The Story Of The Australia-England Telegraph Link

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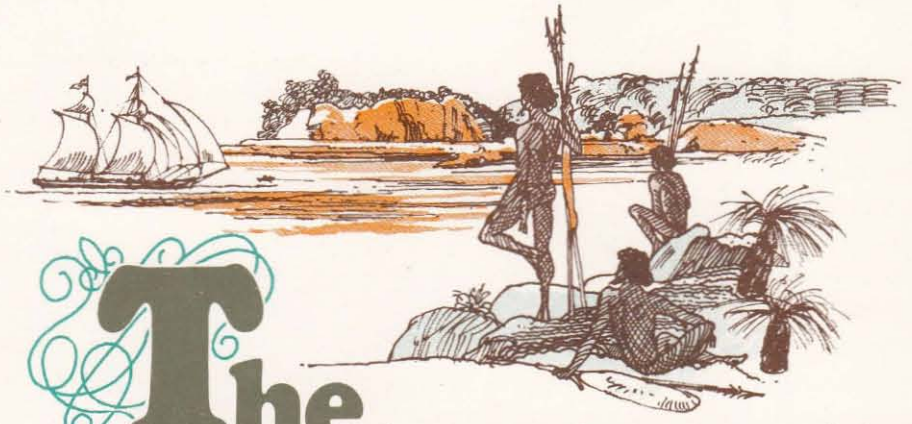
The Wonder Working Wire



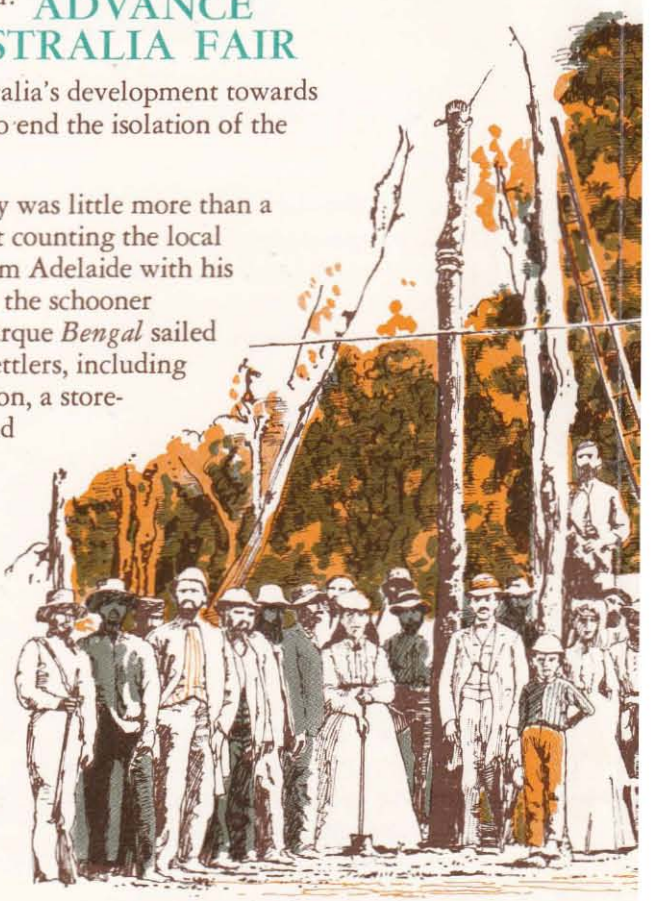
The first overseas telegram ever to reach Australia by cable was received on 20th November 1871 at Palmerston, the tiny settlement on the shore of Port Darwin. Sent from Batavia (now Djakarta) by Captain Robert Halpin, commander of the trio of ships that had just completed the laying of the cable from Port Darwin to Java, and addressed to Captain Bloomfield Douglas R.N.R., South Australia's Government Resident at Palmerston, the message read: **ADVANCE AUSTRALIA FAIR**

This was truly an historic moment in Australia's development towards nationhood. Telecommunication had arrived to end the isolation of the great southern continent.

The future capital of the Northern Territory was little more than a camp, with a total population of about 40 (not counting the local aborigines) when Captain Douglas arrived from Adelaide with his wife, seven children and an Irish maid, aboard the schooner *Gulnare*. This was on 24th June 1870. The barque *Bengal* sailed in on the same day, bringing sixty or so new settlers, including government officials, surveyors, police, a surgeon, a storekeeper, sundry wives, children, cattle, sheep and two goats. The colony of South Australia was making a determined effort to create a permanent settlement on the distant northern coast of its Northern Territory.

The coming of the telegraph was to breathe life into this new-born town, giving it a purpose, a reason for being, and turning it into Australia's front gateway. But all this was surely beyond the imaginings of the little band of settlers in 1870.

On 7th June, while Captain Douglas and his party were still at sea, the managing director of the recently-formed British Australian Telegraph Company Ltd. announced



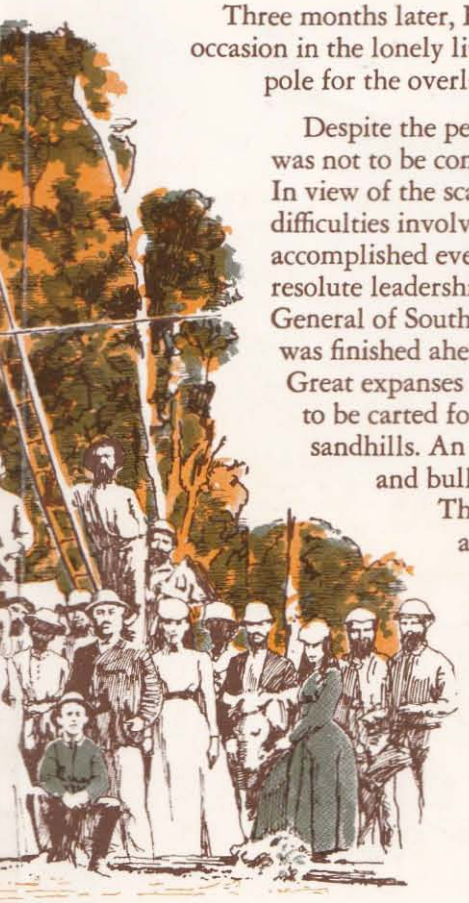
Harriet Douglas planting the first pole of the overland telegraph.

in London that submarine cables would be laid to Port Darwin to connect Australia with England—"—if the South Australian government will pledge itself to construct and maintain a land-line, to be open for traffic by January 1, 1872, connecting that port with the present system of colonial telegraphs."

