

EXPERIMENTAL WIRELESS NEWS

A FEW years ago wireless enthusiasts of the Eastern Suburbs of Sydney formed the Waverley Amateur Radio Club. Like all other experimental wireless clubs and institutes, the Waverley Club had to "close down" during the war, but since Peace was signed and the restrictions imposed on wireless experimenters during the war relaxed, the club has again come to life and renewed its former activities.

At the present juncture there are only about twenty-four members who meet every Thursday evening in the club rooms at "Almont," MacPherson Street, Waverley. The club is progressing rapidly and the members, all keen enthusiasts, are obtaining very satisfactory results in their experiments. The club has been granted a transmitting licence and arrangements are being made to transmit wireless telephone messages under the supervision of Mr. Frank Geddes.



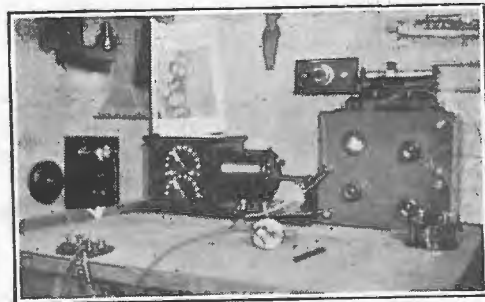
Receiving instrument at Mr. F. Geddes' station at Waverley, N.S.W.

The photograph above shows the receiving station of Mr. F. Geddes, which is equipped with a two-wire "T" type aerial sixty feet high and one hundred and twenty feet long. From the centre of the photograph to the extreme right is a five stage amplifier. To the left is a Marconi plain tuner, another special 600-metre wave receiver, composed of honey-comb coils, Cunningham rectifying valve and a Marconi "VT" Class II. amplifier. With the exception of the filament battery, everything is contained in four cabinets; the instruments tuning to any wave length between one hundred and fifty and twenty-five thousand metres.

The small wall telephone at the side of the pigeon holes is connected to the wireless rooms of four other members of the club who live in the vicinity of Mr. Geddes' station, but it is hoped that this means of communication will be substituted by wireless telegraph or wireless telephone as soon as the authorities issue the necessary transmitting licences to experimenters

We also reproduce hereunder a photograph of Mr. Eric Bowman's experimental station at Bronte, N.S.W. (another member of the Waverley Amateur Radio Club), fitted with an "L" type aerial forty feet high and ninety feet long.

From left to right of photograph is seen the "B" battery switch, loose coupler and valve control panel, the latter accommodating an audiotron valve, two filament resistances and the secondary tuning condenser.



Mr. E. Bowman's experimental wireless station at Bronte, N.S.W.

The primary of the loose coupler is fitted with tens and units tuning switches and two dead-end switches, thereby facilitating fine selectivity in tuning the primary circuit. The secondary is tapped to a six-point switch also fitted with two dead-end switches.

Every part of this receiving set was made by Mr. Bowman, who deserves great praise. He states that he can pick up without the slightest difficulty all Australian and New Zealand coast stations at any time they are working, as well as many ships hundreds, sometimes thousands, of miles out on the high seas.

"SEA, LAND and AIR"

THE AUSTRALIAN NATIONAL MONTHLY

— OF —

TOPICAL INTEREST

OFFICIAL JOURNAL OF

THE WIRELESS INSTITUTES OF AUSTRALIA AND NEW ZEALAND.
THE MERCANTILE MARINE WAR SERVICE ASSOCIATION OF AUSTRALASIA.

Edited by S. E. TATHAM.

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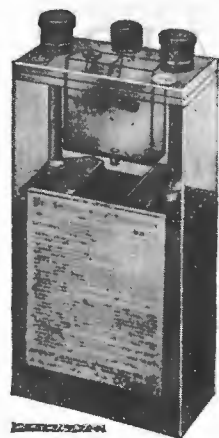
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The Editor will be pleased to receive, for consideration, contributions on Aviation, Wireless, the Navy, Mercantile Marine or other subjects within the scope of *Sea, Land and Air*. All MSS, photographs, drawings, etc, submitted must bear the sender's name on back and be accompanied by postage stamps for return if unsuitable. Although every care will be taken of all contributions received, no responsibility is accepted.

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THE MANAGER, THE WIRELESS PRESS, 97 CLARENCE STREET, SYDNEY.
All Editorial communications should be addressed to THE EDITOR, *Sea, Land and Air*,
97 CLARENCE STREET, SYDNEY.
Sole European Agents: THE WIRELESS PRESS, LTD., 12 AND 13 HENRIETTA STREET,
LONDON, W.C. 2.
Sole Agents for United States of America: WIRELESS PRESS INC., 233 BROADWAY, NEW YORK.
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SEA LAND AND AIR
AUSTRALIA'S NATIONAL MONTHLY

VOL. IV.

NOVEMBER 1, 1921.

No. 44.

TOPICS OF THE MONTH

THE WASHINGTON CONFERENCE

THE eyes of the whole civilized world will be directed towards Washington during the next few weeks, and the peoples of the various countries will await with the keenest interest and anxiety the outcome of the fateful Conference which is soon to begin there. It should not be a difficult matter for even the most uninformed individual to visualise the great national and humanitarian benefits which will follow if the objective of the Conference—disarmament—is achieved.

Most people realise that the storm centre of the future, for Australia at least, is in the Pacific, and the real object in the mind of the convenor of the Conference, President Harding of America, is to bring about disarmament, or a reduction of Naval armaments in the Pacific, and so limit the possibility of another world war. The very timeliness of the gathering, therefore, invests it with a peculiar interest to Australia, for although this country was far removed from the scene of the last great conflict, she carries sufficient marks, in the shape of a heavy death-roll and a long list of maimed in the ranks of her most virile sons, together with a crushing load of taxation to make her realise what war means. Can

it be wondered, therefore, that thinking men rank the Disarmament Conference as the most important in the history of mankind? We are conscious of the fact that what it means to other countries applies even more forcibly to Australia. Why should anyone be classed as a foolish optimist who expresses the opinion that the Conference possesses a bright chance of attaining its object? When we come to analyse the position we realise that it is only fear and jealousy which cause nations to arm—fear, because of the possibility of being overthrown by a more powerfully organised nation, and jealousy, because under present conditions the country possessing a strong army and navy occupies an exalted position in the eyes of the world. The irony of the position becomes more strikingly manifest when we consider that the avowed object for which every nation possesses armaments is self-defence. Clearly then, if an agreement is arrived at by which each nation undertakes to limit her arms to what is required for her own defence—based on the knowledge that every other nation is similarly limited—the maximum will be very small indeed; the security of each country will be

inviolable, and the peoples of the world will be freed from the moral burden of fear, and the material burden of taxation with which they are now oppressed. Surely we have a right to be optimistic when we realise the issues that are at stake. We cannot but believe that the representatives of the nations who are attending this Conference fully realise what success means—and alternately, the price of failure. A broad spirit of tolerance; a determination to sacrifice petty differences for the common good of all, and a realisation that the fruits of their deliberations—be they good or ill—will be the foundation upon which the future of the world is to rest, will surely impel those who sit around the

Conference table to strive, as men have never strived before, to achieve the objective for which they are meeting.

The menace of armaments has always prevented international questions being dealt with on their merits, and the consequence is that secret diplomacy—the most fruitful cause of international troubles—has been resorted to. The bitter lesson of the past few years, apart altogether from such considerations as the moral and material advantages of world peace, should imbue the Statesmen of the different countries with a determination to make this age one that will live in history by reason of what is accomplished at the Washington Conference.

IMMIGRATION

THE old, but ever new, problem of attracting to Australian shores the steady stream of practical immigrants, which thinking men recognise is essential to this country's national well-being, is likely to receive a new impetus as a result of the weighty and well considered statements of Viscount Northcliffe.

Few people will dispute our distinguished visitor's ability to advise us on a matter of such wide importance as peopling the empty spaces of this vast continent, and fewer still will question his power to assist us in successfully solving this great problem. Knowing that England alone has more than sufficient of a surplus population to treble the number of people at present in Australia within a few years, it may seem a simple task to transport them to these shores, where a wider field of opportunity and a richer reward awaits those who are prepared, during their early years here, to work, and if need be to sacrifice, in order to tap the wealth of our fertile lands.

Unfortunately, experience has proved that the task is not a simple one, but this knowledge should not deter, but spur us

on; for if history teaches one thing more than another, it is that objectives worth striving for have never been lightly won.

Quite apart from the need and value of more people as a protective force to Australia, a brief consideration will disclose that we have much to gain in immediate material wealth by the influx of new people bringing new capital. Frequent complaints are heard that the load of taxation per head in Australia is unreasonably high, but it is difficult to see how the burden can be decreased to any appreciable extent unless more people are brought here to share it. It is a fact, not always easy to explain, that the cost of governing a country with a small population is oftentimes as heavy as when the number is twice as great, and of course, the individual burden in the former case is proportionally higher. This is Australia's present position, due solely to her lack of population—one of the unfortunate circumstances which make her the envy of those countries against whom her "White Australia" legislation is directed, and the despair of the other members of the great Empire in which she is a potentially strong, but actually weak, partner.

The power which is going to enable Australia to solve her population problem is the courage, enthusiasm and broad vision of her legislators and people. Admittedly, there are sections in this country opposed to more people coming here, not so much because they are disinclined to allow others to share Australia's many advantages, but simply because they fear that there is not enough to share if all are to enjoy a decent living.

As Lord Northcliffe pointed out a means must be devised of banishing this erroneous belief and in its place must be created a sympathy and understanding between the workers of this country and their fellow workers from overseas, which, when accomplished, will make the immigrant welcome for his own sake as well as for the increased prosperity which his arrival heralds.

A STANDARD RAILWAY GAUGE

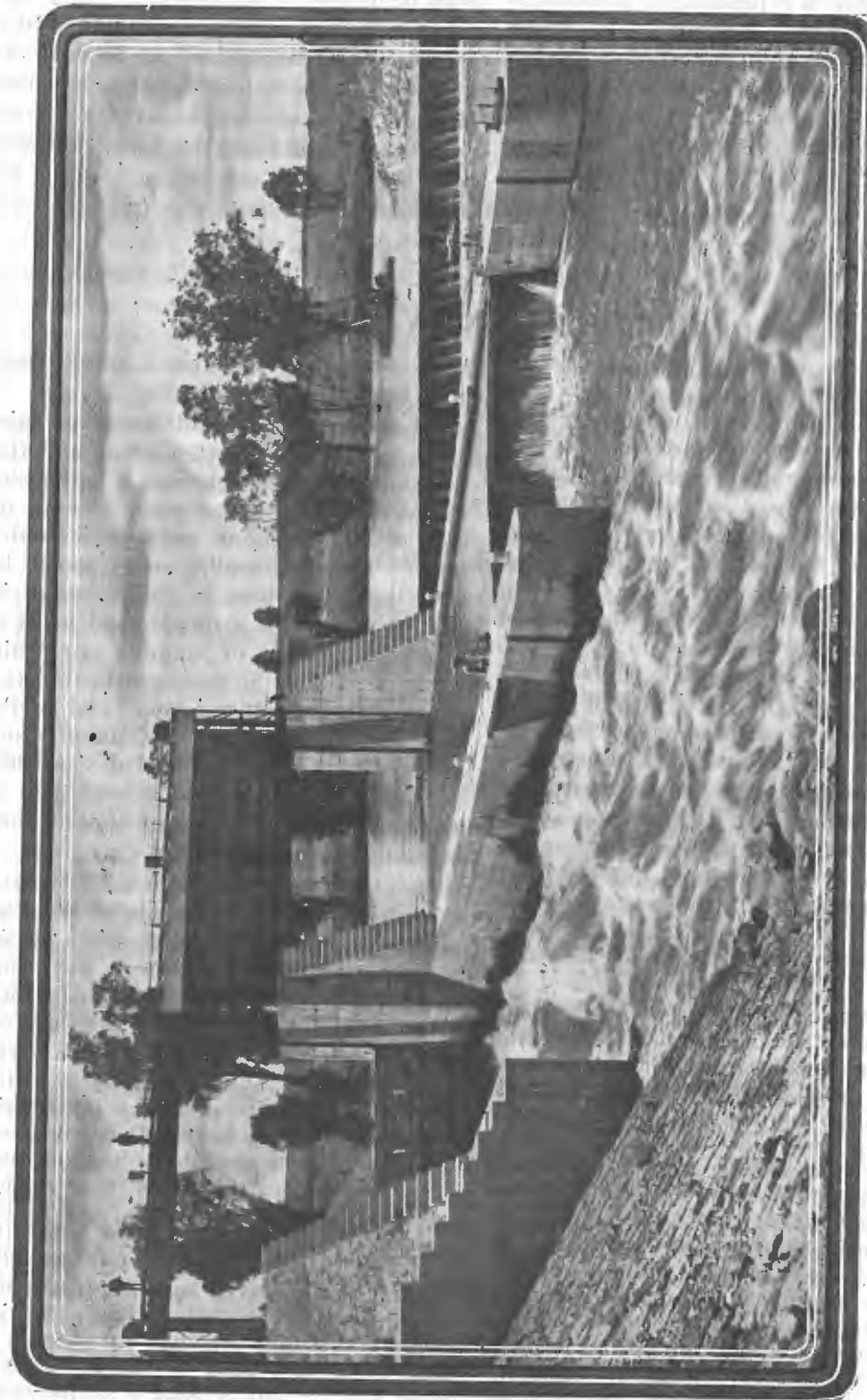
THERE is an old and trite saying that a nation's misdeeds, like an individual's, will sooner or later have to be faced. This is particularly true of Australia's broken railway gauge, a legacy which has been passed on from a generation when interstate jealousies were as keen as international feelings are at the present time. There was clearly a lack of vision on the part of past Statesmen who allowed such a short-sighted policy to come into existence, and worse still, it was allowed to go on unchecked until to-day when there is a disposition to face the position in the interests of Australia's economic and defensive future, the cost of repairing the mischief is positively appalling. The report of the Federal Commission which recently inquired into the problem of unifying our railway gauges, sets down the cost for the whole of the lines in the Commonwealth, those of Tasmania excepted, at £57,000,000.

