massive operation was under way. The cable was to be laid and tested by 30 November, 1935 and all equipment was to be installed sixteen weeks thereafter.



Structure of a Sub-Telephone Cable

By mid-January, 1935, Director-General Brown received a specimen of the cable with a reassuring report from Siemens Bros. that:-

> 'both the progress in manufacture and the electrical characteristics are fully up to expectations.'

There was obviously to be no delay in delivery of the cable and S.T.C's equipment, but in the following month, it seemed that the buildings at Apollo Bay, Naracoopa and Stanley would not be ready for the necessary installation work. If equipment could not be accommodated, testing could not be done. The project would not be completed on schedule and the contractors would not be to blame! Spurs were judiciously applied in certain quarters and the construction work proceeded with urgency. Superintending Engineer Braithwaite was short of both staff and equipment, a situation which was promptly alleviated by timely assistance from his Chief in Melbourne. The work-load, which a few months earlier had looked so formidable, was steadily whittled away and as the land based problems were steadily solved, the longest submarine telephone cable in the world commenced its journey - heading "down under".

THE SUBMARINE LINK

The cable, weighing 1,395 tons was loaded into the specially designed cable ship "Faraday" opposite Siemens factory on the river Thames, and the ship arrived at Melbourne on the 26th October. Having replenished her stores and oil fuel, the "Faraday" commenced laying operations three days later. Detailed accounts of the operation have been produced in a wide variety of documents (see references) and therefore only a summary of essential features are given in this narrative. On paper, the plan of action appeared relatively simple. The programme was to lay the northern section - Apollo Bay to Naracoopa - in two parts, paying out cable from the shore towards the centre and making a splice about half-way. The southern section - Naracoopa to Stanley - would be laid in like fashion. Reference has already been made to the weights of the core constituents, and when the extra weight of armouring wires is considered, the cable could truly be described as "massive". There was, therefore, no question of man-handling the cable ashore and, as neither tugs nor lighters were available,

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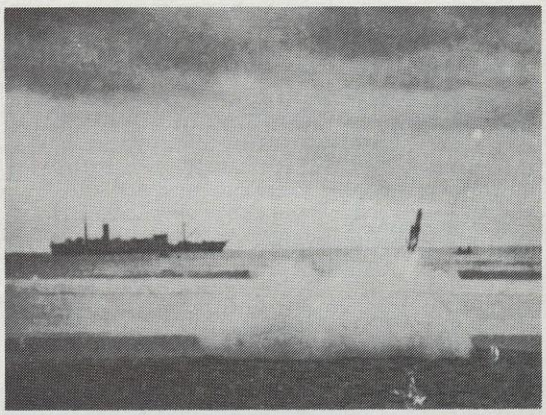
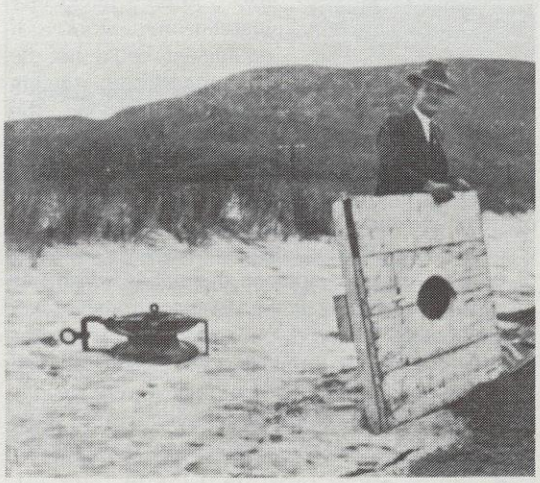
Attempting to land the Cable Shore end in heavy surf — Apollo Bay, 1935.

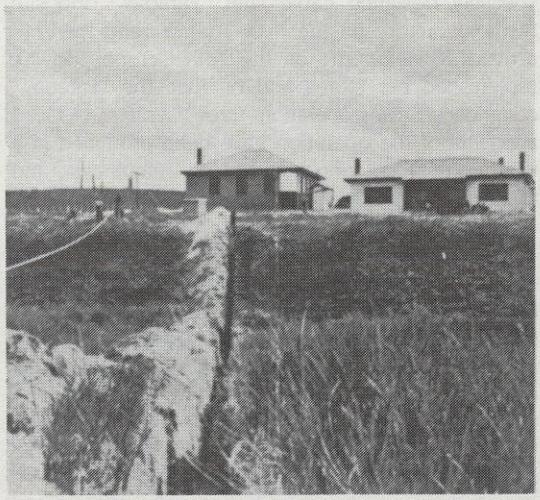


Sending a line to Faraday's Cutter by Rocket — Apollo Bay, 1935.