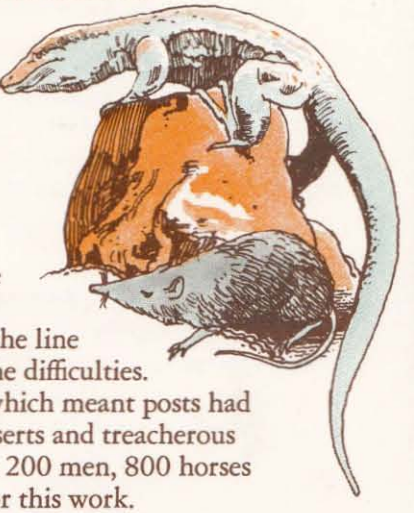
Penalty for delay was to be £70 a day. South Australia accepted the challenge, undertaking to build an overland telegraph line two thousand miles long, right through Australia's "dead heart," with twelve permanently-staffed repeater stations. It meant taming the wilderness.

Harriet Douglas, eldest daughter of Palmerston's new Government Resident, recorded these impressions of the place that was to be her home as she saw it from the deck of the *Gulnare,* gliding silently into Port Darwin on that June day in 1870.

"We sailed past smooth white beaches. Beautiful it certainly was, but Oh so lonely and desolate. There was not a sign of human habitation, no living creature, not even a solitary blackfellow . . . At last we were in sight of the little settlement. My younger brothers and sisters were awestruck at our first glimpse of the barbaric life . . . a handful of log huts, with crowds of natives looking over our heads . . . and this tiny settlement literally the only one in the vast tract of Northern Australia."



Three months later, Harriet was to preside over a gala occasion in the lonely little town: the erection of the first pole for the overland telegraph.



Despite the penalty clause, the overland wire was not to be completed until August of 1872. In view of the scale of the task and the enormous difficulties involved, it is remarkable that it was accomplished even in the extended time. Under the resolute leadership of Charles Todd, Postmaster-General of South Australia, the central portion of the line was finished ahead of schedule, notwithstanding the difficulties. Great expanses of country were without timber, which meant posts had to be carted for hundreds of miles over rocky deserts and treacherous sandhills. An early newspaper account says that 200 men, 800 horses and bullocks and 100 camels were used for this work.

The southern portion, constructed by a contractor, proceeded according to plan and linked Adelaide with Todd's central section. But the party in the north met disaster, its efforts being drowned into oblivion by the "big wet." There were to be two more attempts to build the northern section, and more disasters, before the work was concluded successfully.

The building of the Overland Telegraph is one of the most heroic chapters in Australia's history. The men who built it were heroes all. It is said that two questions only were asked of those who applied for jobs with the construction teams:

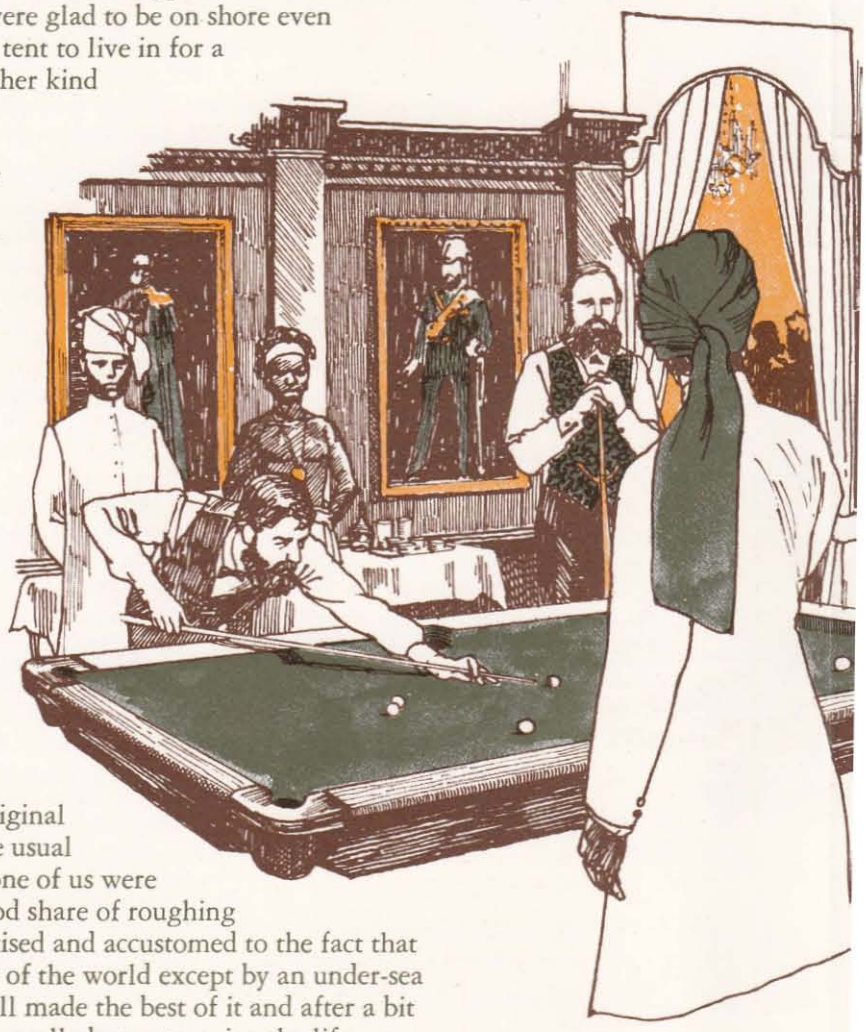
"Are you sound in mind and limb?"

