(Continued from page 688.)

Waimarino	A. S. Dening
Waipori	G. Donnelly
Wairuna	F. N. Davidson
Waitemata	G. Poole
Waitomo	S. J. McVeigh
Wanaka	J. Elmore
Wandilla	D. N. Quinn
Westralia	M. A. Ryan
Whangape	A. O. Sutherland
Wodonga	A. W. Hooper
Wyreema	T. Chalmers
Wyandra	J. Doggett
Zealandia	J. G. C. Higgins

A.W. (A'sia.) Ltd. Operators Temporarily Employed on M.I.M.C.C. and Other Ships.

Rupara	G. Cook
Durham	H. Heather
Wattle	L. N. Callagham

Mr. A. L. Dixon (of Amalgamated Wireless, Australasia, Ltd.), has rejoined the sea staff after some months ashore, and sailed for Singapore in the *Montoro*, on December 4.

Mr. P. Moore-Farmer, Inspector (of the same Company), has returned to duty from his vacation at Tuggerah Lakes, N.S.W.

CALL LETTERS.

The following additions and cancellations are notified:—

Additions.

VHG	*Emita*
VXF	*Bethanga*
VXC	*Berringa*
VXG	*Enoggera*
GBKJ	*Marella* (ex *Wahehe*)
XXE	*Baldina*
VLS	*Mapourika*

Cancellations.

VKZ	*Morialta*
VZA	*Rupara*

NEW TONNAGE FOR AUSTRALIA.

The following vessels have recently passed into the ownership of the companies indicated hereunder:—

Adelaide Steamship Company Limited.

Baldina—Ex *War Duchess* (4,333 tons), built Montreal, September, 1918.

Barunga—Ex *Cape Premier*, ex *War Faith* (4,342) tons, built Montreal October, 1918.

Merriwa—Ex *Gertrud*, ex *Willy Rickmers*, (5,091 tons), built Bremerhaven, 1915.

Milluna—Ex *Franziska*, ex *Mabel Rickmers*, (5,129 tons), built Bremerhaven, 1914.

Aldinga—Ex *Glenstal*, ex *War Cloud* (3,112 tons), built Dublin, 1920.

Aroona—Ex *Cape of Good Hope*, ex *War Typhoon* (3,116 tons), built Middlesborough, October, 1918.

Union Steamship Co. of N.Z., Ltd.

Kekerangu—Ex *Cosmos*, ex *War Coast* (3,091 tons), built Newcastle-on-Tyne, March, 1919.

Kawatiri—Ex *Shahristan* (3,076 tons), built Sunderland, July, 1919.

Kaitoke—Ex *Cape Colony*, ex *War Palace* (3,112 tons), built Middlesborough, November, 1918.

Kaikorai—Ex *Cape Natal*, ex *War Foam* (3,096 tons), built West Hartlepool, May, 1918.

Waiotapu—Ex *Stolberg* (5,886 tons), built Flensburg, January, 1913.

Waikouaiti—Ex *Irmgard* (3,680 tons), built Rostock, 1914.

Kaimanawa—Ex *John Heidmann* (2,380 tons), built Flensburg, 1909.

Burns, Philp & Co., Ltd.

Marella—Ex *Wahehe*, ex *Hilda Woermann* (7,372 tons), built Hamburg, 1914.

WIRELESS NOTES.

The "St. George's" Successful Installation.

The s.s. *St. George*, recently fitted with a Marconi Type C4 set Emergency Apparatus and 103 Magnifying Valve Receiver, is now trading among the Gilbert Islands.

Her wireless officer reports that the installation is giving excellent results, and has created a splendid impression.

The *St. George*, being but of small tonnage, has in use a very short and low aerial and, owing to the high efficiency of the apparatus, is able to maintain regular daylight communication with Ocean Island Radio Station from any part of the Gilbert Group.

As an instance of particularly good working, her wireless officer reports that he worked Ocean Island at a distance of 361 miles in daylight with his emergency transmitting gear.

An Australasian Record.

A smart piece of wireless work was recently performed in mid-ocean between Australia and New Zealand. At 10.20 p.m. a passenger on board an inter-colonial steamer, handed in a message addressed to Wellington, New Zealand. This was transmitted from the ship to the Wellington Radio Station, and thence by telephone to the addressee. The reply was telephoned to Wellington Radio, transmitted thence to the ship, and delivered at 10.30 p.m., the total time between handing in the message and receipt of reply being 10 minutes—which constitutes a record.

Use for Old Dry Cells.

For testing buzzers and spark coils, exhausted cells may be utilised in the following manner: Split the zinc, unwrap from cell, and clean. Take bag containing carbon rod, etc., and also clean.

Then, in suitable glass jar, containing water with handful of salammoniac, stand zinc and bag. Result—a cheap cell with long life.

Mr. A. F. Vipan, from whom the above hint is received, states that he has proved the efficiency of these cells for nine months, when he used 8 connected in series working a ½-in. spark coil.

Wireless Workshops.

The Treasurer's Statement of the Commonwealth Receipts and Expenditure for the quarter ended September 30, 1920, shows that the Government-controlled wireless workshops are operating at an annual loss of more than £8,000, the actual figures for the three months under review being as follow:—

Expenditure	£46,387 9 3
Receipts	£44,331 15 6
Loss	£2,055 13 9

"SEA, LAND and AIR"

VOL. III. FEBRUARY 1, 1921. No. 35.

AMONG THE SOLOMONS

BY

EMMA H. ADAMS

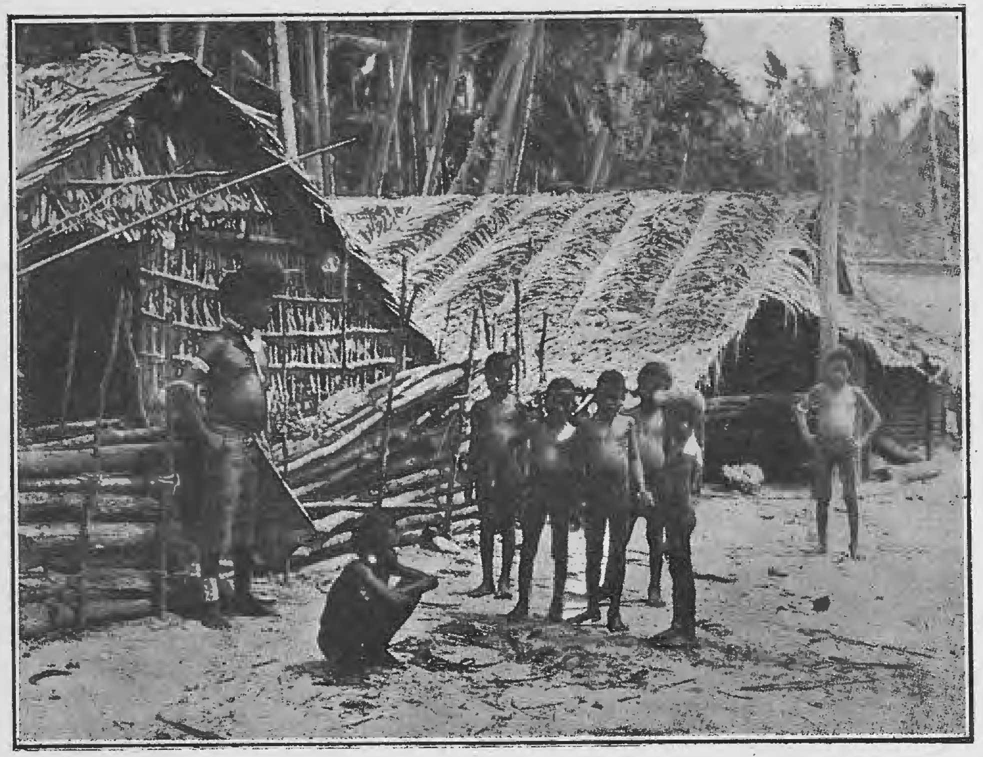
Solomon Island Natives.

The Solomon Islands form one of the most extensive, and in some respects one of the most interesting groups in the South-western Pacific. They were among the first discovered in that part of the island world. Yet, owing to a series of peculiar circumstances, they have until quite recently been the least known of the larger groups of the great ocean. For over two hundred years after their discovery all knowledge of them was lost to the world. The commander of our trim craft remarks that at the rate we are flying along before this stiff trade-wind, we shall touch the group to-morrow morning about sunrise.

This will bring first into view the lofty island of Guadalcanar, with tropical Malaita on our right, and beautiful St. Christoval on our left. Let us, therefore, now gather all the general information possible about the long-lost group. There is the captain trying to make out that strange sail off the coast of St. Christoval. The short aprons of palm leaves. They have as food plenty of fish and some maizes, or roots, which they call beanns. They are, in my opinion, a clean race, and I am certain they eat human flesh.''

The following paragraphs contain the chief pilot's reason for thinking that they ate human flesh:—

''The Spaniards appear to have taken possession of the shore on which they landed, and of the woods adjacent, for the purpose of building a small vessel in which to cruise among the islands, without so much as saying to the natives,



Village Scene, Solomon Islands.

'With your permission.' Yet the latter seem to have taken this incursion very amicably, for on the 15th of March, while the Spaniards were celebrating mass on shore, there arrived at the spot where the brigantine was building, a fleet of fourteen canoes, commanded by the chief of the district.