Two alternative schemes, which the Commission reported on, the first to make a uniform gauge between Fremantle and Brisbane (at a cost of £18,000,000), and the second to convert all the railways of Victoria and South Australia to a standard gauge at a much heavier cost, would neither of them give the advantages of the complete undertaking, and in each case the cost is sufficiently high to make us question if the advantages to be gained thereby render the outlay justifiable. Unquestionably the present method of transshipping passengers and loading at each State border is both inconvenient and costly, and if unfortunately we should ever find it necessary to transport troops hurriedly from one part of the continent to another the loss of

time involved in changing might conceivably have disastrous results.

On one point only did the Commission make a definite recommendation, and that was that four feet eight and a half inches should be the uniform gauge if ever the task of unifying our railways is undertaken. Quite naturally, many people believe that somewhere in the realms of inventive genius lies a simpler and more inexpensive method of running our trains from one end of the continent to the other than by tearing up our broad and narrow lines and replacing them by one of standard width—some mechanical device which will enable the ideal to be attained by using the present rolling stock, lines, bridges and tunnels.

Many attempts have been made to bring this about, but in the words of the Commission "They had no knowledge of any mechanical device suitable to the conditions." The value of such a conclusion is rather nullified by the fact that the Commission admitted that rather than accept evidence from anyone desiring to tender it, it gained all the necessary information by specific inquiry in the quarter where it was known to be available. Such a course may have been expedient for some reasons, but on the whole its wisdom may well be questioned. Past happenings recall that many early designs of what ultimately proved to be inventions of inestimable value were condemned without examination. Who knows but that history may repeat itself in regard to the attempts of those who are now seeking a simple means of solving Australia's break of gauge problem!



The waters follow the natural course of the river for upwards of two hundred miles after being released from Burrenjack. Then they are divided at Berembed, part being diverted into the main irrigation channel and the remainder passed on to the lower river, as shown above.

The Berembed Weir and Diversion Works.

THE MURRUMBIDGEE

STORY OF A GREAT ENTERPRISE

By FLORA A. TIMMS

PERHAPS no river in Australia savors more of romance than the Murrumbidgee, "the very devil in flood," but a veritable Heaven-sent angel of goodwill in times of normality.

The Murrumbidgee (discovered by Hamilton Hume in 1824) joins the Lachlan before the latter unites with the Murray, thus forming the rich Riverina district.

The first proposal for an irrigation system resulted in the appointment of a Royal Commission on Water Conservation in 1887. This Commission recommended the construction of canals from the Murrumbidgee to irrigate the lands lying in the arid zone of its lower valley, but it was not until 1904 that Parliament sanctioned the construction of a canal on the northern side of the river. The great test of successful irrigation is an unfailing supply of water under the most adverse circumstances that may be experienced; thus it was imperative to "go slow" at first.

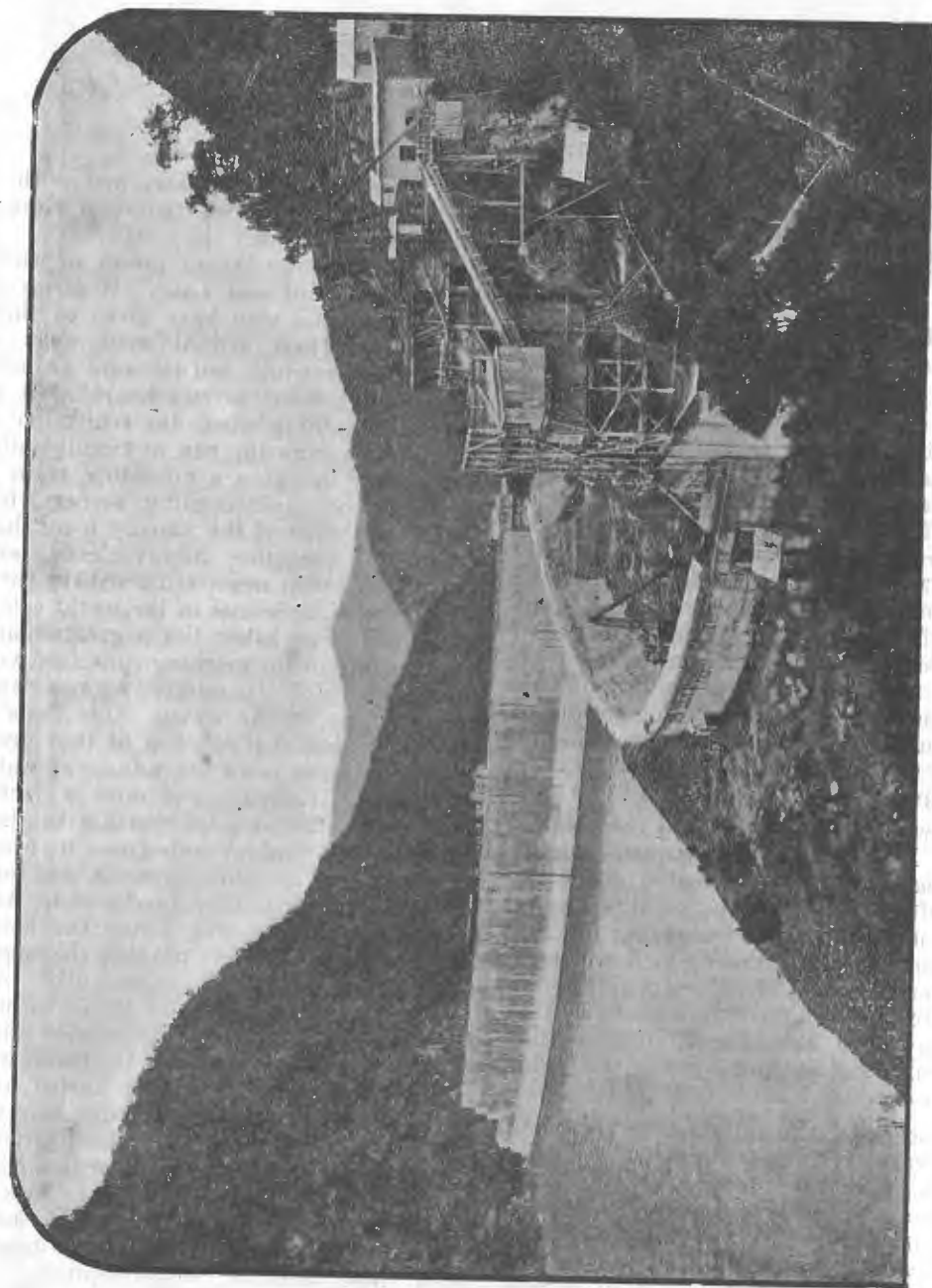
The whole of the supply in the channel of the Murrumbidgee is gained from a great catchment area, situated above the town of Gundagai, about eight thousand square miles in extent, embracing the supply from those mountains which are snow-clad every winter. The Murrumbidgee flow fluctuates between the extremes of the flood volumes which are afforded by the combined rains and melting snows of the spring and the extreme low water of mid-summer.

The selection of a suitable site was made, after years of exhaustive research, at Burrenjack, where the joining of the Goodradigbee with the Murrumbidgee makes an ideal storage site. It was necessary (with thoughts on the Public Exchequer, as well as other conditions) to have a deep, narrow gorge such as was found at Burrenjack, where the main river was confined between immense cliffs of granite reaching upwards of two thousand feet above the river bed, and just below the gorge were the open

flats where the two streams met with a catchment area of five thousand square miles above the site.

Australians are very proud of their Burrenjack Wall and Lake. It seems as if here God and man have given of their very best. There are different ways of reaching Burrenjack, but the most arduous one is well worth the two hours' wait at the railway siding where the trunk line is left. From there the run of twenty miles in the grey dawn on a miniature train is through most uninteresting scenery, but the last six miles of the journey more than make up for the inconvenience and monotony. After negotiating a sharp turn, one of the finest scenes in the world comes into view. Far below lies a great inland sea, dazzling in the morning sunshine, with thickly wooded limestone peaks rising abruptly out of the water. One finds it hard to realise that the bed of that great lake, containing twice the volume of water of Sydney Harbour, was once a fertile valley with farm-houses nestling in their orchards, and gardens dotted over it; where cattle browsed in their thousands, and some of the finest maize ever produced in Australia grew. In gazing across the horse-shoe ahead one wonders whether the engine has "just come down" or presently "will just go up" that particular bit of railway line, but the brave little locomotive sticks to its task. A false move and the train, with its human freight, would be hurled hundreds of feet below; but, although here you travel at your own risk, and could not, even in the event of being maimed for life, claim compensation, it is reassuring to look at the driver's face, and realise how many times that little engine has safely negotiated those hillsides, so precipitous that only a two-foot gauge line was possible.

In the distance beyond the lake is a group of ranges, pile upon pile of them, and one wonders in the atmosphere of unreality that pervades the senses, if it is an



View of Burrenjack Dam, showing northern spillway.

optical illusion. However, it is quickly realised that the almost startling blueness in which the ranges stand out is a feature common in the rarified air of the tablelands.

After negotiating another sharp turn the doomed city of Burrenjack comes into view; doomed because when the great wall is completed, only a few of the houses far up on the hillsides will be above water level.

Standing on the verandah of the "Rest" after breakfast, waiting for the guide, Black Andrew is seen frowning down upon the little settlement from a height of two thousand seven hundred feet.

In traversing the one and a half miles to the Great Wall, the guide points out the landmarks on the ranges across the river that show the future water level, then as the wall comes into view, he will point out a mark on its face to which the highest building in Australia would reach. How far from the top that mark seems! And yet the wall does not look so very high. But how could it with those towering cliffs frowning down on either side?

The great "flying-fox" swinging in mid-air with its cargo of cement, produces a thrill, and for a moment one is sceptical when told that those small objects moving about at the base of the wall on the other side of the water are men. But the breadth of the wall is more impressive than the height. When finished it will be strong enough to resist five times the pressure that will be brought to bear upon it. Even the Murrumbidgee in flood will beat against that fortress in vain. Eleven hundred bags of cement are used every day in the construction of the wall, and when it is finished one million bags will have been absorbed.

To keep that mighty basket—"the flying-fox"—in place, two hundred tons of stone ballast are used. The four boilers consume thirty tons of wood daily, and the great wheel in the power-house, weighing ten tons and revolving twice every second, is driven by a belt two feet wide (one of the largest in the southern hemisphere). It is a relief to get out into the open again where things are not regulated by the mad whirl of a wheel at two revolutions to the second.

After lunch a motor launch takes the tourist up the lake, which extends twelve miles in one direction and twenty-six in another (up the course of the Murrum-

bidgee), and again it is difficult to realise that far below children once laughed and played; men and women toiled and rested, and the old folks sleep their last long sleep, little dreaming that the soft lapping of water, the shrill whistle of a launch, or careless laugh of happy tourists would one day be heard over their resting place.

Within a mile of the shore are wonderful lime-stone caves, the "Wee Jasper," which, when opened up officially will rival the famous Yarrangobilly and Jenolan.

The lake abounds in fish, especially the Murray cod, weighing anything up to forty pounds. Some two or three years ago the country was drought stricken and bush fires raged in the mountains on either side of the river. This was followed by a heavy rain storm which washed the charcoal down into the river, destroying (through the fumes, it is assumed) all the fish within miles of the scene of devastation.

The stored water at Burrenjack, when released through the sluices in the wall, is diverted by a weir about two hundred and twenty miles down the Murrumbidgee at Berembid. From Berembid the irrigation supplies are conducted by an open channel past the town of Narrandera, and on to the irrigation areas.

The wall at Burrenjack is not yet complete. When it is it will have a maximum height of two hundred and forty feet, and will hurl back the waters into a great inland sea covering twelve thousand seven hundred and forty acres. The volume will be about thirty-three billion cubic feet, or sufficient to cover 766,324 acres to a depth of one foot.

The watershed of this great river is in the Monaro Range, of which Kosciusko (7,328 feet) is the highest peak.

In 1852 one of the most disastrous floods in the history of Australia took place, when the town of Gundagai was practically wiped out, the loss of life being enormous. The natives warned the residents of the impending danger and they themselves "took to the mountains." So high did the Murrumbidgee rise on that fateful night, that when the water subsided, one man and several horses were found marooned in the trees at a height of ninety feet. Whole families were washed away in the seething current. One woman was discovered next day caught in the branches of a high tree. She was alive, but her baby was dead in her arms.

ROAMING THE SEAS

HOW TINY VESSELS ARE MAKING HISTORY

BRITISH OFFICER'S NOTABLE CRUISE

IT has long been recognised that the British Navy can boast of having men in its ranks who will perform deeds which will make the ordinary individual marvel without regarding it as anything more than an ordinary, everyday event. Just why this is so it is difficult to exactly determine. Perhaps the hard training, coupled with constant demand on a man's courage and initiative, combined with the spirit of adventure which life at sea begets, makes our Naval men capable of performing feats at which ordinary men would shrink. Certainly an exhibition of these qualities is being constantly revealed; the latest being the case of Lieutenant G. H. P. Muhlhauser, R.N.R., who arrived in Sydney about the middle of October, having sailed from Plymouth to Australia in the twenty-eight ton auxiliary yawl *Amaryllis*.