"Can you live on bandicoot and goanna?"

"H.W.H.S." tells this story of his life as a B.A.T. telegraphist, starting with the return of *Hibernia* to Port Darwin after the cable had been joined.

The *Edinburgh* went to Singapore, the *Investigator* to the new station, Batavia, and the *Hibernia* went back to Darwin to land all the cable-gear, furniture, stores, etc., for preparation of the Cable Station. As there were no wharves and the rise and fall of tide being 24 ft. 6 in. ship's boats had to carry out the work. At low water the mud flat was some 3-400 yards dry.

After a voyage of some three months we were glad to be on shore. We had experienced everything it is possible to happen to an overloaded cable ship in latitude 49° 19′ south and were glad to be on shore even with the prospect of a round tent to live in for a couple of years until some other kind of shelter could be erected. With the departure of the *Hibernia* we were left to our own resources—a short interval daily in a temporary galvanized office just to exchange cable signals. The British Co. had laid the cable, but South Australia was a long way behind with the connecting landline from Adelaide to Darwin, a north and south distance of 1937 miles. It was really another eighteen months before the landline was completed, and what with the advent of a 3-months heavy wet season, attacks and night watches owing to the hostility of surrounding aboriginal tribes, tents to live in and the usual discomforts of a bush life, none of us were accustomed to!, we had a good share of roughing it before we became acclimatised and accustomed to the fact that we were cut off from the rest of the world except by an under-sea wire! However we one and all made the best of it and after a bit of a scrap with the aborigines really began to enjoy the life.

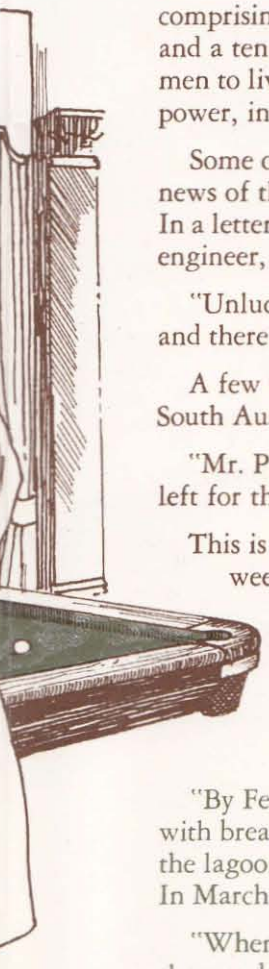


We had evidently landed at the wrong end of Australia, but after the first few months we could put up with anything. Had we been told that some of us would be in the Darwin neighbourhood for the next 30 years, no one would have believed it possible.

The account goes on to describe living conditions ashore.

The Cable Co. had engaged contractors in South Australia to build stores, quarters for officers and staff and in the meantime accommodation was limited to round tents and tarpaulin shelters. The wet season was in full swing. So naturally these places were often flooded. Most of our outfits were damaged. There were no stores, but the Government one and the rations were served out once a week. We ultimately got so short of food we had to get the *Investigator* to bring stores, etc., from Java. After the buildings were up we unpacked our Billiard Table and other furniture. The only drawback for the first two years was the scarcity of ladies society. But taken all round the life was interesting and healthy.

Within a few years, the billiard table and other furniture had been handsomely accommodated in a luxury bungalow, the pride of Darwin, built at a cost of £6,000 and comprising twenty rooms, with offices, billiard room, ballroom, showers, gardens, stables and a tennis court. Everything possible was provided by the company to enable their men to live in a manner befitting overseas representatives of the world's greatest imperial power, including Hindu servants and aboriginal "punkah wallahs."



Some of the first messages transmitted to London via the new cable carried unhappy news of the attempts to complete the overland telegraph. The situation appeared desperate. In a letter to his principals in London on 26th December 1871, the cable company's engineer, Mr. Hockin, reported:

"Unluckily the line is now broken between Port Darwin and Mr. Patterson's Expedition and there has been no news as to the nature of the Country yet to be crossed by the line."

A few weeks earlier, he had written of the difficulties being experienced by the men from South Australia, who still had more than 400 miles of line to complete, and had mentioned:

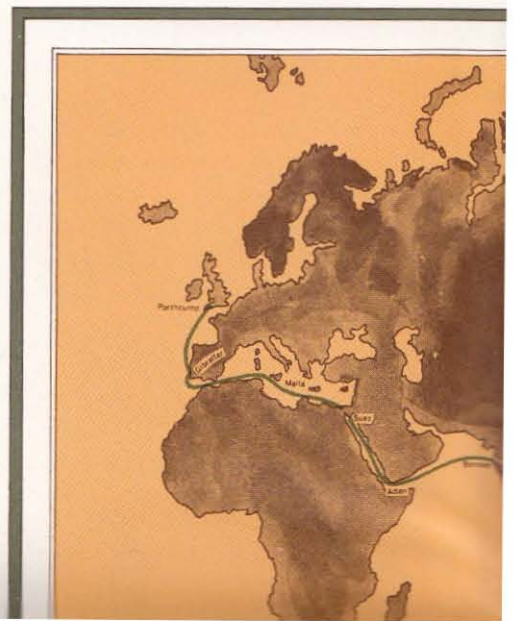
"Mr. Patterson who is in charge of the party now working South from Port Darwin, left for the interior while we were there, he spoke in desponding terms of his expedition."