''Immediately he sent to Mendana, as a present, 'a quarter of a boy, including the arm and hand,' together with some edible roots, politely requesting him to accept them. In order to impress them with the fact that the Spaniards did not eat human flesh, the officer in command ordered the fragment of the boy to be buried in their presence. Thereupon the chief and his people looked confused, hung their heads, and departed to an islet at the entrance of the harour. The chief, whose name was Meta, resided some fifteen leagues from the port.

The brigantine completed, the strangers voyaged to and fro among the Solomons, landing upon and taking formal possession of nearly every important island of the group, except Bougainville, from Isabel eastward, giving names to them, and to a multitude of smaller ones. They killed at least one hundred natives, in conflicts which the Spaniards themselves sometimes provoked, and aroused on all the islands such a degree of enmity and excitement that the natives effectually concealed their provisions, compelling their cruel visitors to begin the return voyage to Peru—August 11, 1568—with insufficient supplies of food and water.

The strangers spent six months industriously exploring the group, and reached

home the last week of June, 1569. Their voyage proved to be one of such danger, privation, and suffering as often to appall the bravest souls among them. They lived through storms such as even the intrepid Gallego had never witnessed in his nearly half a century of nautical experience.

For two hundred years after the Spaniards withdrew from Santa Isabel, all certain knowledge of their rich discovery was hidden from the world. It was even doubted if such a group as the ''Isles of Solomon'' existed. It is said that Mendana gave this name to the group in the hope that his countrymen, ''supposing them to be the islands from which King Solomon obtained his gold for adorning the temple at Jerusalem, might be induced to colonise them.''

In July, 1767, just two centuries after Mendana's visit, the Solomon Islands were rediscovered by the English navigator Carteret, who was, however, ignorant of the fact. He appears to have simply described several members of the group, without landing upon anyone of them. A year later the French voyager Bougainville entered this then mysterious portion of the Pacific, made the west coast of lovely Choiseul Island, sailed through the fine strait which now bears his name, coasted the east shore of Bougainville Island, and passed away from the Solomons at the island of Bouka, apparently not dreaming that he had found the long-lost archipelago of Mendana.

THE MARCONI WIRELESS DIRECTION FINDER

What It Is.

The Marconi Direction Finder is an instrument for receiving wireless telegraphic or telephonic signals, and indicating the direction of the sending station.

It has a working range of some 200 to 300 miles when used in conjunction with the normal low-power coast wireless stations, and a considerably greater range when high powers are used. It is unaffected by weather conditions, and provides the only known means of taking a bearing in fog or haze.

It consists of:—

(1) A pair of special aerials, in the form of rectangular or triangular loops, erected in vertical planes at right angles.

(2) A direction-finder box, provided with a handle and indicating pointer capable of movement over a fixed scale.

(3) A receiver box and auxiliaries.

What It Can Do.

In wireless telegraphy the signals are transformed into sounds by the receiving gear, and these are listened to by the receiving operator, who wears a telephone head-piece for the purpose.

If we imagine ourselves "listening-in" on an ordinary ship's receiving circuit in Bass Strait, for example, we shall hear all the ships and shore stations in the neighbourhood that happen to be working at the moment. If we listen-in on a direction-finder we shall hear only those that

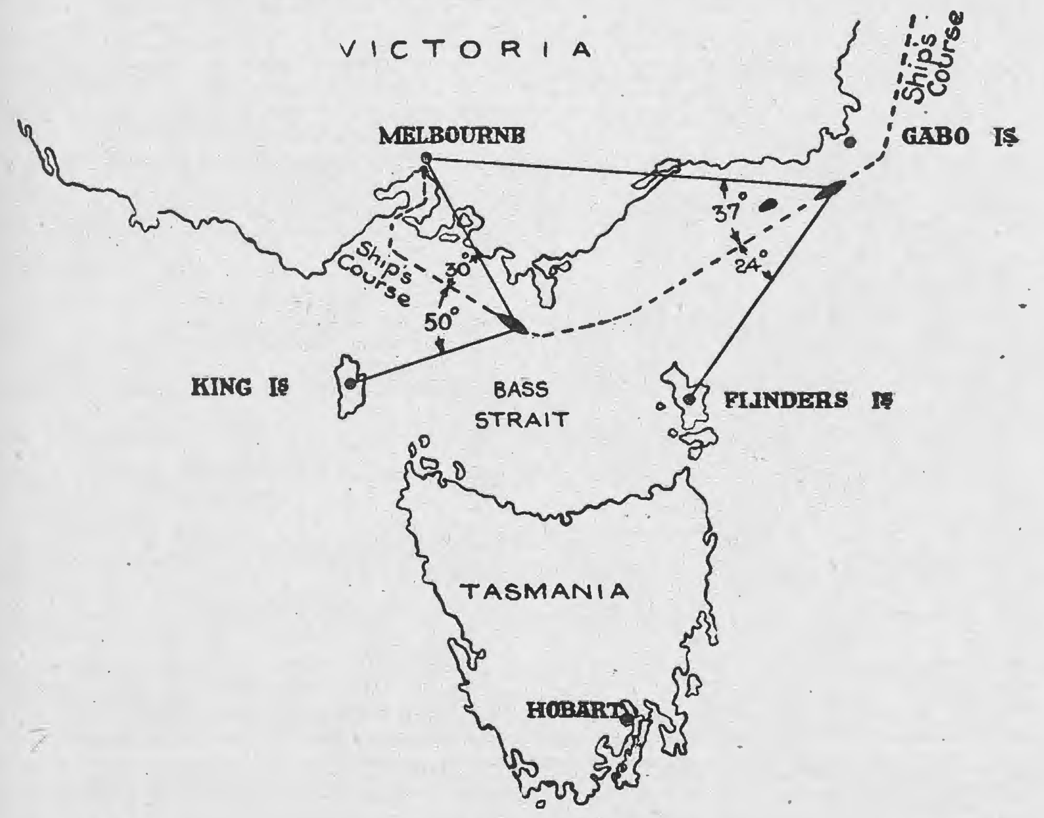


Fig. 1.—Navigation of a Ship in Fog.

happen to lie in the direction of the pointer on our direction-finder box. By moving the pointer round the scale we can ascertain the direction of two or more fixed stations, and by this means determine our position. An example will make this clear:—

Suppose that a ship coming up Bass Strait in foggy weather is somewhere to the west of Gabo Island (*Figure 1*). She would ascertain her position by taking bearings on Flinder's Island and Melbourne, a third reading on, say, Hobart, providing a check on the accuracy of these observations if required.

Under the conditions shown in the figure the direction-finder indicates that Flinder's Island is somewhere on a line making an angle of 24° with the fore and aft line of the ship, and that the corresponding angle for Melbourne is 37°.

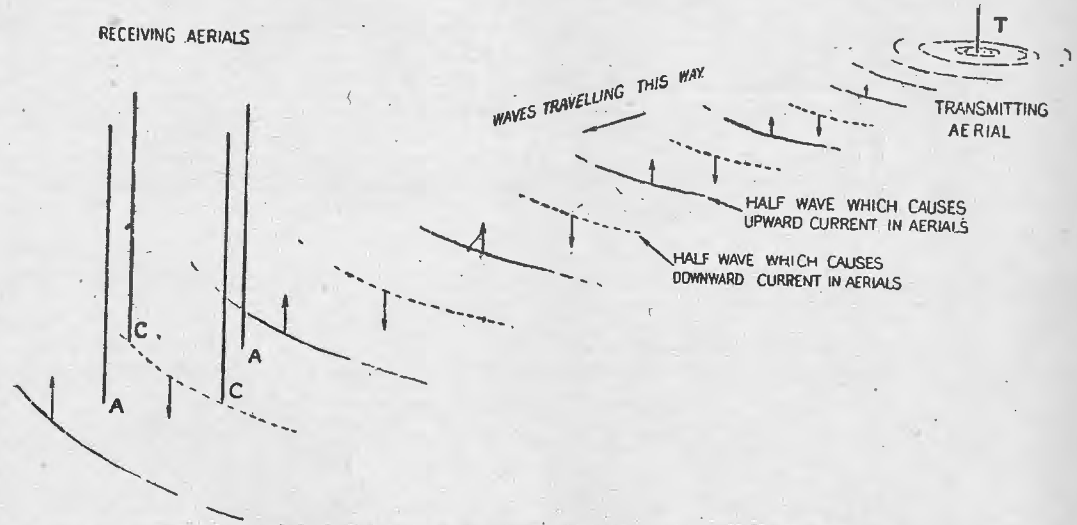


Fig. 2.—Diagram Illustrating Phase Relations in Receiving Aerials.
The currents in C and C[1] are the same since these aerials are equidistant from T, the transmitting aerial. The aerial A is struck by any particular wave before it reaches the aerial A[1], hence the current in A[1] will be late and will not be equal to the current in A at any particular instant.

The direction in which the ship is heading is known, since it is given by the ordinary compass, and it is therefore a simple matter to combine the observations and set out the ship's position on a chart.

Readings may be taken at frequent intervals if necessary, other stations such as King Island, Sydney, Adelaide, etc., being utilised as the ship proceeds on her course.

It may be mentioned that it is not always necessary to ascertain a ship's position, the direction of a known point being often all that is required. In such cases one observation only is necessary, as, for example, in ascertaining whether a ship's course will take her inside or outside a lightship or isolated lighthouse. A wireless signal from the lightship or lighthouse will settle the question as certainly as if the light were visible. Similarly, when about to enter harbour, signals from a station in the harbour will show immediately if the ship has drifted to one side of the entrance.