The story of Lieutenant Muhlhauser's enterprise makes interesting reading. He is a Surrey man, about forty-five years of age, and at the conclusion of the war (during which he served on warships, minesweepers and trawlers), the inspiration gripped him to voyage overseas in the tiny ship which eventually brought him safely to Australia's hospitable shores. Lieutenant Muhlhauser left Plymouth about thirteen months ago, accompanied by three friends—all ex-officers of the Navy or Air

Force. When the West Indies was reached two of the men obtained work ashore, and later on at Kingston the third one of the party was taken possession of by his wife, who had followed him on a steamer from England. At the Barbadoes Lieutenant Muhlhauser shipped two boys—one seventeen and the other twenty—who assisted him in navigating the vessel as far as Suva, where Mr. Abercrombie joined the party and accompanied them to Sydney. Amongst the places touched at after leaving Plymouth were Madeira, the Canaries, the Barbadoes, Jamaica, Marquesas, Society Islands, Cook Islands, Fiji and Noumea. Fine weather was experienced during the greater part of the trip, but on the run from Noumea to Sydney the conditions became extremely boisterous and a jib was lost—the only mishap on the 15,000 miles journey. Lieutenant Muhlhauser's greatest difficulty in navigating his vessel lay in the fact that she was equipped with a tiller instead of a wheel, and to use his own expression, this sometimes "kicked as hard as a donkey."

This much-travelled officer expressed the opinion that if he ever undertook a round the world cruise again it would be in either a ketch or a schooner, both of which are easier to handle with a small crew than is a yawl-rigged boat.

AMERICAN ENTERPRISE

FIFTY THOUSAND MILES IN A MOTOR YACHT

About the middle of August last a ninety-eight-foot motor yacht carrying the flag of the Adventurers' Club—the third emblem awarded by that organisation—left America on a cruise around the world.

The undertaking was the outcome of a long-cherished dream on the part of Albert F. Gowen, Jnr., of Cleveland, a big business man and an enthusiastic yachts-

man, who, for over two years had visualised the delights of sailing under southern skies, and enjoying the respite from the cares of business life which a sojourn on the ocean wave never fails to give.

The *Speejacks*, the yacht on which Mr. Gowen, who is accompanied by his equally enthusiastic wife, is making his long voyage, is probably one of the best equipped

that ever sailed the seas. She cost close on a quarter of a million dollars to build, everything below the water line being of bronze, while all the upper portion is of teakwood, specially imported from India at a cost of about five times that of mahogany. Her motive power is supplied by two two hundred and fifty horse-power engines which give a speed of thirteen knots an hour with a cruising radius of three thousand miles. Everything on board is operated by electricity, and the equipment throughout is in duplicate in order to provide against any contingency that might arise.

When the *Speejacks* left New York she had on board more than three tons of canned provisions, and in addition was equipped with a complete medical outfit, special care having been taken to include the articles which previous explorers had found to be necessary on such a long voyage. Elaborate arrangements have been made to record the complete history of the trip in moving picture film—no less than fifty thousand feet of it being stowed away on the yacht when she commenced her voyage, while arrangements had been made to pick up an additional one hundred thousand feet during the cruise. An expert photographer is accompanying the party, while the developing work will be done in a special dark room on board and the films stored in an ice-chest, to ensure their preservation. Not the least important part of the yacht's equipment is her wireless telegraph installation, which has a range of one thousand miles, and a wireless telephone set with a radius of six hundred miles. By means of these the *Speejacks* will be able to keep well in touch with the outside world, and she carries sails on which to depend for motive power should anything go wrong with the engines.

In planning the tour Mr. Gowen aimed at getting away from the route of ordinary yachting cruises and breathing the spirit of real adventure. Realising that such a course may at times land the party in a tight corner, the *Speejacks* has been armed with four of the latest type of machine guns, firing up to one thousand shots a minute. There is likewise a pistol and rifle for each one aboard, and several heavy pieces for big game shooting, which the explorers expect to indulge in when they touch at West Africa.

After leaving New York the *Speejacks*

shaped a course for Norfolk, Kingston and Jamaica, and thence proceeded through the Panama Canal. The long cruise of 3,729 miles across the Pacific to Marquesas Islands was to follow, and then Tahiti, Society Islands, Samoa, Fiji, the New Hebrides and New Caledonia are to be visited in turn. From the last named the party will make for Sydney, where it is planned to spend Christmas. Java, Borneo, and Manila will be the next places touched at and then the yacht will proceed via China, Siam, India and Arabia to Cairo, where the Christmas of 1922 will be spent. Turkey, Greece, France and Spain will next be visited, and then the yacht will turn her face southward to West Africa. The last stage of the journey will then be entered upon, and the party hopes to reach home again about April, 1923.

Apart from being a pleasure jaunt around the world, the cruise of the *Speejacks* is likely to be of great scientific and historic value. No less than eight hundred and forty charts have been collected on board, and Mr. Gowen expects to bring back some notable improvements in maps, particularly in regard to the South Sea Islands, many of which are still imperfectly known. Being himself a representative of the National Geographic Society and Field Museum of Chicago, Mr. Gowen will gather all the information possible on wild life as he finds it. By means of the moving picture camera many interesting incidents, which it would not otherwise be possible to record, will later on be available for those who are now following with the keenest interest the doings of the *Speejacks'* daring crew.

When the yacht reaches the South Sea Islands, she will be out of touch with ordinary sources of supply, and the natives will have to be depended on for food supplies. It is a well-known fact that the islanders value bright coloured cloths and glass ornaments more than they do money, and the party on the *Speejacks* are coming well supplied with the countless articles which they know will win favour with the natives.

People in all parts of the world will follow the cruise of the *Speejacks* with the keenest interest, and when the undertaking has been successfully accomplished and the story written it will doubtless prove to be one of the most absorbing in the history of marine enterprise.

HAWAII'S FAMOUS PALACE

BUILDING OF OLD WORLD ROMANCE



The Capitol.

Formerly Iolani Palace.

PRACTICALLY every visitor to the Hawaiian Islands has inspected the famous Executive Building in Honolulu—known to old-timers as the Iolani Palace—a building which boasts an atmosphere of romance quite as absorbing as that of the Courts of old Europe.

Iolani Palace was built during the reign of King Kalakaua, the ruler who carried to a successful conclusion the reciprocity treaty with the United States—an event which was perhaps the most important in Hawaiian history.

In the Throne Room of the Palace, which is now the Territorial House of Representatives, are hung many famous portraits of old rulers, while in the fine hall of the building oil paintings of such famous men as Lord Beaconsfield, W. E. Gladstone, Louis Phillipe, of France, and Alexander II., of Russia, may be seen. The portrait of King Kamehameha II., which occupies a prominent position on the wall, recalls that monarch's visit to England in

1823, where his Queen unexpectedly died from measles. The King himself died a few days later, and their bodies were brought back to their island home on a British warship.

The present Senate Chamber in the Executive Building was formerly the royal dining-room, and what is now the Governor's office was the royal bed-chamber. The Hawaiian coat of arms (now the Territorial), together with gilded spears and other marks of olden days may still be seen in the ornamentation of the interior.

One of the most notable figures in Hawaiian history was Queen Liliuokalani, whose memory will ever hold a pathetic interest to the inhabitants of those islands. She reigned in the Throne Room for less than two years, but those years covered a period of great activity, during which a provisional government was formed and a little later the republic of Hawaii came into existence.

After relinquishing the reins of government Queen Liliuokalani went to live a short distance from her former palace, where she remained until her death, in November, 1917, at the ripe old age of eighty years. She was the last of the royal rulers of Hawaii, and although not in authority at the time of her death, she was carried to the graveside with all the pomp and ceremony accorded to an occupant of the royal throne. The population of Hawaii paid its earnest respects both to the monarch and the woman, and after the remains had lain in state in the old Throne Room for seven days the funeral obsequies, on a scale never before seen in the islands, were held. United States troops and Japanese sailors, together with federal, territorial and city officers and people of all races took part.

The discovery of Hawaii, although in some quarters attributed to the Spanish explorer Juan Gaetano, really belongs to Captain James Cook, who landed at Kealahou Bay in January, 1778. He was then on a voyage of discovery, the object of which was to find a north-west passage through Behring Sea from the Pacific to the Atlantic Oceans. When he landed he was worshipped by the natives as a god, for according to Hawaiian legend the god Lono was to reappear on earth, and when they saw the strange ships and men they fully believed that the ancient prophecy was being fulfilled. Unfortunately the theft of several iron implements from Cook's ship, and later on the disappearance of a cutter, led to several affrays between the islanders and the whites, ending in the death of the great explorer.

NEW ZEALAND'S PRIME MINISTER AND WIRELESS

The Right Hon. W. F. Massey, Prime Minister of New Zealand, returning from the Imperial Conference, travelled *via* America. He joined the R.M.S. *Niagara* at Vancouver for Auckland, calling *en route* at Honolulu and Suva.

After departing from Honolulu, Mr. Alexander Hume Forde, Executive of the Pan-Pacific Union, on the occasion of the Balboa Dinner, spoke by wireless telephone to the Right Hon. W. F. Massey on board the *Niagara* and sent the following farewell message:

"May the near future bring Hawaii and New Zealand permanently connected by wireless telephone. May we always exchange words of

friendship and goodwill. Have you a message for the guests of all races at the Pan-Pacific Dinner to-night?"

The Right Hon. W. F. Massey replied to Mr. A. H. Forde in Honolulu as follows:

"I heartily reciprocate your message. May the future Pacific be consistent with its name. May the different races in this part of the world be able to work together, not only for their own good, but for the benefit of humanity as a whole."

After the conversation had finished Mr. Massey was entertained for over an hour with gramophone music which came over very distinctly from Honolulu by wireless telephone, and he was most impressed with the clear way in which the voice and music was received.

A SMART PERFORMANCE

During the last trip of the s.s. *Karoola* a record was established for the fastest exchange of Marconigrams. On the voyage a passenger was desirous of knowing the result of the Epsom Handicap, and on the advice of the wireless officer sent a Marconigram "reply paid" to an address in Adelaide. The message was immediately transmitted to the Adelaide Radio Station, and the reply containing the names of the

placed horses was handed to the passenger exactly four minutes later. This exceptionally smart work was made possible by the standing arrangement to have telegrams addressed to a telephone number, and in this case the message was immediately telephoned from the Adelaide Wireless Station and the reply apparently was made out without delay and telephoned back to the Radio Station for the latter to send on promptly to the ship.

LINKS THAT BIND

"DOWN TO THE SEA IN SHIPS"

BY
BASIL MATHEWS

ONE day as a ship on which I was voyaging was passing eastward by the wide, low delta of the Nile there came out from the river mouth a little vessel. She was low in the water, but with high bows and a long, slanting, rakish sail. A brown-faced Egyptian, sitting at the stern, was guiding with an oar-rudder, while others sat or stood in the boat, looking up as the great ship went by.

As we passed on, and I saw one after another of these little vessels of Egypt sailing along by the sandy coast, my mind went back to pictures that I had seen of the sailing boats in which men went up and down the Nile six thousand years ago. From those far-away days on the very horizon of the history of man up till to-day they have gone up and down that river in boats that can be sailed and rowed. The Persian came to Egypt; the Phœnician, the Roman, the Greek and the Saracen; the Crusader, the Turk, the French and the British. But always the brown Egyptian man of the Nile has sailed his little boat and caught his fish and eels without break and with no very great change in his boats or himself.

To the man of the Nile in ancient times—as to the man of Syria and Babylon—the sea was the greatest of all the things in the world that divide men from one another. He could not in his little sailing boat face the storms and the waves of the Great Sea, as he called the Mediterranean, and as for the Atlantic Ocean, that was the dim waste on the edge of the world over which even in his thoughts he never sailed. So he knew nothing of the lives of people far away across the ocean.

Of all the pictures of ships of the ancient times one of the most interesting is that of the fleet of Egyptian ships that was sent out from the coast of the Red Sea about three thousand six hundred years ago. The pictures are on the walls of Queen Hatshopsitu's Temple. The ships look like great and beautiful gondolas,

with fifteen oarsmen on each side and two look-out men in an openwork fore-castle.

They sailed and rowed away to the south to the land of Punt, which was possibly (even probably) Somaliland. They brought back ivory tusks of elephants, leopard and panther skins, ostrich feathers and gold, beams of ebony, frankincense trees, monkeys; which are shown amusing themselves climbing in the rigging.

"Never," says the ancient inscription on the pictures, "has a transport been made like this one by any monarch since the creation of the world."

Far more wonderful, however, was the wonderful voyage made at the desire of an Egyptian Pharaoh by the most daring sailors of the ancient world, the Phœnicians, who lived on the coast of Syria in Tyre and Sidon and sailed their little ships between the Pillars of Hercules—as the Straits of Gibraltar were called—across the tumbled waters of the Bay of Biscay to the peninsula of Cornwall jutting out from some foggy savage islands in the North Sea called Britain. The voyage they did for the Egyptian was down the Red Sea, past Zanzibar, southward and southward for a year and more, till they turned west and then north round the Cape, and at last, after three years of sailing round Africa, reached the Pillars of Hercules and the Great Sea, and finally the mouth of the Nile and Egypt. No one had ever done that before since the world began.

From that day to this the men who lived and live on the rivers that run down to the sea and oceans of the world have been cudgelling their brains in order to build bigger and stronger and faster ships that will link them up with other people and other lands and carry folk and cargoes of merchandise from one country to another.

Gradually from coasting round the fringe of the land they grew more courageous and built bigger ships and so launched out farther and farther into the sea—outward bound—till we have the

ocean tramp and the liner of our own day that, scorning tempests, drive straight across the widest oceans from continent to continent.

II.

It would make a big book even to catalogue all the kinds of ships that men have made, and make, for the linking up of the different races with one another. But we can sail quickly across the centuries to our own days before we look at the ships of to-day.

The command of the sea and the owning of the best ships ran through the centuries in a strangely unbroken journey from south-east to north-west, from one nation to another, first along the Mediterranean from Phœnicia to Greece and Rome, and thence from Venice out into the Atlantic by Spain and Portugal to Holland, and at last to Great Britain.

After the days of the Phœnicians, the Greek ships sailed the seas, going back to the many ports among the Ægean Islands and on the coast of Greece and Asia Minor. The pictures of their ships you can see on their vases and their coins, with the oars through the sides, the oar-rudders at the stern, the single mainmast with its one hanging sail, and the quaint eyes painted on the bows—one on each side—so that the ship can see her way over the seas.* The ordinary Greek ships had white sails, the admiral had vermilion, while in war time they were blue so that the ship should be "camouflaged" on the blue sea.