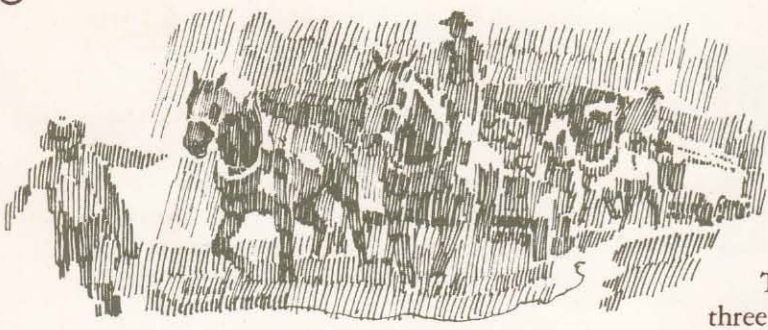
This is how modern Australian author Ernestine Hill describes the final agonising weeks of the drama, in her history *The Territory:*

"The Big Wet was down, telegraph poles washed out of the holes, telegraph parties on hilltop islands. Under the arch of an inky sky, bogged horses were helpless to cover three miles a week. The Roper was not a river but a sea . . .

"By February the plains were an inland sea with breaking waves, crocodiles swimming in the lagoons like sharks in the Indian Ocean. In March the unmerciful rain stopped . . .

"When the Roper was a river again in a thousand miles of glue, W. G. Stretton, with eight others, floated in the body of a dray to Roper Bar, and pulled back two hundred miles against the stiff current, bringing the glad news that Todd's ships were in the river, Todd and Patterson on the way up with a hundred and fifty packhorses bringing food and clothing for the camps."





By May, the northern section of the line reached three hundred miles from Port Darwin south to Birdum Creek. Twelve hundred miles had been completed from Port Augusta northward through the deserts of the Centre to Tennants Creek. There was still a three hundred miles' gap to be closed.

In June, with messages coming through from London on the telegraph as far as Daly Waters, Todd established a pony express to carry telegrams over the 250 miles' gap in the line. The messages were then telegraphed from Tennants Creek to Adelaide. This was the means by which the Australian press received its first international news "flash." A scare report that England and the United States were about to declare war, it was published in the Adelaide papers on July 2nd 1872.

The overland line was joined, at last, on August 22nd. But London and the southern cities of Australia were to be kept waiting a little longer yet before they could make use of their new connection. The submarine cable had started giving trouble late in June. The fault was traced to a section lying in deep water off Java. The *Investigator* had experienced heavy weather in the Arafura Sea and suffered damage to her picking up gear. More delays!

By late October, the frustrations were ended. The circuit was back in working order. The first official telegram transmitted direct from London to Adelaide brought a message of congratulation from Lord Monck to Sir James Fergusson, Governor of South Australia. The telegram read:

"London, 3.40 p.m., 22nd October 1872. As Chairman of the British Australian Telegraph Company, I congratulate you and the Colonies of Australia on completion of a great work. The spirit and determination of South Australia have nobly combined with the enterprise of the mother country in triumphing over all our difficulties."

Joy in the Colonies

Completion of the telegraph line between the mother country and the colonies was greeted with great rejoicing in Australia. Celebratory banquets were held in the capital cities. Typical of the enthusiasm expressed by all speakers at these functions was the comment of the Hon. Alexander Campbell M.L.C., of New South Wales, who described the advent of the international telegraph as ". . . the greatest and by far the most wonderful event that has ever occurred in the history of this country."

The Sydney banquet, which took place on November 15th, was reported in *The Sydney Mail* of November 23rd 1872. A portion of the Governor's speech as published in that paper is printed below. Another speaker at that splendid gathering was the Hon. George A. Lloyd, Postmaster-General of New South Wales. In part, this is what that gentleman had to say:

"The advantages of this wonder-working wire will not be disputed . . . Our ships are safe on our coast, as the telegraph warns them of the coming storm hours before it arrives, and they remain safe in port until the storm has passed. And who can tell what may not result from such remarkable facilities? We had on our breakfast tables on the 7th the re-election of President Grant on the 5th, and on Wednesday we heard of a dire calamity which befell the city of Boston on Sunday. The ashes of that fire are still smouldering the intelligence of which has come to us over 20,000 miles of wire."

The quicker receipt of news from abroad seems to have been the aspect of this new communication system which most captured public imagination. The *South Australian Register* of 23rd October 1872 said: "The establishment of the British, Indian and Australian telegraph is by far the most memorable event that has yet occurred in the history of news-catering in the colony. Our readers will, over their breakfast tables today, be in a position to discuss events happening on the other side of the globe only a few hours ago."

No doubt, to settlers in this still-strange land, who had lived so long with the sense of being cut off from civilisation, the advent of the "wonder-working wire" represented a kind of salvation. England was still regarded quite positively as "home" and, for many of the colonists, Australia could never be other than a hostile environment against which they were doomed to pit their strength until death.

Joy in the Colonies *(contd.)*

Exploration of the vast, empty continent was still incomplete. In 1861, Burke and Wills had perished on their return journey after making the first overland crossing of Australia from south to north, travelling from Melbourne to the Gulf of Carpentaria. John McDouall Stuart had survived two heroic treks into the unknown centre to succeed finally in reaching the north coast at Port Darwin and returning to Adelaide to tell the story, in 1862. The little Scots explorer, crippled with scurvy and going blind, almost died on the way home. He was carried for three months on a stretcher of tree branches slung between two horses. Ten years later, the telegraph wire spanned the continent over the very route he had pioneered.

The rapidity with which this new invention, the electric telegraph, was adopted, testifies to the great hunger of the colonists for improved communications. Inland mails were at that time carried by pack-horse, by the coaches of Cobb & Co. or, where railway lines had been established, by train. An exchange of correspondence between different parts of Australia could take many weeks, even months. Introduction of the telegraph, in the 1850's, brought the revolution of telecommunications to the southern colonies close on the heels of its development in Europe and the U.S.A.

Extracts from speeches made at the banquet held in Sydney to celebrate the inauguration of the telegraph service between Australia and England, as published in "The Sydney Mail," Saturday November 23rd 1872.

The toast was drunk with cheers.