Apart from its use aboard ship it will be realised that the wireless direction-finder is applicable to aircraft navigation, and it is evident that in this sphere it must prove to be of extraordinary value. It has been said, in fact, that the future of commercial aviation is bound up in the development of this method of navigation, and when it is borne in mind that any really commercial transport service must be reasonably independent of weather conditions it will be realised that this is not an altogether extravagant claim.

On account of the war, aircraft development has occurred along specialised lines and, notwithstanding the extraordinary progress in military aeronautics, civil aviation is as yet in its infancy. As a result, the application of the wireless direction-finder to non-military purposes has been restricted, but its wide use during the war has provided the severe practical test necessary to ensure the production of a reliable instrument of tried design.

How It Works.

The electro-magnetic waves of wireless telegraphy and telephony have the property of setting up electric currents in any conductor they may encounter as they travel through space. The second half of a wave gives rise to currents in an opposite direction to the first half, so that as the waves pass a conductor the currents induced in it will alternate in direction.

If we have two conductors, or "aerials," fairly close together, both receiving electric waves from the same source, it is easy to realise that by moving one aerial in relation to the other we can form an idea as to the direction of the wireless station from which the waves are emanating. If two such aerials be placed one behind the other with respect to the transmitting station, the currents in one will be always a little behind, *i.e.*, a little later than, those in the other. On the other hand, if the aerials are side-by-side at an equal distance from the source of energy, they will be struck at the same instant by each wave as it sweeps past, and there will be no difference between the two currents. (See *Figure 2.*) In intermediate positions we shall obtain intermediate results.

Thus, a full comparison between the currents in a fixed and a movable aerial, or in two movable aerials, would enable us to estimate the direction of the transmitting station.

The means of comparison is simple. The two aerials are connected at their upper and lower ends so as to form one aerial, shaped as a rectangle or triangle, and, in the lower limb a receiver is coupled. (*Figure 3.*) In this position the receiver responds to the *difference* between the currents in the vertical limbs which we have, so far, regarded as separate aerials.

When the horizontal limb is set at right angles to the direction of the transmitting station no signals will be heard, since the currents in the vertical sides of the rectangle, or the sloping sides of the triangle, are exactly equal, and their difference, to which the receiver responds, is nothing.

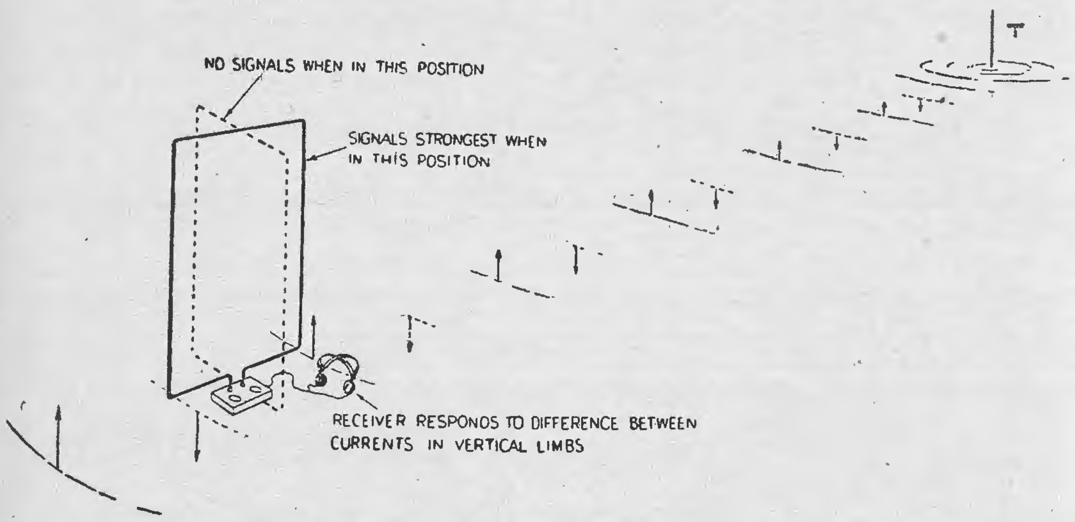


Fig. 3.—Diagram Illustrating the Method Involving Rotation of Aerials.

As the aerial is twisted round so that one limb comes nearer the source of the waves, and the other limb becomes more remote, the signals increase in strength until a maximum is reached, when the rectangle or triangle points towards the transmitting station.

The movement of aerials of any size, in the manner requisite for direction finding, is not practicable, and in actual work, this somewhat obvious method is confined to the few special cases in which very small aerials wound on frames will suffice.

The direction-finding system developed by Marconi's Wireless Telegraph Co., Ltd., which has been in extensive use during the war, permits the use of relatively large stationary aerials.

In this system two independent triangular or rectangular aerials are erected, with their planes at right angles, and connected

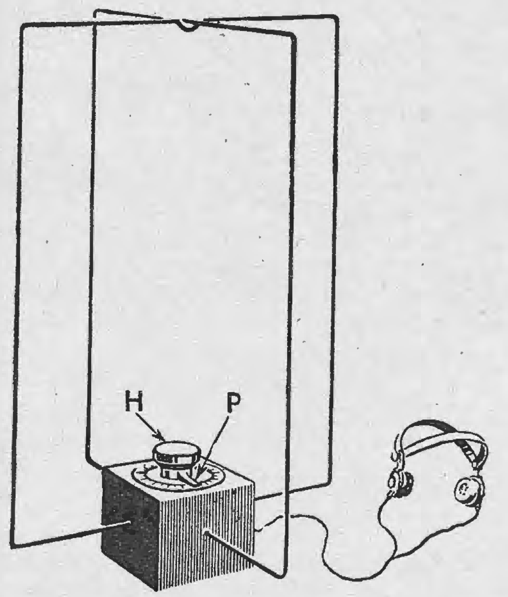


Fig. 4.—Diagram Illustrating the Marconi Method with Fixed Aerials.
Rotation of the handle "H" at the top of the instrument (shown greatly enlarged) is equivalent to rotating a large aerial. The direction is found by reading the position of the pointer "P" on the scale.

to an instrument which may be said to reproduce the external conditions in a small space and, as it were, in a concentrated form (*Figure 4*). A "search coil," of quite small dimensions, which is within the instrument, may be regarded as a diminutive direction-finding aerial under the influence of the large fixed aerials. Rotation of this coil is equivalent to the rotation of a large aerial, but its size and weight are such that it can be manipulated in the convenient manner necessary for quick and accurate work.

MAGNETIC LANDING AND STARTING PLATFORM FOR AEROPLANES

A demonstration given in Sydney recently claimed that, by the adoption of a magnetic platform, it would be practicable for an ordinary three-seater aeroplane to land in a space approximately 200 ft. by 60 ft., fixed on a revolving stage of, say, 300 feet. For the experiment a model aeroplane about 8 in. by 12 in. was used.

The landing platform would consist of a framework of specially composed laminated iron bars, magnetically energised, and placed on a floor of wood or other non-magnetic substance. Each bar of iron on the platform would be magnetised by two or more powerful coils connected with the electric power supply. Between the wheels and the skid of the aeroplane, an attraction plate would be fixed, and it is claimed that the effect of these attractive metals would be to slow down the aeroplane to such a rate as will ensure a safe and satisfactory landing. It is further claimed that the magnetism will be sufficient to hold the machine stationary whilst the requisite revolutions are being attained to ensure a prompt take-off from the raised platform.

There is no doubt that the device contains possibilities which may be of great service in the future development of aviation, and it has been brought under the notice of the Commonwealth Air Board.

are not inclined to instal motors, although the large motor ships have amply proved their reliability on long ocean runs

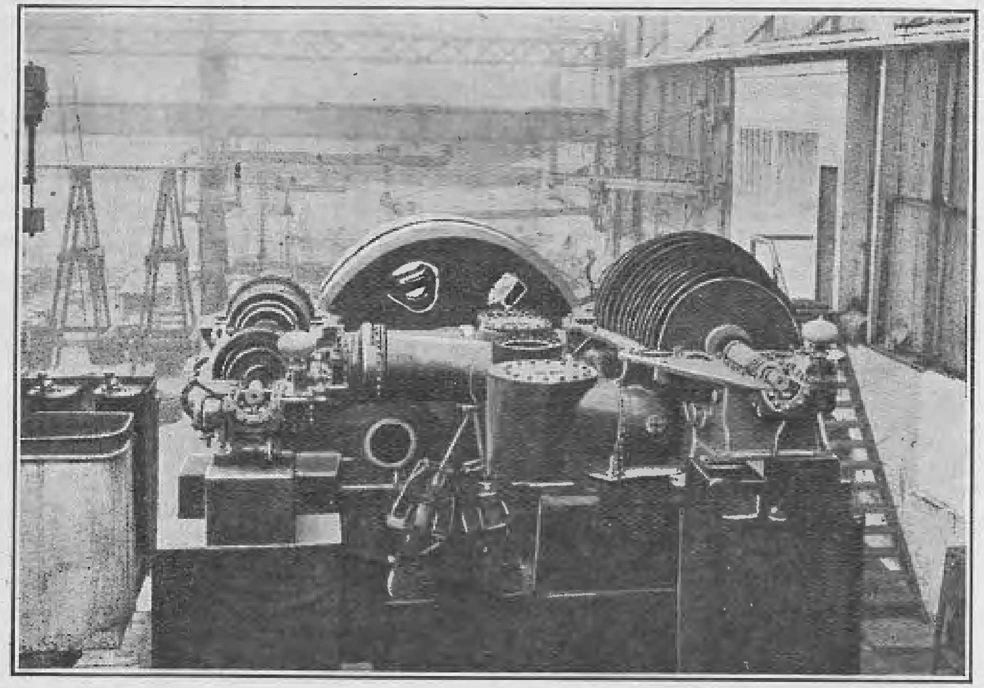
Several tankers now under construction will have oil motors of the Diesel type. An oil carrier now completing by the builders, Messrs. Vickers, of Barrow, carries 10,500 tons, and is oil motor driven; a considerable financial saving will be effected on long voyages as compared with steam engines.