The Greeks really loved the sea and the ships as the Romans never did. This is a part of one of their songs, "The Song of Orpheus," when he lured the good ship *Argo* to launch itself:

How sweet it is to ride upon the surges,
And to leap from wave to wave,
While the wind sings cheerful in the cord-
age

And the oars flash fast among the foam!
How sweet it is to roam across the ocean,
And to see new cities and wondrous lands;
To come home laden with treasure,
And to win undying fame!

Then the Romans took the power in their hands, and (though they loved the land better than the sea) they built ships

* I saw new Greek boats on the beach of Larnaca in Cyprus in 1914, with the eyes painted on the bows just as they did three thousand years ago.

to defend themselves and to feed their millions of people. They had mighty wheat-fleets to bring food to Rome from Egypt and from Asia—it was on one of these wheat-ships that St. Paul was shipwrecked at Malta. And they made battle-ships for fighting against Carthage. In the great days of Rome the Mediterranean was very busy with merchant traffic all through the summer time; for Rome put down with a strong hand the fierce pirates who had infested the seas.

In the wild centuries that followed the fall of Rome the daring Vikings sailed their long warships out of the fiords of Norway and the river-mouths of the Daneland, singing their rough Sagas and waving their battle-axes as they came to raid the English towns and monasteries and the rich cities of Normandy. Some Vikings, we are told, even coursed across the North Atlantic in their open ships, and found the coast of America, which they called Vineland. As their larger boats were barely eighty feet long, and the gunwale was barely three feet above water, this was a feat of skill and courage. But in recent years it has been shown to be possible, for an exact replica has been built of a seventy-nine-foot Viking ship discovered, in 1880, in the blue clay, and it was sailed across the Atlantic from Europe to America.

It was in trying to compete with these Viking ships that Alfred the Great made the beginnings of the British Navy. He built bigger and better boats than even the Norsemen.

So from Saxon to Norman times the Viking kind of sailing-boat was seen in all the waters of the North Sea. But a great change began when Richard the Lion-hearted sailed out with a fleet under the red-cross banner of St. George, across the Bay of Biscay, past the coasts of Portugal and Spain, into the Mediterranean on his great Crusade to the Holy Land.

This voyage did three things, continues the writer in *Outward Bound*, that made a very great difference to the history of Britain. First, it taught the British coasting-sailors to be deep-sea sailors. They became men of the ocean. Secondly, the British ship-builders saw how powerful the much taller Mediterranean vessels were, with their fore-castle (a high place from which men threw spears), their stern-castle (a high, square, fortified fighting-

place in the stern), and the fighting-top (a kind of tub at the top of the mast). So we began to build ships that had the speed of the Viking and the strength of the Mediterranean types. At the same time Richard brought back from the Levant a scroll of the laws that governed shipping in the Mediterranean, and we adapted these laws for use in the North Sea. Thirdly, with the bigger ships (they now were made as heavy as eighty tons) and the better sailors and navigators, the English ships began to do ever so much more trade. So it came about that in the very next reign, that of King John, we find for the first time the phrase used of England, "The Sovereign of the Seas."

In the centuries that followed, a daring sailor, Vasco da Gama, of Portugal, re-discovered the way round Africa; and Columbus discovered America; while Drake and his fellows sailed right round the world. The ships were gradually made larger and stronger, till Henry VIII.'s biggest warship, the *Great Harry*, had a tonnage of 1,500, and carried one hundred and eighty-four guns, while the sailors of Devon and Cornwall had become some of the mightiest the world has ever known through their adventures every year out across the Atlantic on the cod fisheries off Newfoundland, which fitted them for grappling with the Spanish Armada.

We cannot stay to tell the glorious epic of the great ships of adventure that sailed out round the world and across the oceans—the little *Mayflower*, of only ninety tons, that sailed, in 1613, across the Atlantic and started the new great nation of America; the vessels under Captain Cook that went round the world and discovered many islands and had amazing adventures among savages in the South Seas; the dauntless *Duff*, that went out from the Thames in 1796, and sailed, first, across the Atlantic, and then (meeting impossible weather) back south of Africa to the South seas, the longest voyage ever taken up till that date without sighting land, and finally landed its heroic "cargo of missionaries" at Tahiti; or that unparalleled miracle of shipbuilding under difficulties, *The Messenger of Peace*, built by John Williams on a savage island,* and sailed by him to island after island over thousands of miles

* For the stories of *The Duff* and *The Messenger of Peace* and others, see my *The Ships of Peace*, Oxford University Press. 3s. 6d. net.

of the Pacific Ocean, changing as he went the lives of many island tribes from vile, savage cruelty to peace and happiness.

The "stately Spanish galleons" began now to give way to faster craft. Men sailed over the tropic seas and were becalmed under the bright full moon of the equator, and rounded the Cape into winds that carried them to Bombay and to Canton for spices and silks and tea.

So we come to the thrilling days of the racing clippers, splendid, fast, slim ships with towering masts that held at last something like an acre of shining canvas. There were the "East Indiamen," as those that sailed from India were called, and the tea-clippers that came tearing home from China with three hundred tons of tea aboard.

Never since the world began has there been such sea-racing as those clippers made when, American *versus* British, they tore home from Asia to England, each crowding on every inch of canvas to get his cargo first to market.

Great was the excitement when at last the fastest clipper of all made a record by sailing from Canton to Liverpool in less than a hundred days; and one of them made a world-record by sailing over a thousand miles in three days. But most thrilling of all was when two of them came racing into port with one less than half an hour ahead of the other after a hundred days' sailing from the other side of the world. The people cheered as they saw them coming down the last stretch of a course that stretched across the world, the winning clipper:

Making the blue hills of the sea divide,
Shearing a glittering scatter in her stride,
And leaping on full tilt with all sails
drawing,
Proud as a war-horse, snuffing battle,
pawing.*

At last iron conquered wood for the hulls and masts, and wire cable began to replace rope for rigging, though canvas held sway. But then came the day of the steamship, and the first siren seemed to sound the doom of the deep-sea sailorman. The lean, long grey-hound liner; the squat solid ocean tramp; the

"Dirty British coaster with a salt-caked
smoke stack"

* "Dauber," by John Masefield.

could defy calms and scorn storms and carry great cargoes straight as a flung javelin from port to port. The great steamship has almost chased the great sailing ship from the seas.

To-day the threshing of the steamship propeller is heard in every water of the world and the iron hulls carry to and fro the folk and the foods and the fabrics of the earth. There is no meal that we eat, nor clothing that we wear, nor papers and books that we read, of which some of the material has not been brought to us by the men who "go down to the sea in ships" and "do business in great waters." If you could see into their hulls as they go along the skyline you would find cotton and cocoa, nut-oils and wool, oranges and cinnamon, bananas and wheat, silk and spices, aluminium, jute, and a thousand other things coming to Britain and America; while from the West go fabrics of cotton, coal and tinplates, boots, and uncountable manufactured goods going out, and men, women and children from all the continents of the world sailing to and fro.

Yet still the old kind of ships go on sailing. Our liners and our "tramps" meet the squat yet graceful Burmese and Chinese junks, the quaint and swift Algerian felucca, the tubby Arab dhow, the wonderful outrigger Papuan raft-canoe, and a hundred other strange craft of the sea and the river mouth.

The end of these changes has not yet come, however; for to-day oil is taking the place of coal in many ships. It is even possible that for many cargoes we shall find that sailing ships may come back again with auxiliary petrol-driven engines—for these make a very economical combination of forces—the petrol helping the sailing ship to get past calms and to face some winds.

But whatever kind of ship comes in the future, it will always be true while man lives in the different continents and islands of the earth that the ships will be the loveliest, the noblest and the most universal of the links that bind.

THE SHOALHAVEN RIVER AT NOWRA, N.S.W.



The enormous cost of bridging the Shoalhaven for railway purposes has so far prevented the South Coast line from extending beyond Bomaderry, on its northern bank.

WHERE ROMANCE REIGNS

By FRANK REID

THAT portion of our coast extending from Broome to Port Darwin might well be termed the cradle of Australian romance. Years before Captain Cook sailed his frail craft along our eastern shores it was the rendezvous of free-booters and adventurers. Dampier had threaded his way through the isles off the coast in his ship the *Roebuck*, and Dampier's Archipelago still perpetuates the name of the famous buccaneer. Many other spots on the nor'-west coast are made attractive by Dampier's association with that locality. The name of the bay, on the shores of which the town of Broome stands, is called after the buccaneer's ship, and there is also the creek where Dampier sought refuge from the fierce blows which periodically sweep over and devastate this hurricane region of Australian waters. Jutting out from the foreshores of the town is a causeway, obviously not the work of Nature, but considered by local historians to have been built by Dampier's men to facilitate loading and unloading when the *Roebuck* came into port. Tradition says that, somewhere in the sand adjacent to the causeway, the buccaneer buried treasure, but so far the secret of the covered-up hoard, if there be any, has not been solved.

Sufficient evidence has been discovered during recent years to prove that proas for a long period, probably centuries, paid annual visits to the nor'-west coast. No doubt gold, pearls and luscious trepang proved specially attractive to them, and during these early voyages the Malays must have removed from our northern coast millions of pounds' worth of spoil in the shape of trepang, pearls, gold, tortoise-shell, sandalwood, and other timber.

It is also known that a fusion of Malay blood had been made with the aborigines, for amongst the latter have been found many light, yellow-skinned, sturdy-limbed, big-bodied natives, with a better facial angle, and features of a softer, more intelligent cast. These always displayed a

braver front than their darker-skinned fellows, and in battle forays a light-skinned native was almost invariably chosen as leader amongst them.

A fleet of Malay proas was discovered on February 17, 1803, in the Malay Road, south of the Cotton Islands, by Captain Matthew Flinders. The chief of the proas, who was named Pobassoo, informed Flinders that there were then upon the coast in different divisions, sixty proas. Their object was to get trepang. Pobassoo had made seven voyages to the nor'-west coast within the preceding twenty years, and he related that the Malays had long been accustomed to fish for trepang among the islands in the vicinity of Java, but in by-gone years one of the proas was driven by a monsoon to the northern coast of Australia, and, finding trepang abundant they had continued to fish there since that time.

The Malays undoubtedly secured the best hauls of pearls on the coast. Thirty years back the master of a proa called the *Lakara* showed a visitor from Port Darwin six pickle bottles full of pearls. He also stated that during the previous season a proa had taken away thirty-six bottles of pearls, but no doubt a great number of these were inferior. The aborigines collected the pearls during the absence of the Malays, for whom they saved them, and received in exchange grog and tobacco. The liquor the Malays supplied to the natives was awful stuff, and the drinking of it led to many tragedies.

In the past the crews of these proas met with some awful calamities. On one occasion a proa was found drifting with thirteen corpses, all far advanced in decay, lying on the deck. The cause of this disaster was a mystery. Many crews of the proas have also been massacred by the aborigines. Some years back the crew of the *Erang Polia* was attacked, but the Malay captain kept the natives at bay with an old carbine, and the proa eventually reached Port Darwin after terrible hard-

ships. On another occasion the members of a wrecked proa's crew defended themselves for several days against the aborigines, and eventually escaped with the loss of several of their men. Scores of proas have been wrecked between Broome and Port Darwin, and the crews massacred.

Many relics which were once the property of early navigators and adventurers who visited our northern coast have been found from time to time, but, it is to be regretted that few of them have found their way into our museums. Several years back, Peter Erickson, an old Port Darwin resident, discovered an ancient cannon at Cape Bougainville. As this was a notorious place for fierce blacks, it is surmised that the weapon was mounted here for the protection of ships while they were watering. Johnson, a Norwegian, at Port Darwin, found on Bathurst Island a tomahawk roughly made from a piece of iron, and which resembled the stone axes of the dim past. The aborigine who owned the relic stated that there was a tradition amongst his tribe that, long before the arrival of white settlers in the Territory, a sailing vessel was wrecked on Melville Island, and the crew were massacred by the blacks. The tomahawk, which came from the wreck, had been treasured by the tribe since the disaster. Another remarkable discovery, little known at the time, was made in 1914 near Broome. A lugger in search of mangrove wood for smoking trepang, anchored off the coast, and landed a party. The master of the lugger came upon a small cave, some distance inland, and by matchlight he found on the rocky floor an ancient, rusty sword, a brass belt-buckle, two shoe-buckles, and several buttons and coins. Stuck in a crevice was a rusted knife, and beside it was carved the letters "PER." Other letters had been obliterated by time. Evidently some old-time sailor had died there, and he may have been one of Dampier's men who was marooned.

Curiously enough, in none of Dampier's chronicles is there any mention of pearls, but the industry at Broome seeps with romance and tragedy. It was here that the famous "Southern Cross" pearl was found. This extraordinary pearl, or rather cluster of pearls, is probably the most remarkable of its kind that Nature has ever produced. So far as it is

known it occupies an absolutely unique position in the history of pearls. It contains a group of nine pearls, naturally grown together in so regular a manner as to form an almost perfect Latin cross. Seven pearls compose the shaft, which measures one inch and a half in length, while the two arms of the cross are formed of one pearl on each side, almost opposite to the second pearl, reckoning from the top downwards. The component pearls are of fine orient, and would be of good shape were it not that by natural compression during growth they have become slightly flattened on their opposite sides, while some of them, though round in front, are distorted into deep shapes at the back. This pearl was discovered by a man named Clark who, with his son, was pearling in the lugger *Ethel*. The owner of the craft was called "Shiner" Kelly. When the opened shell disclosed the remarkable pearl cross all the crew were filled with amazement and awe. Kelly, who regarded it as a Heaven-wrought miracle, with a certain amount of superstitious dread buried the pearls, for how long it is not known. The cross was discovered in 1874, and in 1876 was exhibited at the Colonial and Indian Exhibition, where it attracted much attention, set in a simple gold mount, which left both the back and front of the pearl perfectly free. At first sight it may be supposed that the pearls had been artificially joined together, but a number of scientists and experts were allowed to examine the cross closely with powerful magnifying glasses and a brilliant light. The cross, however, came out of the ordeal without a shadow of suspicion, and was pronounced to be a lustra natural of unique character.