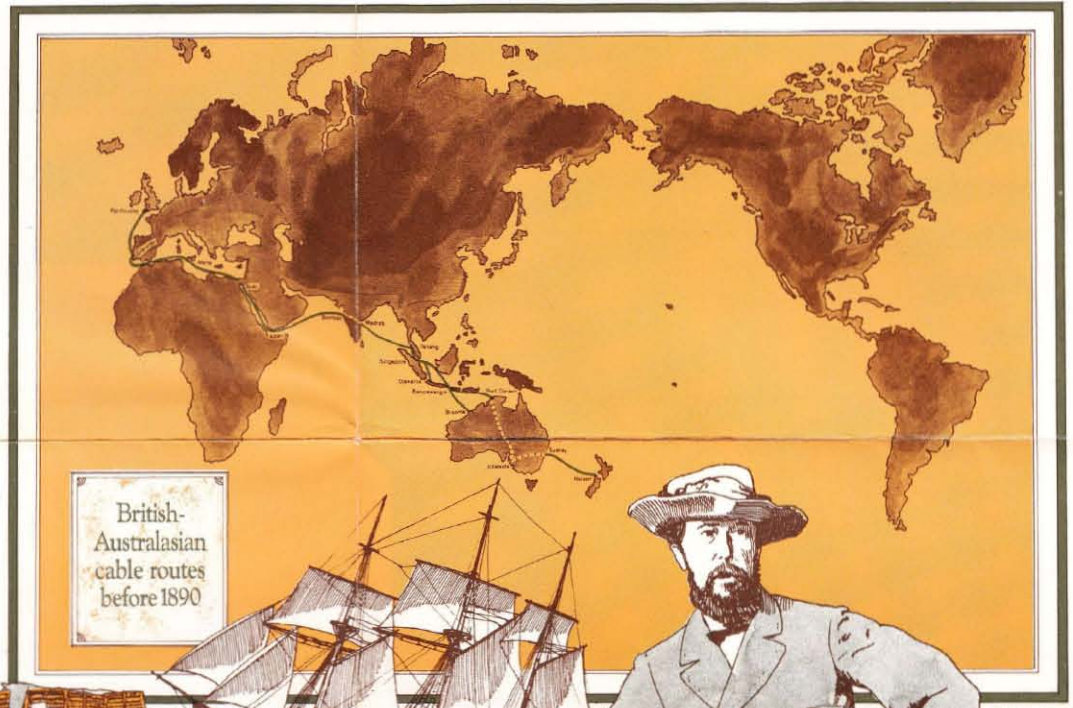
The Hon. ALEXANDER CAMPBELL, in proposing "His Excellency the Governor," said it is fortunate for me that the toast does not require to be commended by a speech. (Cheers.) It is one that British colonists are accustomed to receive with manifestations of loyalty and good feeling (cheers), and I am sure we shall not be wanting on the present occasion, in giving full and free expression to those feelings. (Cheers.) I think we ought to do so in an especial manner when we find the representative of Majesty presiding here this evening in order to lend dignity and significance to our proceedings, and to rejoice with us over the greatest, and by far the most wonderful event that has ever occurred in the history of this country. (Cheers.) I would now ask you to drink the toast, "His Excellency the Governor," with all the honours. (Cheers.)

The toast was drunk with great enthusiasm.

His Excellency Sir HERCULES ROBINSON was greeted with prolonged cheering on rising to respond. He said: I am much obliged to you Mr. Campbell for the kind terms in which you have proposed my health, and cannot but feel gratified at the cordial reception which you gentlemen have been pleased to give to the toast. It has been a great pleasure to me to assist here this evening in the celebration of an accomplishment which is destined to play a great and an important part in the future development of this country. (Cheers.) I believe that since the first establishment of the colony no event of such importance to it as the opening up of telegraphic communication between Australia and the mother country and the rest of the civilized world, has ever before occurred. Indeed it is difficult at first for the mind to realize the magnitude of the achievement, or the results it will assuredly accomplish. (Cheers.) How little the emigrant to Australia forty years ago could have dreamed of the marvellous facilities for intercourse with the old country which have now been opened up. Campbell in his beautiful lines on the departure of emigrants for New South Wales feelingly describes, the depressing influence which the vast intervening ocean exercised on the minds of the poor exiles of that day, who, in leaving their homes and their kindred for these distant lands felt that they were—

> "Doomed to shores so far apart
> From England's home, that e'en the home sick heart
> Quails, thinking ere that gulf can be recross'd
> How large a space of fleeting life is lost."

(Cheers.) And the gulf which presented such a barrier to the emigrant's return presented an equal obstacle to anything like rapid and regular communication with absent relatives and friends. Why, it must be within the recollection of many gentlemen sitting at this table that at the period to which I refer—that is about thirty or forty years ago—the average time occupied in the transmission of intelligence between London and Sydney was 120 days, whilst it frequently occupied five months or more. The course of post was then thought short if within eight or nine months, but it was often twelve months before answers to letters from Sydney were received. Now, just contrast for a moment the slow and irregular circulation of intelligence in those days with what we are now enjoying. The earth has been girdled, as it were, with a magic chain, which practically enables us to converse with our friends in England, and brings us also within speaking distance of every important post in Europe, Asia, and America. (Cheers.) Our daily papers now contain intelligence of every important political or commercial event which may have taken place within the previous forty-eight hours throughout the whole of the civilized world. (Cheers) To-night we are shaking hands, as it were with a company assembled in London for a similar purpose; and since entering this room I have sent a congratulatory message to Lord Kimberley, which has doubtless already overtaken the sun (cheers), and to which we may possibly receive a reply before we separate. (Cheers.)



H.M.S. Beagle, *the ship in which Lieut. John Lort Stokes, R.N., was serving when he discovered and named Port Darwin in 1839.*

John McDouall Stuart

Charles Todd

One of the coaches of Cobb & Co.

Early telegraph transmitting instruments.

The 19th Century communications revolution

Around the middle of the nineteenth century, mankind took his very first faltering steps towards the creation of a worldwide system of instantaneous communication. The miracle of electricity was at long last providing the means for overcoming the tyranny of distance.