In comparing engines, three different types may be quoted of propelling a tanker of 10,800 tons, and 3,000 h.p. engines to give good speed.

Geared Turbine Engines for Passenger and Cargo Boats.

In the *San Florentino,* built last year at Wallsend-on-Tyne for the Mexican oil trade, the engines are double reduction compound geared turbines driving a single propeller. There are five cylindrical boilers. The carrying capacity of oil, heavy and light, is 18,100 tons.

As showing the trend of engineering minds, it is noted that fully 450,000 out of the 900,000 tons of shipping—passenger and cargo steamers—at present on order in yards round the British coast, will be fitted with geared turbine engines.



The Double Reduction Geared Turbines of the Oil-Tanker "San Florentino."

With coals, the day's bill is 36 tons; liquid fuel under-boilers in place of coals, gives 22 tons of oil burned per day; but fitted with oil motor engines, only 9 tons of crude oil are required per day. And the staffing wages bill for the engine-room is reduced by eleven men whose services are dispensed with when boilers are vetoed.

That is why the marine motor is slowly winning its way for large ships, just as it had captured yachts, launches and smaller cargo carriers.

Marine motors are being fitted into seven steamers; and four vessels will have turbo-electric transmission. The *War Hindoo,* built at Port Glasgow, a tanker of useful size, gross tonnage of 5,600, now completing, has triple expansion engines, and is specially designed for carrying lighter oils.

Various of the largest and best known shipbuilding firms on the Clyde, Tyne and Tees have engineering workshops specially for the making of marine engines of the Diesel or semi-Diesel type.

The Rival Claims of the Four-Cycle and Two-Cycle Type.

What is agitating motor-engineering minds is the respective claims of the four-cycle or two-cycle type. The majority of motors up to the present are four-cycle type engines; but the two-cycle engine is now advancing into prominence.

New ideas have evolved new patents, and the latest makes have scavenging performed by means of ports in the cylinder walls, in places of valves in the cylinder heads, as in the earlier patterns of two-stroke engines.

Sir W. G. Armstrong, Whitworth and Co., Ltd., are making Sulzer two-cycle engines, and have contracted to build and engine two large vessels for Norwegian owners.

The Orient Steamship Company, of Copenhagen, have placed orders for two 9,000-ton motor ships with Sulzer-Diesel engines. This two-cycle engine represents a remarkable simplification in design, and both weight and space are lower than in motors of the four-cycle type.

In Italy progress is being made with two-cycle engines for large ships now building, and each vessel will have two 1,200-ton b.h.p. two-cycle oil motors.

All other machinery on the modern oil motor tanker is electric; a dynamo in the engine-room generates ample electricity for auxiliary engines, pumping plant, steering gear, windlass, etc. This year will see large additions to the oil fleets; all oil companies are having vessels built. The latest shipping combine, Tankers Ltd., with a capital of five millions sterling, is at work now placing orders for new tank tonnage.

WIRELESS FLIGHT

Whilst in the middle of the Great Australian Bight, bound from Fremantle to Adelaide, a passenger on board the s.s. *Karoola* decided to send a reply paid wireless message to the Railway Department in Adelaide, to reserve a berth on the mail train.

Special arrangements are in force whereby wireless messages can be telephoned from shore wireless stations direct to the addressee.

As soon as the message was received at the Adelaide Radio Station, it was telephoned to the Railway Department in Adelaide. The reply was telephoned from the Railway Department in Adelaide to the radio station and thence transmitted to the *Karoola.* The reply was delivered to the passenger immediately, 9 minutes after he handed in his message.

Needless to say, the passenger was astounded at the quickness of the service, but, nevertheless, was convinced as to the efficiency and the utility of the wireless service to the travelling public. This achievement is a record in Australasian wireless circles, so far as the general public is concerned.

He and his machine are instruments of business which can be converted into instruments of war in a few minutes. It is worth while to bear in mind when laying plans for aerial development that it is a ploughshare and a sword in one.

Ordinarily one does not associate fish with warfare and successful defence. But to those foreign nations whom the sailor and soldier must consider hostile there is a deal of significance in Mr. Knibbs' figures which tell the average consumption of fish in the Commonwealth. For purposes of defence there is not enough fish eaten in Australia. Fish-eating create the fisherman and the fishing smack, and only Britain knows their full value in times of war. These fishermen make war-sailors of the first order and there is a thousand uses for their craft. No one will deny that the development of the fishing industry on business lines would be a profitable thing for the nation and a study of Britain's naval warfare will show how profitable it is in war.

And the defence value of a fishing industry is emphasised when it comes to the mercantile marine. Australia badly needs sailors for peace and cannot do without them for war. The seamen and the ships which transport food to-day can transport troops to-morrow if to-morrow discloses the need for the change. A soundly organised mercantile fleet is essential in both peace and war and is profitable in both.

But it is no good having ships and road transport and trains and flying machines unless they can be employed in the days of peace. And to employ and expand them necessitates the development of industry. It would be a profitable business proposition if Australia could export the manufactured goods which she at present imports. Manufactories are essential to a country which would defend itself. The motor factory of peace can extend and produce fighting aeroplanes and armoured cars and motor-boats for war; bullets can be made in aerated water factories, and the explosive part of the bomb in soap factories. Machinery is the uncomplaining slave of peace and war and is necessary for success in both.

And what applies to the development of transport and industry applies also to the rapid and reliable transmission of information. Wireless means profit for the business man and therefore for the nation. It is a system of communication which entails no costly cables and wires—which are not only costly but vulnerable—and it cannot be destroyed by an enemy in time of war. It is a paying business proposition to develop wireless in Australia and, like all the foundations of national defence, it is an essential for prosperity in peace.

And now we come to the most essential thing of all—man. He is a profitable investment for any nation, but he is more for Australia than for most, just as the aeroplane is more valuable to Australia than to England. Every man is an extra worker and an extra fighter, and it is better to import the man to make things in Australia than to import the things he makes in another country.

The defence of Australia can be made a paying business proposition. More than it must be a paying proposition for the foundations for national prosperity in times of peace are the same as the foundations of success in times of war.

CALLING FOR POLICE BY WIRELESS

The headquarters of the New York police has been equipped with a wireless station, which is kept open for 24 hours daily. The object of this station is to maintain communication with police boats on the harbour and on the Hudson River, and at the same time to accept calls for police assistance in cases of fire, accident, disorder, etc., received from ships in the harbour or at the wharves.

BRISBANE TO MELBOURNE FLIGHT

MR. C. J. DE GARIS' FEAT

Mr. C. J. De Garis in his Aeroplane.

Another long-distance flight, from Brisbane to Melbourne, was performed on Sunday, January 16, by Mr. C. J. De Garis.

Brisbane was left shortly after 6 a.m., the first landing being made at Grafton (N.S.W.), where he arrived at 8.5 a.m., leaving at 9.18 a.m., thence to Sydney, where he descended at the Mascot Aerodrome at 12.28 p.m. After spending over an hour in Sydney, lunching, delivering complimentary messages and newspapers from Brisbane, Mr. De Garis continued the flight to Galong, where he arrived at 3.25 p.m., departing a quarter of an hour later. The next stop was Cootamundra, which was reached at 4 p.m. Here they partook of afternoon tea, leaving 35 minutes later on the final lap of the journey, which came to a conclusion on arrival at Melbourne at 7.45 p.m., thus constituting the record flying time of 10 hours and 30 minutes for approximately 1,100 miles.

"I am delighted to have got through," said Mr. De Garis, on alighting from the machine, after congratulating the pilot, Lieutenant Briggs, on the success of the venture. "People said we would never do it. We were delayed on account of the heavy rain for over an hour and a half. Instead of leaving Brisbane at half-past four as arranged, we did not get a start till after 6 o'clock, and it was then still raining heavily. The second half of the journey was made in splendid style, and although we had a head-wind for the best part of the trip, we managed to pick up half an hour from Sydney to Melbourne. An average height of about 3,500 feet was maintained, the highest altitude being 5,000 feet, between Sydney and Cootamundra. After leaving Sydney the pilot thought that the carburetter was giving trouble, and he deemed it advisable to land at Galong. Very little time was lost here, however, as, after an examination by the mechanic, who found nothing wrong, we were soon on our way again. We crossed the New South Wales border at 6 p.m."

The pilot (Lieutenant Briggs) expressed himself very pleased with the success of the trip, which, he said, was the longest he had ever accomplished within twenty-four hours. Lieutenant Briggs piloted the Prime Minister (The Rt. Hon. W. M. Hughes, P.C., K.C.) from Paris to London.