Broome waters have given up many other remarkable pearls, and there is the story of one found in 1916 in shallow depths by a black diver which brought the phenomenal sum of £16,000. Then there was the well-known "Eacott" pearl. There has been some dispute as to the actual discoverer of this gem, but the man who owned the lugger, and consequently whose property it became, was a pearler named Joe Eacott, and the gem was named after him. Eacott sold it for £10,000, and promptly invested the proceeds in Frazier Downs Station (W.A.), which he owns at the present time.

Weird tales are current in Broome of pearls of wonderful lustre sold by night in

lay-up time, and one of the most sordid took place in 1907. In that year a Jewish buyer named Leibgild was lured out one night by three Malays with the promise of a pearl for sale. He carried £300 in his clothes to make the purchase: was stabbed, robbed, and thrown into the creek. The Malays were quickly captured and hanged in Fremantle, and to add to the original story the decoy was not a pearl, but merely

a glass marble from the neck of a lemonade bottle.

Many ancient wrecks lie in shallow water near Broome, and the earliest one recorded occurred near Roebuck Bay. This was a Dutch ship called the *Golden Drake*, which struck a rock in 1656. Over one hundred persons were drowned, and an immense quantity of specie was lost.

AMERICAN AIRSHIP PLANS

NOT DELAYED BY Z.R.2 ACCIDENT

Preparations for the establishment of an airship transportation service between New York and San Francisco, to be in daily operation by 1923, will go ahead, notwithstanding the destruction of the *Z.R.2*, otherwise known as the *R.38*.

This is the statement made at the offices of the Manufacturers' Aircraft Association, 501 Fifth Avenue, by Fred S. Hardesty and Edward Schildhauer, engineers representing a group of capitalists in New York, Chicago, San Francisco and other large cities.

Mr. Schildhauer, who had charge of all the electrical and mechanical development of the Panama Canal, returned recently from a tour of investigation through England, France and Germany, in company with Benedict Crowell, formerly Assistant Secretary of War, and one of the supporters of the American airship project.

An investigation into the feasibility of airship transportation was begun in 1919 by Mr. Hardesty and Mr. Schildhauer and had been practically completed in many of its important phases shortly before the *Z.R.2* accident. The project is one of great magnitude, involving an initial capital of 50,000,000 dollars, and embracing the construction in this country of gigantic airships 30 per cent. larger than the *Z.R.2*. These airships will have a passenger capacity of two hundred or more, in addition to the crew and fifty thousand pounds of freight. They will make the New York-Chicago run in ten hours and the coast to coast flight in less than thirty-six. Subject to further scientific inquiry

which is growing out of the destruction of the *Z.R.2*, construction of these ships will be of German duralumin, although fabrication will be carried out in this country. The sustaining power will be hydrogen, if helium is unobtainable at that time, but the investigating engineers are certain of the safety of hydrogen when properly contained; this conviction being based on the actual record of operation in Germany and elsewhere.

"The destruction of the *Z.R.2* will not materially delay the development of airship transportation, either in this country or abroad," stated one of the engineers. "The investigations which we made in England, France and Germany have proved to our satisfaction, and to the satisfaction of the capitalists whom we represent, that airship travel is not only practicable, but that as world transportation advances, it is inevitable.

"Contrary to popular conception, the record of airship development has not been a series of disasters. This is proven by figures which we obtained abroad and which we believe to be absolutely accurate.

"The people of the United States should support and not criticise the Navy Department. If capital has enough vision to prepare for an airship service at an outlay of millions of dollars, the public should have enough faith to sustain our national defence. What America must do is to become self-sufficient in the air—design, construction and operation. The relation of the commercial airship to national defence is intimate. Their development should go ahead hand in hand."

A SENTINEL ON THE COAST

HISTORIC LIGHTHOUSE AT BARRENJOEY

By M.D.



A view of Barrenjoey Lighthouse. The station is nineteen miles north of Sydney, and was erected forty years ago.

THERE are few sea voyagers along the Australian coast who have not at some time or other leaned over the vessel's rail at night and watched with mingled feelings of loneliness and security the twinkle of a red light that seemed to rest on the surface of the dancing waves a few miles off. Experienced sea travellers do not need to be told that what they have gazed at was the glow of a beacon light in one of the many lighthouses which are situated at fairly frequent intervals along the coast.

On a still evening, when the ocean is at rest, passing vessels may do no more than note the light, or perhaps flash a simple message across; but at other times, when the wind has lashed the surface of the water into angry waves, and the captain decides to run for shelter, or alternately keep his vessel away from some particularly dangerous spot, the gleaming light is the guide by which he shapes his course. It is impossible to estimate the splendid service which the sentinel stations on our coast are rendering year in and year out in

safeguarding the lives of the countless thousands who "go down to the sea in ships." With flag and telescope by day and Morse lamp by night, the lightkeeper maintains his ceaseless vigil, ever ready to transmit the warning message or the call for assistance when danger threatens those who, in voyaging over the ocean, come within the radius of his vision or light.

It is many years since the need for lighthouses at various points along the coast made itself felt, and the Barrenjoey Lighthouse on the New South Wales coast, with which this article deals, was first talked of in 1868. The Government of the day was urged to erect a lighthouse there as a guide to the safe and easily accessible waters of Broken Bay. A wooden structure at a cost (including lanterns) of £300 was first built, but Captain Hixson, R.N., who at the time was Superintendent of Harbours, Lighthouses and pilots, was determined not to rest content until a substantial stone tower was erected on the headland which rises to a height of over three hundred feet

on the southern side of Broken Bay. A few years later (in 1879) the tender of Mr. Isaac Banks was accepted, the price being £13,695, for erecting the stone structure which, after forty years' service, is still as well preserved as the day it was built. The lantern and lenses were imported from England at a cost of £2,210, and on April 15, 1880, a party consisting of members of Parliament, Government Officials and pressmen journeyed by coach to Newport and thence by launch to Barrenjoey to attend the ceremony of laying the foundation stone. It was a red-letter day in the history of the district, and the flagstaff on the hill was gaily decorated with bunting, the motto, "Advance Australia," standing out conspicuously.

The ladies of the party gazed with feelings of dismay at the bold rocky eminence which stood facing them at a little distance from the landing point, and which it was necessary to scale in order to reach the point where the ceremony was to take place. The foresight and ingenuity of the contractor had, however, early solved the problem of transporting materials to the summit of the headland. A wooden tram-line over 1,000 feet in length had been constructed, and on the trolley drawn by two horses all materials excepting the stone, which was quarried on the spot, were conveyed to the top.

By this means a seemingly impossible task was rendered quite simple, and once on top the visitors were spell-bound at the glorious view spread before them. Away to the north, the northern headland of Broken Bay stood out prominently, and from thence in a semi-circle stretched the rugged coastline intersected with bays and beaches down past the Hawkesbury River entrance to the beautiful reaches of Pittwater. At the mouth of the entrance to Broken Bay, Lion Island stands like a grim sentinel guarding the placid waters which lay behind it.

Upon Miss Rosa Barnett, daughter of the Colonial Secretary, devolved the honour of laying the corner stone of the lighthouse, and it is worth recalling the words of Mr. Greville, M.L.A., when handing her the trowel and mallet with which to perform the ceremony.

"Upon this spot," he said, "will arise a noble beacon, the silent sentinel of the storm-tossed mariner, the shining monitor warning those who

brave the perils of the mighty deep to shun the dangers of these callous rocks. It will be a light towards which those at sea will look and long—to them it will be the star of hope shining through the mists of storm and stress, beckoning them to the sheltered harbour which lies behind."

How true these words have proved, is known only to the masters of the countless vessels, which, guided by the friendly light, have sought shelter there from storms during the past forty years.

To-day, the locality around Barrenjoey is well known, and Palm Beach, which adjoins the headland where the lighthouse stands, is one of the most popular tourist resorts in New South Wales. The eighteen miles of road between Manly and Barrenjoey is traversed by thousands of motor cars each year, and the lighthouse itself is an object of interest to hundreds of visitors annually. Constant use has made the road leading to the summit comparatively easy to traverse.

The lighthouse stands thirty-eight feet high, and is three hundred and thirty-eight feet above sea level. Access to the tower is by an iron spiral stairway. The light is of three hundred candle power, fixed type, and burns approximately four gallons of kerosene each night. It is fitted with dioptric lenses which are so arranged as to concentrate the rays of light, and thus render it visible at a distance of twenty miles on a clear night. An observation platform extends around the outside of the tower and to appreciate the fury of the wind in such exposed localities one has only to experience the force of a moderate breeze from this platform to realise how stout a structure must be to stand before a full gale.

The keepers' quarters are situated lower down the hill to the south-west of the tower. At one time the station boasted three attendants, but of late years the number has been reduced to two, which means a stretch of twelve hours on duty for each man. The population is usually about sixteen, and in some respects they are more isolated than those living four or five hundred miles from the metropolis. Visitors are, as mentioned, fairly frequent, but newspapers are received at irregular intervals, and then only when they are about four days old. The station is connected with Sydney by telephone, but the ordinary movements of ships, though ob-

served, are not reported. It is only in the event of assistance being required, or when vessels are observed sheltering in Broken Bay that information is required to be furnished. At other times the light enables passing vessels to pick up their bearings, and all mariners know that on the northern side of it lies a haven of refuge which can be entered in any weather.

An object which cannot fail to attract the visitor's attention is a little white-walled grave facing the ocean on the eastern side of the lighthouse. One is instinctively drawn thither, and on reading the inscription on the tombstone learns that there lies the remains of the first light-keeper, George Mulhall, whose body was found, burnt almost to a cinder by a flash

of lightning, some distance away from the tower. This was in 1885, four years after the lighthouse was opened. Mulhall's wife died about six months later, and her remains were laid to rest alongside those of her husband. One would have thought that, living in the solitude and isolation of such a spot, far removed from the risks incidental to the bustling world outside, the sands of life might have been allowed to run quietly and peacefully out. But it was willed otherwise, and at the age of 71 the old lightkeeper was called suddenly to a higher and brighter sphere of existence from where, in spirit, he can still watch with ever sleepless eyes the beam of light which never fails, as darkness spreads over the ocean, to send forth its unspoken message to the ships at sea.

ITEMS OF INTEREST

NAVAL EXAMINATION RESULTS.

The Minister for the Navy announces that recent Admiralty Fleet Orders have promulgated the results obtained by R.N. and R.A.N. junior officers at an examination in engineering subjects, held in the Royal Navy Schools in April, 1921.

The following R.A.N. officers sat for the examination; the positions attained by them on the complete list of seventeen candidates, and the classes of certificate awarded, are as shown:

Name.	Rank.	Position on List.	Class of Certificate Awarded.
Donald J. H. Clarke	Lieut.	1	I.
Vincent E. Kennedy	"	2	I.
Fredk. C. Hodgson	"	3	I.
Henry S. Chesterman	"	6	II.
Richard M. Rowlands	"	7	II.
Joseph E. Hewitt ..	"	11	III.
Geoffrey A. Hall ..	"	12	III.
Roy R. Dowling	"	14	III.
Alfred S. Rosenthal ..	"	15	III.
Francis T. Rorke ..	"	16	III.

It will be seen that the first three places were filled by R.A.N. officers. These officers were the only candidates from both R.N. and R.A.N. to obtain first-class certificates.

IMPORTANT WIRELESS DISCOVERY

Senatore Marconi, upon his return to London recently, announced that he had been testing a new method of wireless reception, developed by one of the Company's engineers, which has enabled him to receive continuously from the United States without being in any way interfered with by atmospheric disturbances which are particularly prevalent at this time of the year, and more severe than usual in recent weeks in consequence of the abnormal spell of hot weather.

Senatore Marconi regards this advance as of the greatest importance, for it enables a wireless telegraph service to be conducted notwithstanding atmospheric disturbances during the whole twenty-four hours, and at high speed during the greater part of the time.

It would be difficult to exaggerate the practical value in commercial long-distance wireless telegraphy of this latest achievement.

CRUISE OF THE "QUEST"

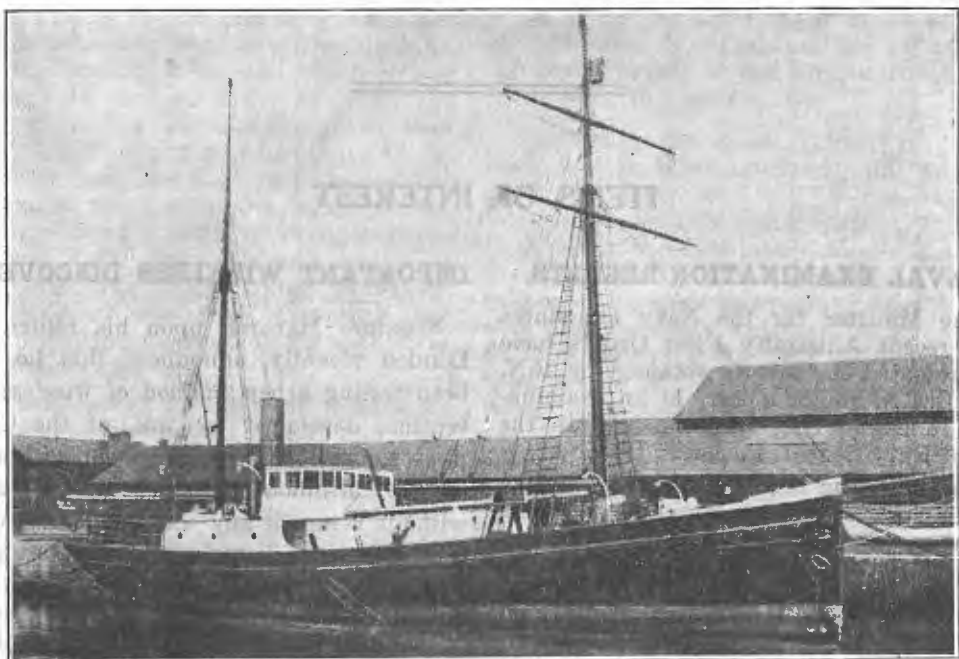
SHACKLETON'S ANTARCTIC EXPEDITION

SIR ERNEST SHACKLETON, the famous explorer, left England a few weeks ago on the auxiliary schooner *Quest* on a voyage of discovery to the Antarctic regions.