Two Englishmen, William Cooke and Charles Wheatstone, had given the first public demonstration of their electric telegraph in 1837. This new method of communication spread rapidly throughout England in the 1840's, following wherever the railways went. At the same time, the electric telegraph of Samuel Morse was similarly spreading across the U.S.A. The next great advance — the transmission of speech by means of the telephone — was to be introduced by Alexander Graham Bell in 1876. Wireless telegraphy was to follow later still, Marconi's historic transmission across the Atlantic of the letter "S" taking place in 1901.

Meantime, the telegraph was as great a marvel as men had dreamed of. With the railway, it brought rescue from dependence upon the ship and the horse for the carriage of information from town to town and country to country. It aided the spread of knowledge, promoted trade and encouraged the extension of settlement into areas previously considered too remote. Looked at against the long measure of history it was, perhaps, the most significant single step man had yet taken in the direction of drawing the human race into a unified community.

Development of the submarine cable by the British, using gutta percha as insulation material, made it possible for the telegraph to link countries separated by sea. The first signals were exchanged by this means between England and France in 1850, though it was not until November of the following year, with a new cable, that communication became satisfactory. Once the serviceableness of this new type of cable had been proved, the telegraph quickly developed into an international system. It spread throughout Europe, with British-manufactured submarine cables providing the links across the Channel, the North Sea, the Irish Sea, the Black Sea, the Adriatic and the Mediterranean. By 1866, after several failures, England and America were successfully joined by a trans-Atlantic cable. The British, with a far-flung empire to rule, world-wide commercial interests, and inspired by a dream of putting "a girdle round the earth," started looking eastward.

The conveying of a telegram from England to Australia at that time was a complicated undertaking. The message would be transmitted via Paris or the Hague, crossing Europe to Constantinople by any of a number of alternative routes, being copied out at several points and even taken by messenger over long sections. From Constantinople, each message was telegraphed via Baghdad to Karachi and on through the Indian system to Galle, in Ceylon, which was the end of the line. From Galle, telegrams were brought to Australia by ship.

In a paper read before the Royal Society of New South Wales on 14th July 1869, Mr. E. C. Cracknell, Superintendent of Telegraphs for New South Wales, described some of the difficulties faced by the telegraph companies. Quoting a Mr. Walton, director of the Persian Gulf cable, he gives an example of the causes of delay, thus: ". . . the Baghdad men report seventy or eighty messages on hand, send twelve or fifteen, and then smoke hookahs or say their prayers for two or three hours, during which time Fao hears nothing of them." It is hardly surprising that messages were sometimes lost without trace or that important despatches, such as the news of the Franco-Prussian war, took as long as forty-five days to reach Australia's newspapers.

In 1870, a great surge of enterprise transformed the situation and prepared the way for the direct Britain-Australia link that was to follow in 1871. British companies laid cables under the seas all the way from England to Alexandria, from Suez to Bombay, from Madras to Singapore and from there to Batavia. Landlines through Egypt and India linked the cables. Now the British had a direct telegraph line under their own control reaching almost half-way round the world. Given the co-operation of the Dutch colonial authorities in Java, they needed only to cross a further thousand miles of sea to extend the line to Australia. As our story tells, this link was accomplished in 1871, the actual cable laying taking only twelve days. Five years later, New Zealand was brought into the chain by means of a cable laid from La Perouse, Sydney, to Wakapuaka, near Nelson. That was in 1876, the year before Perth became linked with Adelaide by an overland telegraph line. By 1880, a direct line had been laid between Singapore and Banjuwangi, ending reliance upon the Dutch landline through Java.

The Banjuwangi-Darwin cables (a second had been laid in 1879) continued to be used until 1938 and were finally abandoned in 1950.

So Australia entered the era of international telecommunications. And so began what remains today, after great changes, the world's longest submarine cable network — the Commonwealth cable network, now a modern system carrying all types of telecommunications signals, including speech. Australia, represented by The Overseas Telecommunications Commission (Australia), is now a partner in this enterprise, playing an important independent role. In fact, our country is now among the world's principal users of international telecommunications and a participant in the management of several of the most important international systems. Through OTC, Australia holds a 25 per cent share in the COMPAC cable, a 28 per cent share in the SEACOM cable and a 2.5 per cent interest in the International Telecommunications Satellite Consortium (INTELSAT). The story of Australia's rise to prominence in international telecommunications and descriptions of how the present-day systems operate will be found in another OTC Information Broadsheet.

Meanwhile, the community at Palmerston waited for the cable ships to arrive from England, and painfully learnt to adapt to isolation and the vicissitudes of the tropical climate.

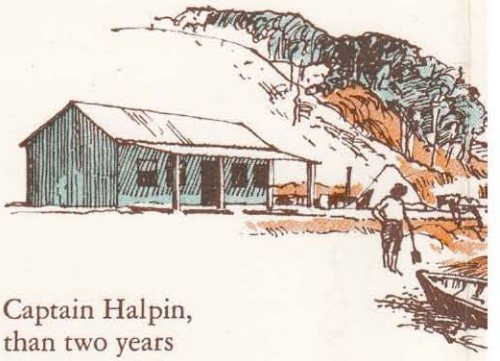
A contributor to the *Illustrated Sydney News* in 1872 recorded this word picture of the little frontier town:

"Palmerston consists of the police barracks, built palisade fashion of saplings roofed with iron; a log lock-up; the customs and telegraph offices; an unpretentious Government House; the cable company offices; a couple of weatherboard stores; a few log huts and some sly-grog shops."

Around this time, the Reverend J. A. Bogle was attempting to found a parish of the Wesleyan Church in this outpost. He recorded in his diary:

"Preached twice at Palmerston to a congregation of four! The Church was full of mosquitoes and snakes, with rain battering on the roof. It quite spoilt my sermon."

October 1871 brought a blaze of excitement with the arrival of a fleet of British ships. On October 26th, 28th and 30th, one after the other, the steamships *Edinburgh, Hibernia* and *Investigator* dropped anchor in the harbour. Chartered by the Telegraph Construction and Maintenance Company, of London, contractors to the British Australian Telegraph Company, these ships carried between them three thousand tons of submarine cable and all the equipment required to lay it. In less than three weeks, the cable would be stretched snakelike along the ocean bed from Port Darwin to Banjuwangi, at the eastern end of Java, giving Australia its first telegraphic link with the outside world.