REGULAR AIR MAIL SERVICE TO CUBA NOW IN OPERATION

Regular air mail service between the United States and a foreign country is now being carried on as surely as regular trans-Pacific shipmail service.

Every day since November 1 huge Aeromarine-Navy cruisers, freighted with several hundred pounds of mail and ten or twelve passengers, have been running on schedule between Key West, Florida, and Havana, Cuba, crossing in an hour the gap which takes a steamer an entire fortnight to bridge.

The big flying boats travel through the air with the sureness of a locomotive along its rails or a steamer across a smooth sea, for they were specially built to fly over oceans for long distances and have been subjected to a very rigorous test by the United States Navy before being placed in the service.

As a means of testing their stamina and reliability, the two Aeromarine cruisers were flown down the Atlantic coast from New York to Havana, a distance of sixteen hundred miles, just before the Key West-Havana mail service was inaugurated. The sixteen hundred miles were ticked off behind them as regularly as a watch marks off the seconds, although no effort was made to try for a speed record. The big cruisers can do 100 miles an hour, but this is not unsurpassable speed for a 'plane by any means. But the Aeromarines, with their luxurious cabins and other fine passenger facilities are not racing 'planes, but air yachts designed to carry passengers swiftly, yet in comfort.

According to reports reaching New York, the big air cruisers, named the *Pinta* and *Santa Maria* in honour of two of the caravels of Colombia, "hopped" to Norfolk, Va., on the first day of the journey and there permitted the score of passengers and the members of the crew to see somthing of the town.

Manteo, on the Island of Roanoke, where Virginia Dare, the first white child born in America, saw the sun, was the next stop, but it was not wholly because Virginia was born there, that the big ships glided down to the water. It was near Manteo, on Kill Devil dunes, that the Wright Bros. made the first flight in a motor propelled airplane. That was in 1903 and the flight lasted but 59 seconds, and was only for a few hundred feet.

Stops were also made on the southward tour at Southport, N.C., Georgetown, S.C., Charleston, S.C., St. Augustine, Fla., Port Pierce, Fla., and Miami, Fla.

The Aeromarines completed their first mail-carrying tour to Havana on November 1; which happens to be the Cuban election day, but alighting in Havana Harbour amid the cheers of a crowd which seems to be the entire population of the city. Five hundred pounds of mail was delivered on the initial trip. This amount is 21,000 letters. Each letter bore a stamp indicating that it travelled by the first airplane mail service between the United States and a foreign country.

The 'planes which are used in the flight have a wing spread of 104 feet, are fifty feet long, and are powered by two four-hundred horsepower Liberty motors. They differ from Navy 'planes of the *F-5L* type in that they are equipped with two cabins each of which are furnished in mahogany, with silver fittings and finishings which compare with those of a millionaire.

The main cabin is forward of the wings, and contains six luxurious reclining chairs, upholstered in leather, each beside a large port-hole shaded by old blue and gold silk tapestry curtains. The operating compartment is next, and behind it is the after cabin, furnished as a club compartment for cards, writing, smoking, etc.

The passengers who made the flight southward included officials of the company and their wives, two women writers, a nine-year old boy and others. After the first flight the passengers came to regard their tour in much the same light as a cruise in a big yacht, save that the swiftly changing scenery, from two to three thousand feet up is far more interesting and fascinating.

These big boats are operated by the Aeromarine West Indies Airways Inc., and will shortly place four more similar boats in operation between Palm Beach, Miami, Bimini and Nassau.

SOME VALVE ACCESSORIES

FOR THE WIRELESS EXPERIMENTER

BY
RAYMOND EVANS.

The following information will no doubt provide the wireless experimenter with some short cuts towards the simplifying of the design and construction of some very necessary accessories to the successful operation of the electronic valve.

Mounting the Valve.

The mounting of valves, in most cases, is one of the most simple operations, particularly so in the case of the "Expanse A," V24 and Q Valves.

Take the "Expanse A" for example, all that is required is four terminals arranged so that convenient connection can be made to and from the valve. It is usual to mount these upon an insulated base such as ebonite or bakelite, of suitable dimensions.

Details are as follows: Cut from ⅜ in. or ½ in. sheet ebonite a piece measuring 5 in. by 3 in., mark off the positions for the terminals as shown on the drawing and drill holes to suit. The terminals can be either purchased, or taken from an old instrument. A small spring clip to hold the valve must be made of some light gauge springy brass or phosphor-bronze. Be careful that it is not too strong, otherwise the glass wall of the valve might collapse under the strain. To make this clip, cut a strip ¼ in. in width and bend to shape shown in the drawing, after which two small holes can be drilled for the purpose of fastening down to the base. Use small brass cheese-head screws and nuts as shown.

To complete the mounting mark the terminals as shown on the drawings, to act as a guide when making connections.

The mounting for "V24" and "Q" valves is perhaps a trifle more involved, but nevertheless is quite simple in construction. As these valves are smaller than the "Expanse A," they can therefore be mounted upon a smaller base. The drawing provides for a base measuring 4 in. by 3 in. by ⅜ in., and the contact-clips shown must be of a thin, springy material, preferably phosphor-bronze. For the "plate" and "grid" clips, cut a strip ¼ in. in width and drill and bend to the shape shown in the drawing. Those at the top and bottom are the filament clips, and besides being wider than the others (about ⅜ in. will suit) they are drilled with a ¼ in. hole so that the valve can be sprung in between centres, so to speak. A glance at the drawing will show this quite clearly. Use No. 4 or 5 B.A. screws and nuts for fastening down the contact-clips and making connections.

Though the foregoing instructions provide for a mounting just large enough to hold the valve only, nevertheless, should the experimenter so desire it, the valve can be mounted on a large panel in exactly the same manner as described for the smaller one.

Some valves are provided with a brass screw-cap which serves to conduct the current to any other screw-cap lamp. In these, the connections to "Plate" and "Grid" are taken through the glass wall of the valve to insulated pillar terminals conveniently placed.

Other valves, such as the Marconi V.T., have the whole four contacts arranged as prongs at the base of the brass cap. Of course a special socket or receptacle is required for this particular valve. Many other valves are in use which require a different method of mounting to those already described.

The Filament or "A" Battery.

Most experimenters will find the filament battery undoubtedly the most troublesome part of the valve receiver. As the valve will consume from 0.7 to 1.0 amperes of current, generally speaking, only one class of battery can be conveniently used, namely, the accumulator. Either the lead or the Edison type will easily furnish this current, but, of course, will require periodically recharging. If lead cells are used they must be treated with the utmost care. Beware of short circuits, these, if only of quite a short duration might easily cause such serious buckling of the plates as to effect a permanent "short" internally, rendering the cell useless. Edison accumulators will stand much rougher use, but of course are correspondingly higher in cost.

Most primary batteries are absolutely useless on the filament of the valve, as the amount of current they deliver is not sufficient to light the filament for any appreciable length of time. A potash battery of considerable merit has been recently tried by the writer. This works admirably, and should suit our purpose, as it will deliver 1.5 amperes without any noticeable drop, but the voltage (0.7 volts per cell) will necessitate six or seven cells being connected in series. As this is the first cost, and the inconvenience of carrying about for charging purposes is cut out, many experimenters might care to try them. For their benefit the following details are given: Procure for each cell a glass or earthenware jar with a capacity of about one quart. A rubber or cork cover must be made to fit tightly into the top of the jar, and must be provided with three ¼ in. holes in a line across the centre. Two of these are for the terminal rods from the Positive and Negative plates, and the third is a filling hole which is afterwards sealed.

The electrodes or plates are iron (black sheet) and zinc (sheet), and may be arranged in any suitable manner, which provides a large amount of surface, and good connection to the terminals. The iron is placed in first, then the jar is filled to a height of about one inch from the bottom with crystals of black oxide of copper, after which the zinc is placed in position. The electrolyte is prepared by making a saturated solution of ordinary caustic potash in clean water and stirring thoroughly until no more will dissolve. The mixing operation must be done in an iron, enamelled or porcelain vessel and an iron rod used for stirring.