The vessel is singularly well equipped for the important but hazardous mission on which she is engaged. She carries a *Baby Avro* seaplane, the wings and engine

who has had considerable experience in flying in cold climates, such as North Russia and the Baltic, will pilot the seaplane.

Sir Ernest Shackleton's last expedition lasted well into 1917. The war was then at its height and on their return the members of the party threw their whole energy into the scale on the side of the Allies.



The "Quest."

The tiny vessel on which Sir Ernest Shackleton is exploring the Arctic regions. The above illustration shows the equipment and supplies being taken on board at the pier at Southampton.

of which are stored in the forward hold, and is fitted with a long range wireless installation. The seaplane is intended primarily for photographic survey work, and for this purpose carries a cinematograph machine and special aerial cameras. These will be attended to by Captain Wilkins, M.C., who has already taken part in several Arctic expeditions. Major C. R. Carr, D.F.C.,

Scarcely was peace accomplished when Sir Ernest set about organising another expedition, and on this occasion he and the adventurous spirits who accompany him are setting out better equipped than ever before to accomplish their purpose.

One of the earliest calls which the party will make will be at Tristan d'Acunha and its nearest neighbour (two hundred and

eighty miles distant), Gough Island. These small volcanic islets are of particular interest to geographers and geologists by reason of the fact that the submarine ridges from which they rise abruptly, have an effect on ocean circulation; and also because of the part which they have played, or may play, in world climatic variation, and the migration of species of animals and plants. Another striking point about Tristan d'Acunha is that it is one of the

a much bigger expedition than the one now being undertaken.

On the homeward journey it is proposed to further explore and chart the Sandwich Group, South Georgia, Lindsay and Bouvet and Heard Islands. This is an undertaking of great magnitude, particularly when it is remembered that these islands lie in what have been aptly described as the stormiest seas in the world.



The "Baby Avro" seaplane on a final test flight near Southampton (England) before being dismantled for storage in the "Quest."

most isolated spots in the world. The visit of a ship like the *Quest* will be an event in the lives of the handful of settlers who eke out a scanty existence by means of their flocks of cattle, sheep and geese, and their crops of potatoes. From Capetown the real interest in the expedition, from the explorer's point of view, will begin. South of South Africa lie some thousands of miles of unexplored coast, the successful charting of which would in itself be a task of sufficient magnitude to engage

Bouvet Island and its neighbour have a particularly interesting history. They were discovered, lost, re-discovered and again lost. A landing was afterwards made upon them, but they were not charted, and it is probably because of this that their existence was doubted by such great navigators as James Cook and James Ross. It will be realised, therefore, that in planning to explore and chart these islands the party on the *Quest* is undertaking a project of considerable importance.

A line of argument should be the shortest distance between two points—the point of contact and the point of contract.

It is only the ignorant man who talks interminably, and he does so to cover up his ignorance.

THE BURNING OF THE "LIGHTNING"

AN OLD-TIME INCIDENT RECALLED

By W. G. KENDALL

FOR some days the Black Ball liner *Lightning* had been loading her cargo of wool at the west side of the Yarra Street pier, and her fine lines and excellent sailing qualities had been attracting the attention and calling forth the admiration of the frequenters of the Geelong waterfront. Little did those who viewed this fine product of naval architecture guess that soon she would be adding to the maritime history of the port. The work of loading her was completed on Friday afternoon, October 29, 1869, and arrangements had been made for her departure early in the following week. However, old Fate again took a hand in the arrangements.

Shortly after two o'clock on Saturday morning, October 30, 1869, the sleeping town was disturbed by the clanging of the fire bells. It was not long before the fire brigades answered the call, but on arriving at the end of the wharf very little flame was visible. Once alongside the ship, however, the flames could be seen bursting out of the fore hatch. In five minutes the firemen were pouring streams of water into the hold, but had they been pouring in a hundred streams, the result would still have been negligible. As the flames became fiercer it was decided to haul the vessel out into deeper water so as to prevent the wharf and neighbouring vessels from being damaged, and an attempt was then made to scuttle her. This scheme, however, failed, and the blazing vessel lit up the surrounding sea. By this time the heat had become almost unbearable, the flames working their way aft with a fierceness that baffles description. The tug *Resolute*, which was in the bay waiting to tow another ship to sea, now towed a barge

alongside, and the work of transferring the wool was commenced. Plenty of willing helpers were found for this work, and the men vied with each other in their efforts to save as much of the cargo as possible. In all, about four hundred to five hundred bales of wool were salvaged. The lanyards of the foremast were then cut away, as it was expected every moment to go by the board. Such however was not the case, for it stood the heat for over an hour, and then melting, it gave a spasmodic sort of twist, the upper portion coming down with a crash over the side of the vessel and sending up a column of sparks like so many fireworks. However, the iron mass did not break, the lower part apparently stood in its socket and bending about five or six feet above the main deck remained in that position throughout the brilliant scene. In its fall the fore topmast brought down a lot of top hamper of the other masts with it, and several of those on deck had a narrow escape from serious injury and death. Owing to the increasing danger, everybody was then ordered to leave the doomed vessel.

At a quarter to eleven on the Sunday morning there was a cry of "There she goes!" The mizzen mast could stand no longer, and giving a sudden lurch it came down, bringing with it all that remained of the mainmast. At eleven o'clock another crash was caused by a large piece of the bulwarks falling over the side. It was now observed that, as the cargo was being consumed, the forepart of the ship rose out of the water so that the scuttle holes cut from the starboard counter to the main rigging instead of being under water were about two or three feet above.

A message was sent calling out the ar-

tillery with a view to sinking the hull by gun-fire. Whilst the gun was being placed in position the tug *Resolute* made an effort to cut down the burning vessel, but without avail, the hull not having burnt thin enough. All it did was to make three or four large holes about six feet above the waterline, which of course had no effect on the *Lightning*, which was now ablaze from stem to stern. At 12.30 a cannon boomed out, and a thirty-two-pound ball crashed against the hull amidships just above the water line. The firing was continued for some hours and another gun was brought to the assistance of the first one. The only effect these guns had was to put a number of holes in the hull, but not to sink it. At 4 p.m. a number of ships' carpenters went out to the hulk and cut her down to the water's edge, but as the fire burnt so the hulk rose that even these efforts proved futile, for a time at any rate. Shortly afterwards the vessel's figurehead "Pluto," which had so proudly held its position throughout the conflagration, fell into the water. At 6.30 p.m. the scuttlers were rewarded, as it could be seen

that the hulk was sinking, and within five minutes the water commenced rushing through the holes in the side of the doomed vessel and she settled down in twenty-seven feet of water. Soon there was nothing left to show that the *Lightning* had existed except a few burning beams jutting above the placid waters of Corio Bay. Thus ended the career of one of the clipper ships which had done much for the trade between Australia and London.

At the time she caught fire the *Lightning* had on board four thousand six hundred bales of wool, two hundred tons of copper, a quantity of tallow and thirty-five casks of colonial wine. She was in charge of Captain Jones and was owned by Mr. Harrison, of Liverpool. The total loss was estimated at £70,000. It is generally believed that the fire was caused by spontaneous combustion, although other theories were also advanced. The *Lightning* was built in 1854 by Donald McKay, of Boston, and had many fast passages to her credit. She was a regular trader between Australia and London, being one of the well-known wool-clippers.

RADIO DIRECTION FINDER

One of the most ingenious of devices in the department of radio-telegraphy is the "Radio Direction Finder," an electrical apparatus which enables its operator to discover the direction from which a radio signal emanates. The finder has been in use in the American Navy for over a year, and is found to work with perfect precision. The process is as follows: A ship, 100 miles off the port of New York, is doubtful of its position. From its radio it sends out the question, "What is my true bearing?" The question is received by five radio compass stations at widely different points. As they have receivers only, and not transmitters, the stations cannot communicate with the ship; but all forward the message to the central control office in the heart of the city of New York. The central office immediately radios to the ship to continue sending the call for thirty seconds. During this interval the operators in the five stations turn their com-

pass coils until each has an accurate bearing on the ship. The five readings are transmitted to the central office, where, on a large chart, they are combined. The point where the five lines of bearing intersect is the precise location of the ship. The central office conveys the information to the inquiring navigator; acknowledgment from the ship completes the operation.

Quite recently a ship made a voyage along the American coast from Boston to Charleston, her course being planned by other navigational means than the radio compass. But during the trip the ship was located by the compass bearings from various stations, and at the conclusion it was found that the two tracks practically coincided. The distance at which bearings are accurate within half a degree is still limited to 100 miles, but with the improvements constantly being made it is expected the distance will soon be doubled without the accuracy being diminished.

A PICTURESQUE WATERFALL ON THE BLUE MOUNTAINS (N.S.W.)



Few spots throughout Australia are as popular from a tourist point of view as the Blue Mountains of New South Wales. The town of Katoomba, which is sixty-eight miles from Sydney, boasts a population of over six thousand, and is really the capital of the Blue Mountains. Its well-deserved popularity springs from the variety of beautiful scenery, picturesque walks and health-giving atmosphere with which the name "Katoomba" has always been associated. The town itself is built on modern lines, and as a business centre is exceedingly progressive. The people are keenly alive to the wide popularity which their town enjoys and lose no opportunity of initiating movements to make it still more widely known. The famous Jenolan Caves lie within fifty miles of Katoomba, and many thousands of tourists journey thither each year. The run by motor from Katoomba is delightful, and by leaving at 6.30 a.m. it is possible to make two inspections and arrive back in Katoomba about 7 p.m.

EXPLORING BY AIR

A PEN PICTURE OF NORTH-WEST QUEENSLAND

By HUDSON FYSH

THE second aerial exploration trip into the Northern Territory was carried out by the writer, with Mr. H. Avery as mechanic, the route being from Longreach, down the Thomson River to Windorah, on Cooper's Creek, across to Adavale, and then down the Bulloo River to Quilpie and Thargomindah. Hungerford, on the Queensland and New South Wales border, was then visited, and later the explorers touched at Eulo, Cunnamulla, Wyandra, Charleville, Augathella, Tambo and thence back to Longreach. The whole of the western part of the trip was undertaken in the "back-country," away from communication as far as railroads are concerned, and where the coach still forms the means of communication between the different towns.

None of the towns mentioned had ever been visited by an aeroplane before, and the enthusiasm and interest displayed by the residents was naturally great. Innumerable questions had to be answered as the strange-looking machine stood on the various landing grounds. "What makes it fly?" "What makes the wheels go round?" "Are they solid?" "What happens if the propeller comes off?" "Which is the front?" "Do the wings flap like a bird?" "What happens if the engine stops?" are a few samples. It was the same at other towns a year ago, but people are becoming more educated now in regard to aircraft, and probably have more faith in the reliability of the machines.

The chief trouble with the aeroplane as far as the commercial aspect is concerned, is its newness. A strange mechanical contrivance which is but little understood and which operates in an entirely new element—the air, is the reason of this. At first glance it is admittedly difficult to believe that such a frail-looking object as the or-

dinary 'plane is capable of travelling through the air at a speed greater than an express train under conditions of safety to its occupants. When a person who does not know (and there are many) is told that an aeroplane will right itself from any known position without help from the pilot at a sufficient height, and that every turn and manœuvre is done against the natural inclination of a stable machine, they are surprised, and yet another surprise is in store when they are told that all is not lost when the engine stops. The pilot then, of course, explains that every time he wishes to land he has to stop the engine and plane down to earth.

To return to the trip. On April 12 the B.E. machine left Longreach at 9.5 a.m. and arrived at Stonehenge, one hundred miles down the Thomson River, at 10.10 a.m. It was a fast run with a good following wind.

All the western rivers, the Georgina, Thomson, Barcoo and Cooper's Creek run towards the centre of Australia and eventually fall into Lake Eyre. The landing ground at Stonehenge was a good one, suitable for all weathers, but rather stony. Passengers were carried, and the machine pushed on to Jundah, forty miles farther down the river. Slight trouble was experienced on the run through the overheating of the engine. Supplies of petrol and oil are very scarce in the "out-back" towns and some "A" oil had to be used in the engine, which naturally made a few objections.

Jundah is a typical western town, and boasts two hotels, one, the "Club," and the other somewhat sarcastically (or is it optimistically) called the "Railway." The nearest railhead is at Yaraka, seventy miles away and as yet there is no sign of

any further advancement. The "Club," a low-doored, mud-built place, is the leading hotel. The low roof and wide-arched entrance to the bar almost give a suggestion of Egyptian architecture in the native quarters. The gaudy racing prints of the early Victorian period, which grace the walls of the parlour, immediately brand the place as a back-country hotel. Horehound and lemonade were ordered, but the latter only was available. We were told, however, that horehound was obtainable across the road at the "Railway." When we arrived there they had no lemonade. Several huge cockroaches were playing havoc round the corks of the rum and porter bottles, but these free drinkers are speedily whisked off on to the counter or floor, and the bottles opened for the benefit of a real customer. Dog-fights are numerous and form a little light amusement for the crowd when things are dull. The dogs are plentiful enough and fight well; but they are nothing to some of the human beings after they consume the bush "tanglefoot." At a race meeting some months ago an encounter was witnessed in which one of the contestants had his teeth firmly embedded in his opponent's ear, while a third party, brandishing a knife, was perched on top, loudly calling on him to let go or the knife would be used.

Cooper's Creek.