Laying the cable

S.S. *Investigator,* with the commander of the expedition, Captain Halpin, aboard, had made the journey via the Suez Canal (then less than two years old) and had called at Singapore, Batavia and Banjuwangi on the way. The other two ships had sailed round the Cape of Good Hope. Although they had been at sea for almost ninety days, having left England at the beginning of July, the party spared little time for relaxation on arrival at Port Darwin. On board, conductivity and insulation tests were carried out on all the lengths of cable to make sure all had arrived in good condition. Ashore, there were trenches to be dug and arrangements made for siting and construction of the cable house and living quarters for the permanent staff.

Hibernia commenced laying cable on November 7th, handing over to *Edinburgh* four days later, four hundred miles out. The task was accomplished swiftly, though not without problems, as the following extracts from the Engineer's Final Report to the Directors of the British Australian Telegraph Co. reveal.

Extracts from the Engineer's Final Report:

On arriving at Port Darwin we found that the foundations of a Station house had been commenced and the walls were raised a foot or so above the ground but no Cable house had been prepared. For reasons given in Mr. Hockin's letter a Copy of which will be found at the end of this report Appendix K. The site for the future station house was changed, and an iron house situated at the edge of the beach, lent by Captain Douglas the Governor of the settlement, serves for the present as Cable house and operating room. A trench from this house was cut down to the then low water mark crossing some yards of hard conglomerate rock. This trench was properly cut, except for a distance of about six feet before the shore end was landed this short piece was afterwards completed under the superintendence of Captain Mudie of S.S. Investigator.

Mr. Van der Pfordtnen your Superintendent at Banjoewangi was landed at the latter place from your ship "Investigator" on her voyage to Port Darwin and instructions were left with him as to where the trench for the shore end and Subterranean line was to be cut. Two rooms in the Telegraph Office of the Dutch Government were placed by them at his disposal for operating room and office and the instruments for speaking were properly fitted, tested and connected to the Cable before we left Java.

Mr. Pell your Superintendent at Batavia had before obtained a house for the occupation of your Staff which appeared to Messrs. Hockin & Lambert in every way fitting and comfortable.

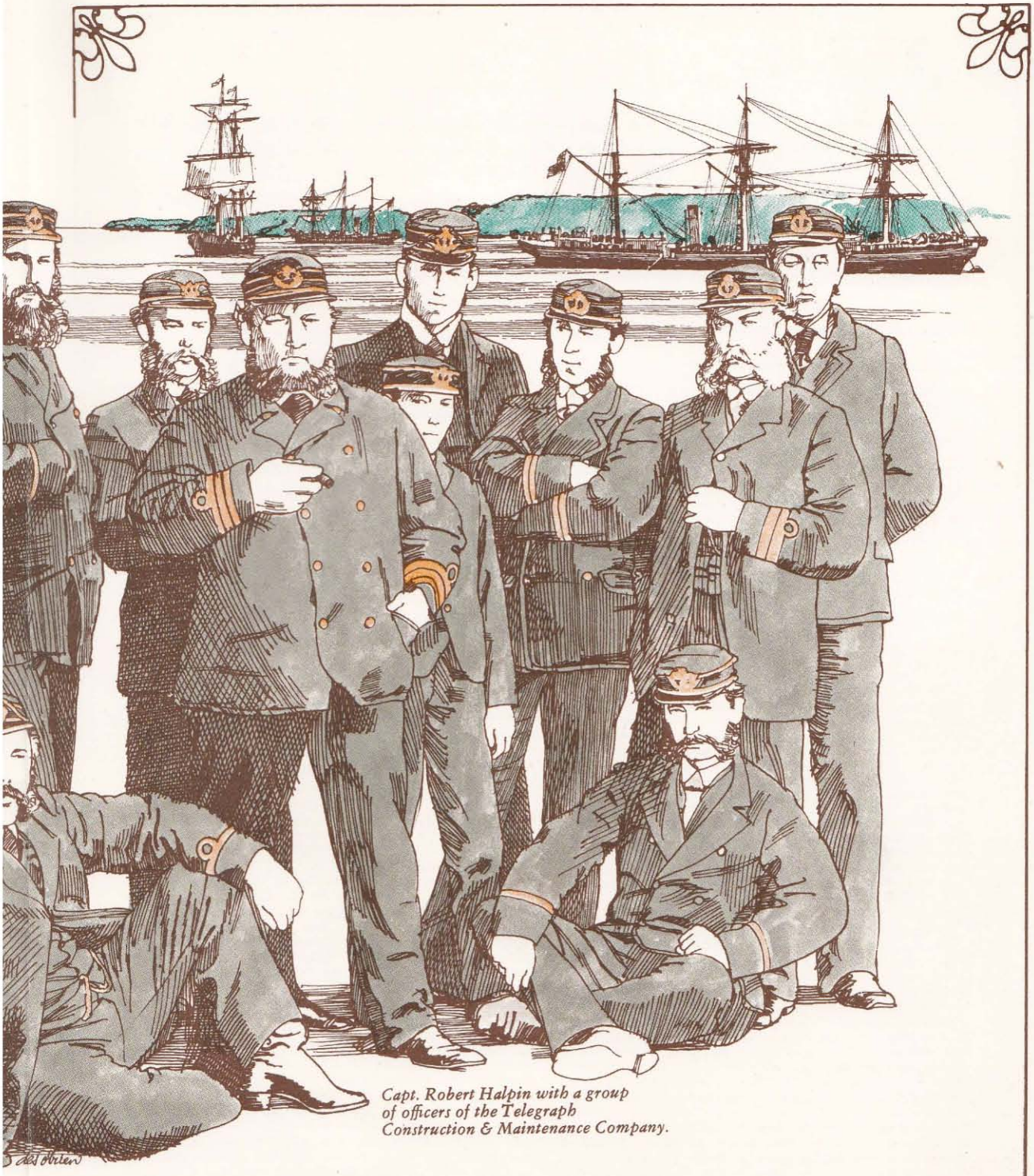
Careful tests of all the Cable on board the Ships "Hibernia" and "Edinburgh" which it was intended to lay were taken in Port Darwin Harbour. The Cable was found to have arrived out in good condition. The detailed results will be found in Appendix E.