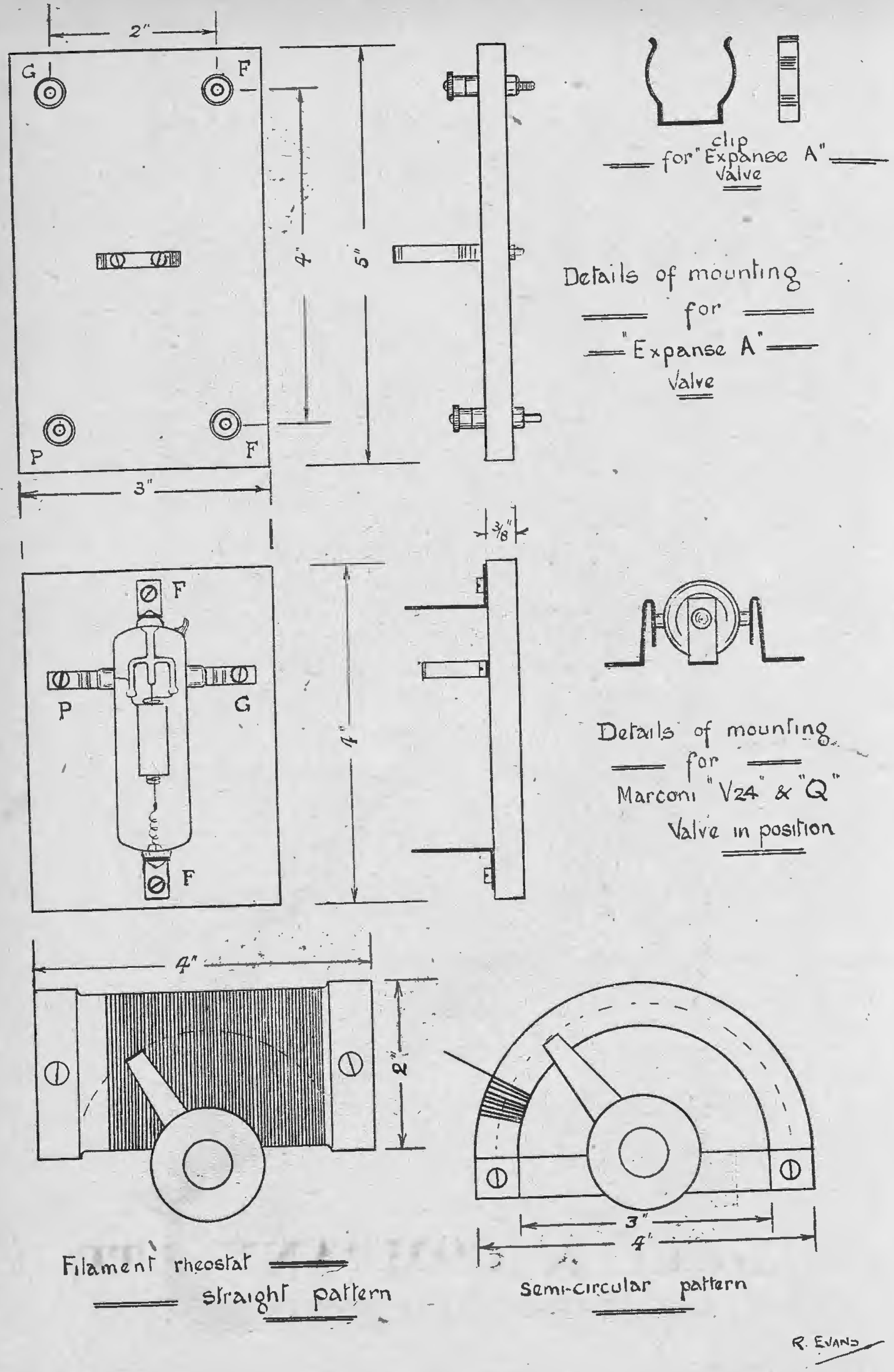
During this process, considerable heat is given off, and care should be taken to avoid the solution coming in contact with the hands or clothing, etc.

The solution must be allowed to cool before using in the cells, and be hermetically sealed whilst standing, otherwise it will deteriorate.

After filling the cells, pour a small quantity of kerosene oil in each, and seal up the cover with paraffin wax. The zincs will of course require to be replaced from time to time as they become eaten away, but can be expected to last many months on intermittent use. It will be found that these cells stand up well under ordinary conditions and will supply the amperes required quite readily. They are rugged and stand a fair amount of rough use. In fact a "short circuit" does little or no damage.

All filament battery circuits should have small fuses placed as near to the battery terminals as convenient, as is the practice in other electrical circuits. It will be found that this idea will not only protect the battery in the event of an accidental "short," but will also (provided of course the fuse is the correct size) prevent the possibility of burning out the filament with excessive current through the careless use of the filament rheostat.

The working voltage required for most valves is 4, but new valves often require


2"
G
F
P
F
3"
4"
5"
clip
for "Expanse A"
Valve
Details of mounting
for
"Expanse A"
Valve
F
P
G
F
4"
3/8"
Details of mounting
for
Marconi "V24" & "Q"
Valve in position
4"
2"
3"
4"
Filament rheostat
straight pattern
Semi-circular pattern
R. EVANS

as high as 5 or 6 volts. After a period of continued use, however, valves will be noticed to require a slightly lower E.M.F. than when first purchased.

The "B" or High Potential Battery.

This is sometimes termed the "plate" or "annode" battery, and may be required to furnish an E.M.F. from 10 to 200 volts or even greater, depending upon the make of "valve" used. As valves are not uniform in characteristic, no precise data can be given, but the following gives an approximate idea of the "B" battery values required for a few well-known valves.

"Expanse A" valve requires from 18 to 30 volts; "Marconi V24" valve requires from 20 to 30 volts, and for amplifying 50 volts; "Marconi V.T." valve requires from 20 to 35 volts, and as an amplifyer 50 to 60 volts; Marconi "Q" valve requires about 160 volts.

Having an approximate idea of the values required, it is quite a simple matter to ascertain experimentally the most suitable working potential for your own valve.

It must be distinctly understood that for the plate of the receiving valve, quite small current is required, so that for the sake of convenience, dry cells can be used quite successfully. They should, however, be of a reliable make and arranged so that a variation of potential can be made. This can be accomplished by connecting in series and taking tappings off in suitable positions, so that a quick variation can be made. For this purpose, a plug- or point-switching arrangement can be used, but if the latter, care should be taken that the contact-studs or points are spaced sufficiently so as to avoid the possibility of the contact-arm "shorting" between studs. In other words, the contact-arm must "break" from one contact before "making" with another.

The 4-volt refill batteries for use in pocket flashlamps can be made to perform the functions of a "B" battery, if suitably arranged. A battery of from 6 to 12 of these forms a most compact unit and can very easily be made to fit within the valve cabinet itself. The writer, however, would advocate its isolation for reason of the fact that it will be more accessible should a fault occur. The better plan is to build a box of suitable dimensions for the cells, and fit an ebonite panel with a point-switch or plug-in arrangement on one end. If the experimenter should care to go to the additional expense, a small voltmeter could also be mounted on the panel, and connected across the main terminals of the battery. This will enable him to keep at all times, a check on the exact potential required for different valves and conditions.

As with the "A" battery, it is a good plan also to furnish a fuse preferably on the battery box itself. A small strip of tinfoil about $\frac{1}{8}$ in. wide, mounted between two terminals, serves very well, provided the centre portion is cut away leaving a width of about $\frac{1}{32}$ in. at one point in order to enable it to blow at a very low amperage.

Another type of "B" battery is made up of accumulator cells of a simple pattern. A number of test tubes are let into holes or receptacles upon a wooden frame or stand. These will form the containers for the cells. The plates, of which two are required for each cell are cut from $\frac{1}{8}$ in. sheet lead and measuring approximately 6 in. by $\frac{1}{2}$ in. are separated by strips of glass. The cells are filled to within an inch of the top with the usual dilute sulphuric acid solution, after which a little molten paraffin wax is poured in to prevent evaporation. Pierce a small hole in the paraffin wax when cold to allow the gas to escape when on charge.

The cells can be connected either in series or parallel for charging purposes, and will depend upon the voltage available. It will be noticed that when placed on charge the positive plates will have assumed a brown colour, and the negative grey which serves to indicate that the cell is working and that the plates are being "formed." It is always a good plan to charge and discharge slowly several times before actually placing into service. This type of battery is excellent for use on the plate side, provided, of course, some ready means of recharging is at hand.

Alternating current is sometimes used to furnish the plate potential, but some means must be provided for rectifying the A.C. An ordinary valve may be made to do this, though in actual practice a two-element, or Fleming, valve is almost invariably used for the purpose.

The Filament Rheostat.

The design of the filament rheostat depends largely upon the number of valves it will be called upon to control at the same time. If for a single valve receiver, it can be built to carry a maximum current of say, 1.5 amperes, but if required for a number of valves (cascade amplification) the rheostat will of course be wound with sufficiently heavy a wire to carry, without overheating, a correspondingly greater value of current. For example, two valves will require 3 amps., three valves 4.5 amps., etc.

These figures, of course, indicate the maximum possible current and allow a safe working margin, so that it must be assumed that your valves will not consume so large a current as that mentioned.

A rheostat for use on a single valve can be wound with 24 or 26 gauge "Eureka" wire to about 2.5 to 3 ohms resistance, while one for seven valves 16 or 17 gauge will be suitable.

The table below will give an idea of the gauge "Eureka" resistance wire necessary for various numbers of valves.

Eureka Resistance Wire for Filament Rheostats.

1 valve,	use 25 or 26 gauge wire.
2 valves,	use 24 or 25 gauge wire.
3 valves,	use 23 or 24 gauge wire.
4 valves,	use 20 or 22 gauge wire.
5 valves,	use 18 or 20 gauge wire.
6 valves,	use 16 or 18 gauge wire.
7 valves,	use 14 or 16 gauge wire.

Rheostats can be mounted upon the valve cabinet or separately as desired, also they can be placed within or without the cabinet. Provision must be always made when building a filament rheostat, for an "off" position, or in other words a position which entirely opens the filament circuit. This can be easily accomplished by finishing the winding a little short at one end as shown on the drawing.

The actual shape of the rheostat is immaterial, but two most commonly used patterns are shown. In the straight pattern the former is of slate, ebonite or fibre, the wire being wound in hollow slots cut in the outer edges by means of a three-square file or, if a lathe is available, a suitable thread can be cut which of course will be better. In this manner, each turn of wire is separated from its neighbour by an exceedingly small space, and allows a greater amount of wire being wound on and enabling the rheostats to be kept small.