There was an oil shortage at Jundah when we arrived, but Mr. Avery got busy and dug up some oils of doubtful brand and strength, out of which he produced something very close to *B.B.* and on which the engine ran quite satisfactorily.

On a beautiful clear morning Jundah was left behind and the machine sailed along at a height of three thousand feet, down the Thomson River. In fifteen minutes the junction of the Barcoo River was passed, and we were above Cooper's Creek. It is a case of two rivers forming a creek—which is probably unique.

The creek had a good main channel, which every few miles divided up into minor water-courses and rivulets. Fine belts of trees grow along the banks—if such a term can be applied to any timber in Central Australia—while away to the east stretch extensive flats bordering on rough, hilly and rather uninviting-looking country, well timbered, but with few landing

grounds in sight. To the west, stretched the beautiful rolling downs, intersected only by small timber belts, with here and there a well filled water-hole, or lagoon. At one point the creek sharply defines and forms a boundary between the black soil Downs country and the red soil of the so-called desert country, over which the remainder of our trip southward lay.

At length the white roofs of Windorah are seen grouped on a red sandy rise in the distance. The town is situated high above the flood level, a wise precaution, as a vast volume of water comes down the creek in flood time, carrying all before it. Nearing the town, a wide expanse of flats meets the eye. Here the creek opens out into two main channels with scores of smaller watercourses which become intermingled and are finally lost in the huge area of perfectly flat delta-like country. At flood time the creek is thirty miles wide as the water slowly wends its way towards its ultimate destination, Lake Eyre.

At the time of our visit the recent flood waters had receded, leaving innumerable water channels running through an area of the greenest green. It was a picture rather of the Nile delta than of Central Australia. At Windorah we were only one hundred miles from the South Australian border and two hundred and eighty miles from Lake Eyre.

We arrived at the township in time for three days' racing, and the interest fluctuated between trying to back winners and seeing Cooper's Creek from the air. Twenty-two availed themselves of a flight in the evening when the rays of the setting sun cast long shadows on the still surface of the water.

At Jundah we had been warned of the Windorah mosquitoes, which we were told were of a very large and most ferocious character. Unhappily no notice was taken of the advice to secure nets, and in consequence we suffered. The aerial pests certainly lived up to their reputation. The worst job was putting petrol into the machine. As soon as both hands were engaged, came the signal for a general attack. However the problem was solved by one putting the petrol in while the other kept the mosquitoes at bay. Passengers waiting for flights had to take refuge on the lee side of a good smoke fire, which was kept going for the purpose. It seemed to us rather a queer sort of waiting room, but

the Windorahites seemed to almost live in smoke while the pests abound.

On our return to the town after the day's flying was finished, we were surprised to find volumes of smoke issuing from several doors of the hotel. Thick clouds of it hung in the rooms and brought tears to the eyes. Nevertheless the mosquitoes were absent; so the inconvenience was justified.

Across the Bulloo River.

Adavale, one hundred and thirty miles to the west, was our next objective. The machine rose well in the crisp morning air and the altimeter soon showed two thousand feet. In a short space of time Windorah was only a speck in the distance, and it must be confessed we were not sorry to leave behind the mosquitoes and other discomforts of "an out-back town in race time." As we rose higher the green expanse of the Cooper's "delta," with its gleaming water channels, could be traced southward till it became lost on the horizon. What thoughts one conjured up when flying in this "way-back," isolated region! It was only three hours' flying down the creek to the spot where Bourke and Wills sat and looked for the relief that never came. Then came the thought—what of the future of these vast areas which still fling defiance in the face of the settler? At one visit you may see a paradise of green verdure, wild flowers, running water and fat stock, while later on all may be barren and desolate. King Drought rules with an iron hand. The luxuriant grass and beautiful streams no longer exist, while even the long scrub has been cut to prolong the lives of the starving stock. This is a scene of desolation and a happy hunting ground for the dingo and crow. Happily, however, the latter picture is seldom seen.

To the aviator flying over unknown country there is, however, more serious business than attempting to peer into the future, and the problem of finding forced landing grounds soon engages attention. On every side stretches an unbroken view of red soil country clothed with stunted trees, but more heavily timbered along the banks of the several running streams over which we passed.

At length the Grey Range, a long, low line of hills stretching from north to south as far as the eye can see, is crossed, and

we are over the Great Divide, a watershed which marks the eastern edge of the Great Central Basin. Soon we are passing over rivers which do not run backwards, but ultimately find their way to the sea.

The Bulloo River, on which Adavale is situated, evidently belongs to neither system, as it follows the Grey Range southwards till it finally becomes swallowed up in the marshy lakes of the same name.

At last Adavale comes into sight, and soon we are circling over the town looking for a landing place. No smoke-fire is observed, but the wind direction is quickly picked up by the steam which is seen rising from the town's hot-water bore. Aided by this we descend to earth, close to the crowd of people who have come along to welcome the first aeroplane to visit the town. The run across from Windorah occupied two hours fifteen minutes.

Two days were spent in Adavale, during which time a large number of the inhabitants were taken up "amongst the clouds." We then visited Milo station where a hearty welcome awaited us. The homestead is one of the finest in Queensland and to the traveller is as welcome as an oasis in a desert.

We next turned our faces southward again, and ran down the Bulloo River for sixty miles till Quilpie was reached, which is the western terminus of the Southern Queensland railway system. The trip occupied one hour fifteen minutes, during which some extremely bumpy weather was experienced. Contrary to our usual practice, a late start was made, and when we attempted to take off over Adavale bore drain with its rising steam, it was quite a task to drag the machine off over the low bordering fence. The air had absolutely no "sting" in it, and this continued depression allowed the machine to barely climb with the throttle almost wide open. Then in a second we were in the first upward current. At first we were only half in it and over went the old machine on one wing tip, but by using the opposite controls hard we were soon fairly on the lift. From two hundred to one thousand one hundred feet we went on an even keel, before the inevitable "big bump" came again and we were once more deposited in "sloppy air." Fully two hundred feet was lost nosing about before we ran into another current which lifted us up into cooler air at one thousand six hundred

feet. From thence onwards it was only a matter of "taking the lift" till three thousand feet was reached.

Masses of white, feathery clouds were close above us, their outskirts curling and eddying as they scurried on their way. Pushing up a little higher, we became acutely aware of their presence in the form of "bumps," which are of quite a different air phenomenon to the "currents" we had just come through. Knowing from experience what these clouds were like on a little closer acquaintance, it was decided to bring the machine down a little. Earlier in the tour we had sworn not to do any flying in the middle of the day, when rough air is met with, and this promise was repeated again as we "wobbled" and "bumped" our way toward Quilpie. Later appeared in large print on our flight announcements, "No flying between 11 a.m. and 3.30 p.m."

Quite a long article could be written on

air pockets, currents, bumps, etc., the study of which is still in its infancy. Amongst the many causes to which "rough air" is attributed, is the presence of mountains, rivers, and the proximity of storms. There is no doubt that these play their part, but out in the west, where one may cross little more than a low hill in a run of several hundred miles, and large rivers are few and far between, a totally different set of causes has to be looked for, and one can only surmise that it is the hot air rising in the middle of the day which results in most of the disturbances, as flying is always perfect at sunrise and sunset. The best flying days are when rain is about, and immediately after rain has fallen, also in the cooler winter weather. The air disturbances often go up as high as five thousand feet and of course all that is needed to get better air is the engine power to reach the calmer atmosphere above.

KIAMA, N.S.W.



Kiama is fast achieving popularity as a holiday resort. The town offers a variety of scenery and splendid tourist accommodation. The famous "Blow Hole" is on the promontory below the lighthouse.

WIRELESS COMMUNICATION

WORLD-WIDE SERVICE FOR AUSTRALIA

Mr. E. T. Fisk, managing director of Amalgamated Wireless (Australasia) Limited, returned to Australia on the R.M.S. *Narkunda* last month from a business trip to England and the Continent. Interviewed by a special representative of *Sea, Land and Air*, Mr. Fisk furnished some very interesting and important particulars of the proposed direct wireless service between Australia and Great Britain, which we publish hereunder.

As a result of my visit to England we are now fully prepared for the establishment of a modern wireless service between Australia and England, said Mr. Fisk, giving direct communication between the two countries and equipping the capital cities in each State so that they will be able to take equal advantage of a cheap and rapid service.

These arrangements include the erection of a corresponding station in England, and, in order to provide for the growing traffic between Australia and North America, I have also made arrangements for a station to be established in Western Canada, so arranged as to afford facilities for distributing Australasian traffic through North America, and of course capable of direct communication with the high-power station in Australia.

Lower Rates.

I have also made arrangements, he continued, which will permit us to send and receive all classes of commercial, social and press messages between Australia and the United Kingdom at one-third less than the existing cable rates, and I have got an undertaking that, if the Marconi Company erects and operates stations in India and South Africa capable of communicating with Australia, they will make similar traffic arrangements for messages exchanged between Australia and those countries.

Duplex Working.

The Australian high-power station and the corresponding station in England will be equipped with the most modern apparatus for duplex automatic transmission and reception with distant control, and the feeder stations at the other capitals will be similarly equipped but with smaller power.

By this means messages will be able to pass in both directions simultaneously, and they will be actually sent and received from an office in the heart of each city. The

wireless stations will be situated outside the cities, but they will only be manned by a sufficient staff to keep the apparatus in working order; the actual operating staff will work in the heart of the city, from which point they will send and receive messages by means of distant control apparatus. It will thus be possible for messages to be handed in at the city office and despatched immediately by wireless to their destination.

Australian High-Power Station.

For commercial efficiency and strategic effectiveness it is essential to place the main high-power station in the vicinity of Sydney or Melbourne, and since the English station will have distant control from London the Australian city will be directly in communication with London. The other capital cities, such as Adelaide, Brisbane, Perth, and Hobart, will be similarly equipped but with smaller power, because they will only be required to communicate with the main trunk station. Thus, a person in Brisbane, for instance, wishing to send a message to London, will pass it over the counter of the Brisbane office, from which it will be immediately despatched by wireless direct to an operator in the city which controls the high-power station. The latter, who would be operating the Brisbane feeder circuit, would hand the message to a man, probably sitting next to him, who would be operating the main trunk circuit, and he would immediately flash the message into the city of London. Exactly the same procedure will be carried out in each capital city. By means of selective apparatus and various wave-lengths it will be possible for all the feeder stations and the main trunk station to be working at the same time, thus all the States will have an equally speedy and efficient service. It will also be possible for each city to receive its own messages direct from London, and in the case of press messages it will be possible for them

all to work on one wave-length so that press telegrams addressed to all the cities can be received simultaneously.

By extending the plant in the feeder stations they will also be able to provide an efficient service for communication with ships at sea; this will make it possible to have a direct wireless service to ships from any part of Australia and to have wireless communication through the feeder and main trunk stations between a ship on the Australian coast and any address in the United Kingdom.

Additional apparatus in the feeder stations will enable them to communicate with any of the islands, many of which will no doubt be glad to make use of the Australian and English circuit, and thus bring revenue from the islands into this country.

Progress Abroad.

Remarkable progress has been made during the past five years in Europe and America in the establishment of commercial wireless telegraph services. All the principal countries of Europe, that is the United Kingdom, France, Italy and Germany, and many others such as Belgium, Norway, Sweden, Switzerland, Holland and Denmark, are linked or being linked one with another and with other countries in all parts of the world by commercial wireless services, and it is certain that within a few years Europe will be covered with a net-work of intercommunicating stations, and all oceans will be spanned by high-power wireless services.

The unlimited possibilities of wireless for direct communication between any two countries are recognised everywhere. Side by side with this practical application of wireless telegraphy to commerce, rapid strides are being made in the development of wireless telephony. The human voice has on several occasions been carried clearly and distinctly across the Atlantic, and there is every prospect that within five years it will be heard in Australia from England. Some entirely new developments in wireless telephony are being investigated by the Research Department of the Marconi Company, and if these are successful they will open up a new field of application for the wireless telephone, but it is not possible to speak of this in detail at present.

Since modern wireless telegraphy and wireless telephony are both operated by what are technically known as continuous

waves, it will be possible to adapt wireless telegraphy stations, if they are equipped with up-to-date apparatus, for providing telephone as well as telegraphic services, that is when the telephone has been developed for commercial long distance work.

Thus, if Australia is equipped throughout with a thoroughly up-to-date commercial wireless telegraph service, it will have something of immediate commercial and strategic value and will also be prepared for long distance wireless telephony when that is developed to the present stage of wireless telegraphy.

Research and Patents.

In England, France, United States and Germany there are four great wireless companies designing and manufacturing apparatus, conducting and extending long distance services and carrying on research work side by side with practical application. Each of these companies spends many thousands of pounds annually in that direction; in England the Marconi Company expended nearly £90,000 last year.

This combination of commercial activity, practical development and extensive research is producing extraordinary progress and solving all the great problems as they arise. Because of this and of the fact that wireless is largely a new branch of physics, all the modern applications are covered by one or more master patents, and it is impossible to equip and operate efficient wireless stations to-day without infringing somebody's patents.

This, of course, was a serious question for Australia, but my Company was largely protected through the exclusive rights it already held. I have, however, succeeded in obtaining further options so that, instead of the patent position being a handicap, it will be a great assistance. With the rights already held by my Company and the additional options secured the service we propose to establish in Australia will be protected by all present and future patents of the Marconi Company of England, the Radio Corporation of America, the General Wireless Company of France and the Telefunken Company of Germany. The benefit of this will be manifold, concluded Mr. Fisk, and principally it will arise from the fact that the Australian service will be able to reap full and continuous benefit from the research work being conducted by the great wireless companies and the best scientific and technical brains in the world.



Ship With a History.

THE Italian steamer *Iris*, which arrived in Sydney recently for the purpose of taking in a cargo of wheat, possesses rather a unique history. She was originally owned by an Austrian firm and at the outbreak of war was captured by the Russians in the North Sea, who utilised her for some time. When Peace was declared the *Iris* was returned to her former owners, but owing to certain Austrian territory being ceded to Italy the vessel once more floated the latter flag. Captain Hreglich, who was in charge of the *Iris* when she was first captured and was held prisoner for some time, still commands the vessel.