The following general results were obtained. Mean insulation resistance per knot at 75° Faht. at the end of one minutes electrification 550 megs. Mean Copper resistance per knot 11.847 ohms. As remarked in the Appendix the figure 550 is probably a little too high as some of the tanks had lately been filled with the hot water from Port Darwin Harbour and the resistance of the Conductor indicated that the core had hardly obtained the full temperature of the water throughout.

The tests were satisfactory except for one short piece of 8 miles which was consequently not connected up, in order that it might be re-tested at Banjoewangi and if necessary repaired before being joined to the Cable.

The shore end having been laid from the Ship by boats and secured from the sun by filling in the trench and connected to the instruments in the Cable house, paying out commenced from the Steam Ship soon after noon November 7th 1871.

At 4.25 a: m: when 24½ knots of Cable had been paid out unmistakeable evidence of something wrong either on the Cable or on Shore was observed the Ship was stopped and a long series of tests taken, the Cable was then picked up to the splice with the shore end. The splice was cut out and defective insulation was observed in the core near where the joint had been made but not at the joint. No sign of injury to the core was apparent to the eye. The faulty piece was cut out and retained by Mr. Brown the Telegraph Construction and Maintenance Company's Electrician. After the Cable had been laid the piece of core was tested at Banjoewangi and on washing it a small mark as of a pin hole was seen. The core was not cut open but kept by Mr. Brown to be minutely examined in London.



Capt. Robert Halpin with a group of officers of the Telegraph Construction & Maintenance Company.

Overleaf is an extract from the personal reminiscences, published in 1937, of a man who sailed in the *S.S. Hibernia* and stayed on at Palmerston (later to become known as Darwin) as a telegraphist for the British Australian Telegraph Co.

The paying out of Type B. After the completion of the joints continued under Strain of from 8½ to 12 cwt without further interruption until November 4 at 7 a: m: Ships time when the whole of the intermediate Cable Type B the cable on board the Hibernia had been expended.

All hands went on board the Edinburgh at 7.25 a: m: and the splice was completed and paying out of type D from the Edinburgh commenced at 9.5 a: m: The splice lies in latitude 11° 24′ 3″ S Longitude 124° 40′ 30″ E and 83 fms water mud and sand bottom, on the edge of the Australian bank. The paying out of the main Cable type D continued without any irregularity in the tests until the Ship reached Bali Straits where the end was cut and buoyed on Novr. 16th at 2.30 p: m: In latitude 8° 30′ 30″ S longitude 114° 33′ 45″ E In 49 fathoms sand bottom 1059.6 knots having been paid out.

The Ships then steamed in Company to Banjoewangi.

On landing at Banjoewangi preparations were at once made for laying the land cable and shore end.

As free labour is very difficult to obtain, the "resident" at Banjoewangi allowed the Construction Company to employ the native convicts. A large number of whom soon completed the trench for the subterranean Cable that had been commenced by Mr. Pfordtnen before the arrival of the Ships. A proper trench was completed dug everywhere to wet ground and a double line of ½ mile in length was laid. The insulating material used in this Cable is Hooper's India Rubber and the Cable is protected by Clark's Compound a permanent joint between the Shore and Cable and the subterranean Cable is made and secured in one of Clark's dry chamber testing boxes which is placed in a bamboo hut close to the beach serving as a Cable House.

The tests of this subterranean line were very satisfactory at first and the insulation at the end of thirty days was perfectly good and as high as when the line was laid being about 5000 megohms per knot. The details of the tests will be found in Appendix H of this Report.

At Port Darwin no subterranean wire is now in use but one mile of India Rubber wire was spliced to the main Cable by the jointer left on board the S.S. "Investigator" after the other Ships had left Port Darwin.

On the 19th November the shore end was laid by boats from the S.S. Edinburgh anchored in the roads, at about noon the Edinburgh got under weigh and 15 miles of Shore end Cable and 7.7 of Type B were laid. The buoy at the end of type D was reached at 5 p.m. The splice was made in the Ship's boat, and the Cable completed at 8h. 8m. p.m. Novemer 19th 1871.

The result of 30 days official tests made on our behalf by Messrs. Hockin and Lambert at Banjoewangi will be found in abstract and in detail in Appendix G — the main results are as follows:

The length of the Cable from Cable House to Cable House is 1082.27 knots.

The estimated working speed of the Cable is 23 words per minute — at 12 and 13 words per minute the signals were very good and were easily read by the less practised members of your staff in Java and a higher speed can readily be reached as they become more used to the signals given by the Cable.

Australia's International Telecommunications Authority

The Overseas Telecommunications Commission (Australia) is the body which is nowadays responsible for the establishment, maintenance and operation of public telecommunications services between Australia and other countries, with ships at sea, and to and between Australia's external territories. The Commission is a corporate body of the Commonwealth of Australia, established by an Act of Parliament in 1946.

The services provided by OTC enable Australians to communicate with people in other countries around the world by telephone, telex, telegraph, phototelegraph, switched data and leased (business) services, and to enjoy live television programme exchanges with other countries. Radiotelephone and radiotelegraph services to ships at sea in any part of the world are provided through the coastal radio service. This service also maintains a listening watch for distress signals and broadcasts weather reports to shipping.

OTC controls four earth stations for satellite communications—one each at Moree and Ceduna and two at Carnarvon; four cable stations—at Sydney, Cairns, Madang (New Guinea) and Guam (U.S.A. Territory); four international radio stations in New South Wales and Western Australia; three smaller radio stations in Papua-New Guinea; seventeen coastal radio stations; and telegraph operating rooms in Sydney, Melbourne and Brisbane.

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