A contact-arm is made to work from a spindle as shown, and should be light and springy and so shaped as to give good contact on the wire without undue wear. Should this rheostat be mounted behind a panel, then a small brass pointer must be fitted to the knob in a position corresponding to that of the contact-arm, and a scale engraved upon the panel in order to indicate the position of the contact-arm.

In the case of the semi-circular rheostat which is shown partly wound, fibre would be the best material to use. This could quite readily be cut from ⅛ in. sheet material with a fretsaw and filed nicely to shape, after which the edges of the former part can be slotted, but this time allowance must be made for the curvature of the winding so that the inner slots will be spaced closer than the outer. Provision can be made for these slots when first marking out the fibre by merely marking radii evenly around nearly half the circle as a guide.

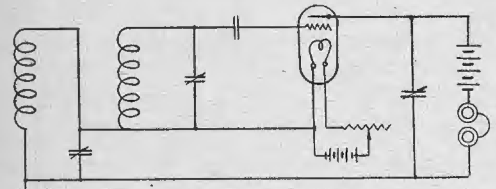
The resistance value of the rheostat, 3 or 4 ohms will be generally found quite sufficient when using a 4-volt battery, though some experimenters prefer a 6-volt battery and in this case it will be best to use a rheostat of about 6 to 10 ohms.

GROUND WIRELESS

BY

JOSEPH G. REED

A short time ago when experimenting with my 600 meter receiver I found that by connecting it to earth alone, as shown in *Figure 1,* signals could be distinctly heard with practically no interference from static, which was particularly strong at the time. By installing two oscillating receiving sets about 300 ft. apart clear signals were exchanged when connected as mentioned above. In U.S.A., General George O. Squier used this method of transmission for working over considerable distances.



Circuit for Ground wireless
Fig 1

My explanation for this peculiar result is as follows:—

Long-distance radio telegraphy—contrary to the usual theory of ether-wave propagation—depends chiefly upon earth currents radiated by the transmitter. In *Figure 2* suppose station A is a transmitter and B a receiver.

Now A charges his aerial to a potential above earth and then suddenly discharges into it, thereby disturbing the potential of the earth in the immediate neighbourhood. The surging of currents up and down the aerial system gives rise to a train of earth waves which radiate outwards like the familiar ripples in water. Any conducting body which lies in the path of these waves and has a capacity to earth will absorb energy from the radiations, particularly so if it is tuned to resonate at the same frequency as the transmitter. The slight capacity of the receiving set to earth provided sufficient "storage space" for enough energy to give rise to the signals which were received in the above-mentioned experiment.

Many text books state that the foot of the ether-wave travelling through the earth gives rise to earth currents of a

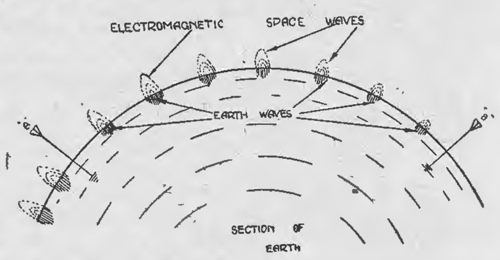


Fig 2

feeble nature, but I consider that the earth current is the main factor and the space-wave merely the electromagnetic field which accompanies all currents which pass through a conductor. When the elementary principles of electricity are applied to this problem the latter explanation appears the most logical.

Now all you "near experts" write to the Editor and tell him your experiences along with arguments for or against the above—"heresy against Hertz."

WIRELESS MAST CONSTRUCTION

BY

"BARTLETT"

When installing a radio set the problem of erecting masts presents many difficulties to the average amateur. The following description of mast construction will no doubt be found useful.

The writer, using valves for reception, and intending to use a continuous wave transmitter at a later date, limited the height to about 40 feet, using galvanised iron water pipe (new or second-hand).

Two masts were erected of 42 and 35 feet height respectively. For the first, one 18 ft. length of 2 in., one 18 ft. length of $1\frac{1}{2}$ in., and one 9 ft. length of 1 in. pipes were used. The second was made from two 18 ft. lengths of $1\frac{1}{2}$ in. and 1 in. pipe. The sections were joined up by telescoping them 12 in. and bolting with two $\frac{1}{2}$ in. G.I. bolts at right angles about 9 in. apart. Great care must be taken that the holes for these bolts are in perfect alignment and diametrically opposite. The holes in the larger section should be drilled first and used as guides for drilling the corresponding holes in the smaller pipe. If the bolts do not pass through easily, ease the holes with a file. About an inch from the top of each mast drill $\frac{3}{8}$ in. holes and insert $\frac{3}{8}$ in. bolts to hold the pulley, used for hauling up the aerial.

Guys can be made from No. 12 gauge galvanised steel wire. Wrap this around the masts between the bolts at each section. About 4 ft. down from the top of the smaller mast insert a 2 in. by $\frac{1}{4}$ in. bolt to provide a grip for the upper set of guys.

For the bases of the masts procure two 7 ft. pieces of 6 in. by 6 in. hardwood. Insert them $3\frac{1}{2}$ ft. into the earth, and pack them with pieces of broken stone. The mast is secured to the base by means of two iron saddles made from 1 in. by $\frac{1}{4}$ in. stock which are held to the post by 8 in. by $\frac{1}{2}$ in. bolts. When erecting assemble the guys, ropes, etc., and place the foot of the mast against the hardwood base and haul it up complete.

Cover all joints with black adhesive tape and insert wooden plugs at the top to protect the inside of pipe from rain. Several coats of paint will improve the appearance of the masts in addition to protecting them from the elements.

When erecting a mast impress upon your helpers to take orders from one person only.

A BRAINWAVE.

BY

R. H. E. CHANNON

The lightning flashed, the thunder crashed,
The safety gap was sparking;
The asmospherics tumbled in
Like a host of dogs all barking.
The aerial swayed, and creaked, and groaned,
'Midst wind and flashes blinding.
My fingers closed on the grounding switch
As I thought of the headset winding.
The storm passed over—all was still:
The wind had stopped its shrieking.
The signals came in rather weak
As the aerial now was leaking.
I switched the juice off in despair
As on the bed I sat,
When a thousand metre brainwave
(Continuous wave at that)
Came stealing through my dizzy head.
A cute idea I thought
Would be to build a sending set
From the motor bike I'd bought.
I had two gallons in the tank
So I started her up to warm 'er,
And used a stand-by sparking coil
For a young step-up transformer.
I set the engine on full speed
With the "Maggie" working fine
Supplying juice to both the plugs
And a fair supply to line.
I put two spark points on the works
And from them took a tap
And used the steel spokes on the wheel
To sychronise the gap.
She roared and crashed, she flamed and flashed,
She sparked right through the tyres;
The sparks went flying right and left
Regardless of all wires.
I heard a crash—I knew no more;
I dreamt of sparks and flashes.
My motor bike transmitting set
Reduced itself to ashes.
Now Radio "bugs" take my advice,
As you've already seen,
'Tis a dangerous game to play with sparks
Wherever there's BENZINE!!!

LIST OF WIRELESS OFFICERS ATTACHED TO VESSELS OF THE AUSTRALASIAN MERCANTILE MARINE

Revised to January 24, 1921.