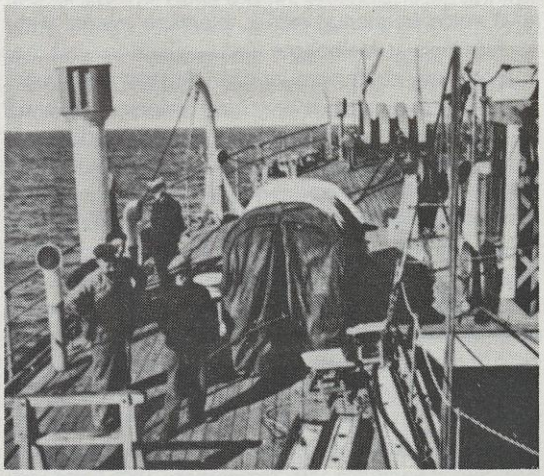


Sand Anchor Equipment

The Cable "Floated" Ashore — Apollo Bay, 1935.



The Cable Hauled Ashore at Naracoopa.



Cable Jointer's Tent on Board "Faraday".

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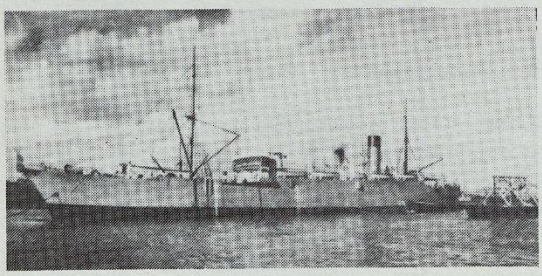
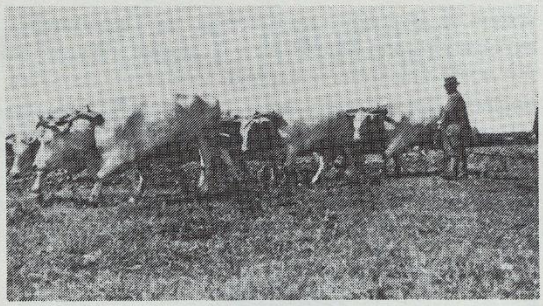
the ship's own hauling gear was used to land the shore ends. Landing lines were first connected by means of rockets - boats could not proceed to the shore at Apollo Bay because of heavy surf - a four inch manila rope was then dragged ashore followed by the cable which was "floated" by means of empty watertight steel barrels. By 10.30 pm on 5th November, the Victorian end of the Bass Strait cable had been connected in the repeater station. All the barrels were then cut away, collected and returned to the ship.



"Faraday" Loading Cable 1935.

The following morning, a course was set for King Island, and at the half-way point, the cable was cut and buoyed. The shore end was connected at Naracoopa and cable payed out on the reverse course until the buoyed end of the northern half was reached. Both ends of the northern section were then securely jointed on board "Faraday" and the spliced cable was slipped into 50 fathoms of water on November 11th.

The section from Naracoopa to Stanley was successfully laid using similar procedures but it must not be assumed that the operation was completed without difficulties. The project had been planned to coincide with the period when favourable weather conditions might be expected, but Bass Strait again lived up to its treacherous reputation. Gales blew up unexpectedly, flotation drums broke adrift, boats were overturned in heavy surf and shore parties spent uncomfortable nights on land because they could not be re-embarked. Every possible opportunity was taken of pushing ahead as the storms abated - even to the extent of working by moonlight and floodlight. On 25 November, the cable was brought ashore at Stanley and the southern splice was successfully made. On Tuesday the 26th, a 600 yard length which had been hauled to the beach by a bullock team, was jointed to the southern section, thus completing the connection from Stanley repeater station to Apollo Bay via King Island. Notwithstanding that about half the available time had been spent in waiting for suitable weather, the work was finished four days before the contract date of completion.