SHIP.	OPERATOR.
Apolda	J. W. McKay
Arahura	W. C. Brown
Araluen	H. H. Black
Aramac	C. Williamson
Arawatta	D. W. Higgins
Atua	L. G. Devenport
Australbrook	J. F. McGinley
Australcrag	V. E. Stanley
Australford	T. W. Bearup
Australglen	W. H. Richardson
Australmead	S. V. Blight
Australmount	A. R. Catford
Australpeak	J. B. Ponsonby (s) H. P. Weedle (j)
Australplain	A. Stuart
Australpool	E. J. Glaisher
Australport	J. H. Pullan
Australrange	V. P. Nevins
Bakara	C. W. Donne
Baldina	——
Barambah	M. L. Robertson
Bellata	G. Soilleux
Berringa	L. E. Ternes
Bethanga	F. G. Forrest
Bingera	J. H. Hawkins
Birriwa	F. G. Lewis
Bombala	A. H. Jeremy
Boonah	F. A. Cook
Booral	T. V. Tressler
Boorara	T. Alexander
Bulla	R. T. Stephen
Bundarra	N. W. G. Scott
Calulu	F. Exon
Canberra	H. W. Barnfield
Cape Colony	A. W. Watt
Carina	W. Hill
Changsha	B. Boni
Charon	J. E. Cleary
Cooee	P. D. Hodges
Cooma	V. M. Brooker
Delungra	I. B. Gibson
Dilga	R. Jordon
Dimboola	——
Dinoga	R. R. Robinson
Dongarra	H. J. Byrne
Dromana	F. Stevens
Dumosa	H. Beckett
Dundula	J. A. Cooper
Eastern	C. H. A. Kidman
Emita	——
Eurelia	J. A. Guy
Eudunda	——
Gilgai	D. H. George
Hwah Ping	H. F. Hartley
Kaiapoi	E. A. Miller
Kaitangata	H. F. Harman
Kaituna	F. E. Duggan
Kaiwarra	F. Marsden
Kanna	K. McSwann
Kanowna	W. J. Washbourne
Karoola	R. R. Pilmore
Katoomba	T. A. Jones
Karori	W. C. Lucas
Katoa	A. E. Lawrence
Kauri	H. S. Chown
Koromiko	J. G. Henderson
Kowarra	H. Fullerton
Kurow	A. D. R. Davis
Levuka	A. S. Smith
Loongana	H. A. de Dassel
Macedon	H. E. Young
Mackarra	A. G. Ross
Macumba	S. G. Joues
Maheno	G. H. Hugman
Makambo	C. F. Griffiths
Makura	E. A. Hunter (s) M. Webb Watts (j)
Malayan	H. F. Giles
Manuka	J. A. Heavey
Maori	R. S. Taylor
Mapourika	C. F. G. Taylor
Marama	J. H. Bennett (s) F. Ouvrier (j)
Mararoa	G. M. Gormlie
Marella	W. J. Martin
Marsina	J. H. Gilligan
Mataram	J. F. Hutton
Maunganui	——
Melusia	S. F. Stafford
Minderoo	M. A. Prudence
Mindini	E. F. Hayes
Moana	S. R. Dixon
Moeraki	F. L. Scott
Mokoia	T. H. McWilliams
Monowai	——
Montoro	A. L. Dixon
Morinda	F. C. Davies
Navua	D. C. Lane
Ngakuta	H. Bargrove
Niagara	W. H. Harris (s) F. A. Hunter (j)
Ooma	A. E. Sheppherd
Oonah	R. M. Firminger
Paloona	R. P. Ginders
Parattah	K. L. Simpson
Pateena	——
Rakanoa	W. A. Hawkins
Riverina	G. Illingworth
Rotomahana	J. B. Ponsonby
Shandon	G. Vincent
South Africa	E. J. Giles
St. Albans	T. Bannister
St. George	A. J. Sawyer
Suva	L. S. Lane
Tahiti	E. M. Bain (s) W. S. Ringrose (j)
Taiyuan	F. A. Woodall
Talawa	D. Hairs
Talune	R. W. Barnes
Tarawera	G. M. Whiteside
Tofua	L. R. Dickson (s) E. N. Williams (j)
Toromeo	M. Sedgers
Ulimaroa	H. Tuson
Victoria	H. M. Lamb
Wahine	J. O. Taylor
Waihora	H. Bashford
Waihemo	G. Maxwell

(Continued on page 757.)

(Continued from page 756.)

SHIP.	OPERATOR.
Waikawa	N. Leeder
Waimarino	F. L. Dawes
Waipori	G. Donnelly
Wairuna	F. N. Davidson
Waitemata	G. Poole
Waitomo	S. J. McVeigh
Wanaka	J. Elmore
Wandilla	D. N. Quinn
Westralia	M. A. Ryan
Whangape	A. O. Sutherland
Wodonga	A. W. Hooper
Wyreema	T. Chalmers
Wyandra	J. Doggett
Zealandia	J. G. C. Higgins

A.W. (A'sia.) Ltd. Operators Temporarily Employed on M.I.M.C.C. and Other Ships.

SHIP.	OPERATOR.
Rupara	G. Cook
Durham	H. Heather
Wattle	L. N. Callagham

PERSONAL NOTES.

Mr. A. Cuthill, Wireless Officer of Amalgamated Wireless (A'sia.) Ltd. recently left the s.s. *Moeraki* in Sydney to take his annual holidays, during which time he was married at Rockdale, N.S.W., on Saturday, January 7, 1921. On behalf of the Wireless Officers and our readers, we tender our heartiest congratulations to Mr. Cuthill.

Taking advantage of the stewards' strike, Mr. T. A. Jones, of the s.s. *Katoomba*, is spending a holiday at his home in Adelaide, S.A.

Mr. L. G. Devonport, who was recently married, has returned from his honeymoon and joined the s.s. *Moeraki*.

We had a visit during January from Mr. J. S. F. Slattery, who has just resigned from the R.A.N. Radio Service, and who is on his way to America to take up a position there. The old members of the staff of Amalgamated Wireless (A'sia.) Ltd., will, no doubt, remember Mr. Slattery, who was at one time a Wireless Officer of that Company.

WIRELESS INSTITUTE OF AUSTRALIA

NEW SOUTH WALES DIVISION

The 46th General Meeting was held on January 18, at "Wireless House," 97 Clarence Street, Sydney, Mr. E. T. Fisk presiding.

The Minutes of the last General Meeting were read and confirmed.

Mr. H. R. S. Callan was elected a member of the Division.

The next business was a notice of motion which had previously been given by Mr. Wilson:—

"That it is desirable to register this Division of the Wireless Institute of Australia under Section 52 of the Company's Act, 1899 (N.S.W.), with a membership up to 500."

Mr. Wilson, in speaking on his motion, pointed out that registration as proposed would give the Institute a proper status, and although it was only possible to register the N.S.W. Division in this State, there being separate Company's Acts in the other States, it was felt that the other Divisions would appreciate this action and avail themselves of the opportunity of following the example of the New South Wales Division, which they would find much simplified thereby. Furthermore, this Division would be able to hold property such as wireless apparatus, etc., defend the rights of its members and members would only be liable up to the full amount of their subscription should the Division be involved in any litigation and finally the Institute's title would be protected.

Mr. Perry seconded the motion, pointing out several advantages, and mentioned that according to mutual arrangement the several Divisions of the Institute were at liberty to act independently in matters such as this, but that now this matter was before the New South Wales Division the other Divisions were being informed, and it was hoped that they would also act on similar lines.

Mr. Fisk, in supporting the motion, emphasised the importance of the step at the present juncture, as the Institute would at once become a recognised body, and not merely a group of persons without status. He also mentioned that the Aero Club had recently adopted a similar course.

The motion was then put to the meeting and carried unanimously.

Mr. Fisk, in outlining this Division's comprehensive scheme, drew attention to the fact that the whole scheme was again coming before the Council with a view to appointing a committee to carry out all the preliminary work and place the scheme in operation, and now that the control of wireless matters had reverted to the P.M.G.'s Department, it would be submitted to them as a basis of this Division's future operations. All members have already received a copy of the comprehensive scheme showing the proposed zones.

A special cinematograph demonstration on "Direction Finding" was then given by Mr. J. F. Wilson. The film depicted an aeroplane trip from London to Brussels, the three direction finding stations illustrated being situated at Chelmsford, Lowestoft and Pevensey.

During the particular trip indicated by the film, bearings were taken at regular intervals over the entire journey of several hundred miles.

A comprehensive description of the direction finder appears in this issue of our official journal.

At the close of the meeting a hearty vote of thanks was tendered to Mr. Wilson and also to Messrs. Tatham and McIntosh for their very valuable assistance in loaning and preparing the apparatus for the cinematograph demonstration.

The next general meeting of the Division will be held at "Wireless House" on February 8.

"SEA, LAND and AIR"

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ISLES OF PEARL AND GOLD

BY

FRANK REID.

Islands and reefs and palms—how we all loved them in our school days! How devotedly all the boys, and many of the girls, hoped some day to wander away in a long, low raking ship with many sails, discover pirate hoards, purchase handfuls of pearls for a few yards of gay-coloured cloth, see sharks and flying fish, pick up coral and cocoanuts, and have adventures like we read in the never-to-be-forgotten books by Robert Louis Stevenson and others!

I well remember the day I first met the late Louis Becke in Sydney. I had just returned from my first trip to Fiji, and we spent the best part of an afternoon discussing the early trading days amongst the isles of the South Seas, the notorious trading of firearms and black-birding, and the adventures of that most modern of pirates, "Bully" Hayes. I have visited many islands since those days, but alas, they have changed greatly since, full of boyhood stories, I wandered over coral seas to the climes of "reef and palm." Nowadays no natives flock in canoes to the ship the moment she nears land, to offer pigs, fowls, yams, and all kinds of island produce, in exchange for any trumpery we may give them. A ship is no novelty to them now; even steamers have, in a great measure, lost their charms, and the natives know a great deal better than we do what their property is worth, as we soon find out when we come on shore to deal with them. It is much nearer home, within the Barrier Reef, and amongst the islands in Torres Strait, that we can still find islands where adventure lurks, and where riches lie below the rippling waters. Even at the present time gold is being found on these coral specks, and pearls of great price are still dragged from the waters which wash the shell-strewn beaches.

A few months ago I visited Murray Island, in Torres Strait. Few places in the far north are so strewn with ancient wrecks, and so full of mystery and romance. It was here that the late Frank Jardine, in 1892, driven in from the open seas by a cyclone, came upon a chest of Spanish dollars buried near the beach. From an old Murray Island native Jardine learnt a tradition about the treasure, as handed down from his ancestors.

It was that a ship was wrecked on the reef fringing the island, and that some very dark men came ashore on a raft with a chest of money. They were all murdered by the natives. During the years that passed the chest was forgotten and crumbled with age a few inches below the surface until it was unearthed by Jardine. Later, Captain Dabelle, of the Torres Strait pilot service, found several ancient relics on the island. These included an ancient cannon, old coins, and an old-fashioned hour-glass. The natives of the island tell stories of other ancient Spanish ships which lie in shallow water on the reefs, a few miles from land. However, there is no evidence that these wrecks date from a period earlier than the settlement of Sydney.

About the beginning of the 19th century several Spanish prizes were brought to Sydney, and on the journey one or more of them may have been wrecked in the then unchartered waters of Torres Strait. On the other hand it is quite possible that unknown Spanish navigators may have attempted to sail through the straits with-