Hauling Cable by "Bullock Power", Stanley 1935.
(Courtesy Mrs. Irene De Jonge)

TESTING AND TRIUMPH

The cable was laid and the long-promised voice link with the outside world drew even closer:-

> 'But it will not be just yet,' cautioned "The Mercury'. 'Terminal land line carrier and repeater equipment has also to be installed at Launceston and carrier equipment at Hobart before the cable can be brought into use. The testing of the cable upon completion of laying operations and the large amount of installation work to be done in connection with the complex equipment will probably occupy some months.'

And so it proved to be. A vast amount of money was being expended upon a truly imaginative engineering project, and it was therefore imperative for exhaustive tests to be applied by Departmental officers before final acceptance of the system. At each landing of the cable and at each splice, cable characteristics were examined most minutely and checking was carried on continuously throughout a thirty day guarantee period. All was well; the cable's performance satisfied all concerned with the venture. S.T.C's equipment for the various stations arrived steadily and was distributed with all haste as the system gradually approached completion.

The commissioning of the service would undoubtedly be a noteworthy event. The longest submarine telephone cable in the world was to begin operating; a new era in radio broadcasting was to commence for Tasmanians and they could at last speak to the mainland - and, if desired, to countries far beyond Australian shores. The occasion was celebrated at a banquet held in Hadley's Orient Hotel in Hobart on 25th March, 1936. Prime Minister Lyons, broadcasting from Albury, declared the new service to be open, and at 9.25pm, a number of courtesy calls were made from a hotel room especially prepared for that purpose. Overseas reception was good; as "The Mercury" reported:-

> 'Reception was fully as good as that from another part of the city.'

Ninety one calls were booked over the circuits between Tasmania and the mainland on opening night and two hundred reservations were made for the following day. It is a matter of record that within the five ensuing months, 30,000 calls were made over the

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system - a total which far exceeded the Department's expectations and which clearly illustrated the value of the voice link from a national viewpoint. As Chief Engineer J.M. Crawford aptly commented, "Seas no longer divide."

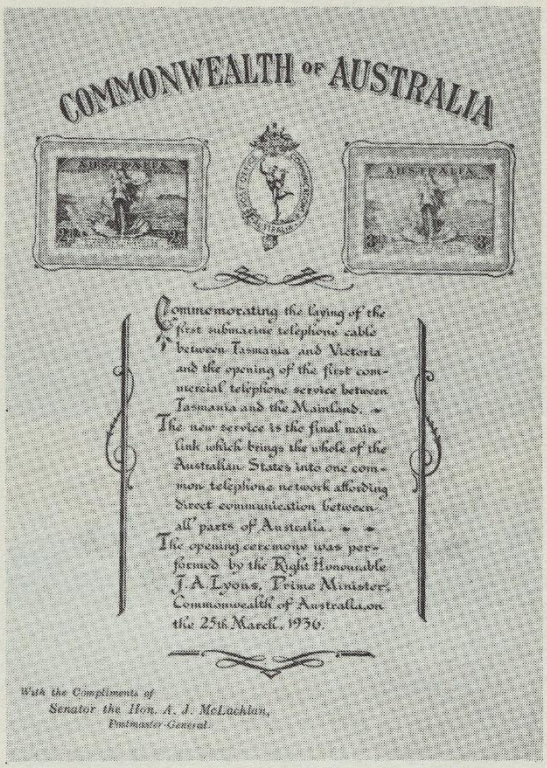
COMMONWEALTH of AUSTRALIA.

DINNER

CELEBRATING the INAUGURATION of the SUBMARINE CABLE - - - - - - TELEPHONE SERVICE between TASMANIA and the MAINLAND OF AUSTRALIA.

HADLEYS HOTEL

Hobart, 25th March, 1936.



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Alan Tulip, graduated and diplomate of the University of Durham, served for nine years as a Royal Air Force Instructor and then taught and adminstered a group of schools in Central Africa. Persuaded by an ex-service colleague to settle in Tasmania, he soon decided that a change from teaching was desirable and joined the P.M.G. Department in 1971. He became Tasmanian Historical Officer two years later and has, since then, been happily researching and writing, and administering the Hobart Postal and Telecommunications Museum.

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