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Voyage in Open Boat.

Seven castaways from the American five-masted schooner *Columbia River*, which was wrecked on the Kermadec Group recently, reached Suva in an open boat after having experienced a trying time. Captain Murchison, who was in charge of the *Columbia River*, has told a thrilling story of adventure and privation. On September 6 the schooner left Auckland without either cargo or ballast, and three days later she was close to the Kermadec Islands. At 4 a.m. on the morning of the third day the vessel ran ashore in a small bay, and was held fast on an even keel. There were no inhabitants on the island nor any food, but fortunately the schooner had ample supplies on board and a quantity of these were landed. Captain Murchison decided to make for Suva, and in a twenty-two-foot boat started on the perilous journey. Three days afterwards a heavy gale sprang up which threatened

every moment to overwhelm the tiny craft. However, a sea anchor was put overboard and for three days and nights the boat rode to it, and happily escaped injury. When the weather moderated they ran before a south-east wind and early one morning found themselves off the main reef between Vitu Levu and Ovalau, on which the *Cardinia* was wrecked. A long, weary pull against a heavy sea and strong wind enabled them to get clear of Naselai, and a course was then shaped for Suva which was safely reached.

Captain Murchison cannot account for the mishap, and the only feasible suggestion is that the lightness of the vessel made her less weatherly and she consequently made more easting than was anticipated.

The "Nestor" Refitted.

The distinction of having carried a greater number of officers and men during her war career than any of her sister ships which were fitted for war service in Australia, belongs to the Blue Funnel liner *Nestor*. The number totalled sixty-seven thousand. Another feature which distinguished the *Nestor's* war career was that she carried the last body of soldiers away from Gallipoli. The liner has now been refitted at a cost of £350,000—approximately what it cost to build her—and is once more in the first-class passenger service to Australia after an absence of seven years. An inspection of the *Nestor* reveals the comfort and sumptuousness of her fittings, which are on a far more elaborate scale than before. Those cabins which previously contained many berths have been divided into smaller compartments containing one, two and three berths. The suites on board are a special feature.

The walls of the smoking-room are adorned with fine paintings of the *Golden Hind* and the *Great Harry*, Britain's first fighting ships.

New Motor Liner.

Considerable interest is being manifested in the trials of the first motor passenger liner *Domala*, which has been built on the Clyde to the order of the British-India Line for service between London and Calcutta.

The *Domala's* gross tonnage is 9,000, and her motors have a combined horse-power of 4,660, with a speed of thirteen knots and a fuel consumption of sixteen tons of oil daily. If the trials prove successful it is expected that a considerable revolution will take place in steamship travel. It is estimated that the cost of running motor ships will be considerably less than steamships, and another advantage is that funnels can be dispensed with.

Ships and Ballast.

An instance of the grave danger to which ships in ballast trim are frequently exposed, is provided by the experience of the Howard Smith steamer *Century* on a recent voyage from Melbourne to Newcastle.

The vessel ran into a violent gale after passing Gabo, and the master experienced the greatest difficulty in keeping her off the land. The vessel stood so high out of water that she would not answer her helm, and in being tossed about by the mountainous seas her propeller was more often out of the water than in it. Her position became desperate as she gradually drifted towards the land, and as a last resource Captain Egan dropped both anchors. Even then the ship continued to drag inshore, and it was only when the engines were set going full speed ahead that it was possible to stay her progress. For fifteen hours she steamed into the teeth of the gale, and thanks to her engines and anchors, she was able to maintain her position until the storm abated, although it was then possible to throw a biscuit from her deck to the shore.

The question of providing sufficient space for carrying enough water ballast to stabilise ships in a heavy sea is an important one, almost as important from a safety point of view as the observance of the Plimsoll to prevent overloading. It is

contended on many sides that the introduction of a light load-line would go a long way towards eliminating the risks to which sailors on unloaded ships are now exposed.

Ship Arrested.

Few vessels can boast of a more chequered career than the American four-masted barque *Muscoota*, which was recently arrested at Newcastle (N.S.W.), through having incurred a debt of £5,000. The case came before the Admiralty Court in Sydney, and the vessel was ordered to be offered for sale at auction unless in the meantime she is sold by private treaty.

The *Muscoota* is a barque of 2,564 tons and originally belonged to a German firm. When America declared war against Germany she was at sea, and the master altered her name from *Bertha* to *Ottawa* and shaped a course for San Francisco. As she was about to enter that port she was seized as a prize of war and subsequently sold to the United States Government. Under the name of *Muscoota* she arrived at Adelaide early in the present year with a cargo of lumber, and during the shipping strike traded between Australian coastal ports. Some months later she put into Newcastle and, being heavily in debt, was placed under arrest. Captain Wilvers appealed unsuccessfully to the owners and charterers in America for financial aid to clear the ship, and she is to be sold as already stated.

American Ship Blown Up.

The boatswain of the American steamer *Western Front* (5,743 tons) has told a vivid story of the crew's experiences when that vessel caught fire and blew up off the Scilly Islands recently. The *Western Front* was bound from Jacksonville to London with a cargo of resin and turpentine, when early one morning the fire was discovered in one of the holds. The hatches were immediately battened down and steam turned into the hold. After a couple of hours it appeared as though the fire had been extinguished and the steam was turned off, but the flames soon burst forth again and it was necessary to once more direct steam into the hold. Some hours later the boatswain donned a gas mask and was about to descend the hold when a terrific explosion occurred. The captain and a number of others who were stand-

ing close by were blown into the air, two of them being seriously injured. After the explosion the vessel commenced to burn furiously, and she was still burning when last seen by her crew, who were rescued by the steamer *British Earl* and afterwards transferred to the St. Mary's lifeboat which landed them at St. Mary's.

A Luxurious Liner.

The recent addition to the United States Mail Steamship Company's fleet, the *Centennial State*, is an example of the luxury and comfort in which ocean travellers of the future will cross the seas. The vessel is of 10,533 tons and has accommodation for eighty-two first-class and six hundred third-class passengers. One novel feature of her equipment is that all first-class cabins are outside rooms amidships, and are arranged for only two passengers each. The berths are ordinary bedsteads standing in large airy compartments, and with the abundance of room available they form a striking contrast to the shelf-like bunks which form the sleeping places in the small "state-rooms" of most of the Atlantic liners. Every detail for ensuring the comfort of travellers has been carefully studied. The wardrobes have mirrors reaching from floor to ceiling, reading lamps are placed at the head of each bed, and between each pair of state-rooms is a bathroom fitted with both plunge and shower baths. The *Centennial State* is the first of the Company's fleet to carry two classes of passengers. Previously accommodation was provided only for first-class passengers.

"Nairana's" Rough Trip.

The Huddart, Parker turbine steamer *Nairana* received a severe buffeting on a recent trip from Launceston to Melbourne. Shortly after leaving Low Head the vessel ran into heavy seas and hurricane winds, and in order to prevent damage to the steamer the captain reduced speed. Despite her splendid sea-going qualities the *Nairana* received a severe buffeting from the wind-lashed waves, and she rolled heavily, much to the discomfort of the passengers. After about nine hours the gale moderated sufficiently to permit of speed being increased. The steamer arrived at Melbourne seven and a half hours behind schedule time.

Collision in English Channel.

A collision between the Ostend mail steamer *Jan Breydel* and the Norwegian steamer *Salina* occurred off the Goodwin Sands in the English Channel recently. The *Salina* sank in a few minutes, ten of her crew being drowned and two killed by the impact. The remaining fourteen, several of whom were seriously injured, were rescued by the *Jan Breydel's* boats.

M. Kubelik, the famous violinist, was a passenger on the mail steamer, and his first concern was to save his *Stradivarius* violin, valued at £25,000. He soon realised that despite the commotion amongst the passengers there was no danger of the *Jan Breydel* sinking.

Captain Merrel, master of the *Salina*, performed an heroic act in attempting to save his wife and two children, whom he saw struggling in the water. He swam to them and clasped his wife and baby under one arm while his young son clung to his back. He struck out for one of the *Jan Breydel's* lifeboats, which picked them up; but unhappily the baby was dead and Mrs. Merrel died later.

Commonwealth Passenger Service.

The management of the Commonwealth Government Line of steamers is hopeful of despatching the first of the passenger liners to be commissioned, the T.S.S. *Moreton Bay*, from Australia in January next. These fine steamers have accommodation for seven hundred third-class passengers in two, four and six-berth cabins. Commodious dining saloon, lounge and social hall are also provided for the use of these passengers. Provision to accommodate a limited number of first-class passengers in special two-berth state-rooms on the bridge deck has also been made.

Special attention has been paid to the life-saving equipment of the vessels—each being installed with the *Australis* boat releasing gear, an Australian invention which permits boats to be swung outboard in eight seconds under any conditions.

No return tickets will be available by these steamers, but should passengers re-book within twelve months after landing ten per cent. will be allowed off the backward single fare then current.

The route of the vessels will be *via* Colombo and the Suez Canal, and passengers will thus be afforded an opportunity of having a glimpse of the East.

Big Salvage Award.

The Admiralty Court in London recently awarded £13,200 to the Captain and crew of the Cunard Australasian liner *Port Stephens* for salvage work rendered to the American steamer *Tashmoo* when disabled in the Atlantic. The *Tashmoo* was on her maiden voyage from New York to Cork with general cargo when boiler trouble occurred, and she was drifting helplessly when picked up by the *Port Stephens*. Both vessels were fully loaded, and in the heavy seas which were running the task of retaining control of the *Tashmoo* was exceedingly difficult. The distance to Queenstown (Ireland) was about twelve hundred miles, and before port was reached the food supply on the *Tashmoo* ran short and provisions had to be obtained from the *Port Stephens*. The total value of ship, cargo and freight in the case of the *Tashmoo* was estimated at £489,763. The *Port Stephens* is commanded by Captain C. A. Robinson, whose home is in Sydney.

Wreck at Ellice Islands.

The American-built auxiliary schooner *Marua*, owned by Burns, Philp & Co., of Sydney, was wrecked on Nanamaga, one of the most northern islands of the Ellice Archipelago, some time ago. The schooner was employed in the inter-island trade at the time of the disaster. From particulars supplied by Captain W. Johnstone, master of the *Marua*, who, with the remaining three members of the European crew, were brought from Nauru to Kembla (N.S.W.) by the steamer *Bulga*, it appears that the schooner was gripped by a strong current, and despite desperate efforts made to save her she was carried on to the reef and became a total wreck. The vicinity in which the disaster occurred has always been recognised as a dangerous one by shipping masters in view of the treacherous currents.

Quaint Ceremony at Sea.

Passengers on the P. & O. mail steamer *Malwa* on her last voyage from London to Australia, were afforded an opportunity of witnessing the interesting and picturesque Mohammedan ceremony of "burying the devil." About sixty Indians took part in the performance which began at midnight, below decks, and continued until six o'clock the following evening. Dancing

and singing were indulged in to the accompaniment of the beating of tom-toms and native drums, and after this had continued for many hours a hand-made banner of yellow and blue silk, symbolical of the "devil," was committed with due ceremony to the deep. The Indian superstition is that by this action they rid themselves of the "devil" for a year, when another one will visit them and be similarly disposed of.

"Ophir" Sold for £6,000.

The steamer *Ophir*, which was built for the Orient Company in 1891, was recently sold in London for £6,000. For many years she was engaged in the Australian trade, and in 1900, when the Duke and Duchess of York visited Australia, she was specially fitted up to convey the Royal party on their trip. A little over a year ago the Admiralty refused £45,000 for the *Ophir*.

Link With the Past.

Three members of the crew of the lifeboat which performed such heroic rescue work when the barque *Catherine* was wrecked on Redhead Beach, Newcastle (N.S.W.), just fifty years ago, are still living. They are Mr. Richard Hickey, coxswain, of Hamilton; Mr. John Limeburner, second coxswain, of Newcastle, and Mr. James Croft, bowman, of Tighe's Hill.

The *Catherine* was a day out from Newcastle with a cargo of coal aboard when she sprang a leak and was forced to turn back. A strong south-east gale was blowing, and being unable to make port the vessel was run on to the beach. She grounded about three hundred yards from the shore and when the lifeboat was launched from the beach to rescue the crew it was realised that the task was an almost impossible one. Huge seas were breaking over the wreck, and the fact that the crew had taken to the fore-rigging, while ensuring their own immediate safety, made the work of rescue much more difficult. For three hours the lifeboat men stuck to their task, and by that time all the crew had been taken on board. Unfortunately, the heavy seas had washed all but two oars out of the lifeboat, and those on board had no option but to beach her and wade ashore. This was done without mishap, and so one of the toughest bits of work in the history of life-saving at Newcastle was successfully concluded.

THE GRAND ARCH, JENOLAN CAVES

The central feature of the Jenolan system of limestone caverns, a great natural tunnel through the heart of a mountain spur.

WIRELESS STATIONS OUT-BACK.

The radio branch of the Postmaster-General's Department has completed arrangements for the erection of two wireless stations in the far north of Australia, one at Powell's Creek (Northern Territory), and the other at Camooweal (Queensland). Sites have been secured and material collected, and it is expected that work will be commenced in the very near future. These two stations will act as collecting centres for messages from private plants, with which the Department is working in conjunction where landline communication is unobtainable. Several pastoralists have signified their intention of applying for licenses to operate their own plants, and by this means it is hoped to bring wireless, as a means of communication in out-back areas, into fairly general use. The Postal Department is also inquiring into the possibilities of wireless telephony for use in isolated areas, but it is improbable that anything will be done in this direction for some considerable time.

LETTER TO THE EDITOR

The Editor, *Sea, Land and Air*.

Sir,—We read with interest an article in the September issue of *Sea, Land and Air* under the heading of "Aerial Exploration in North-west Queensland."

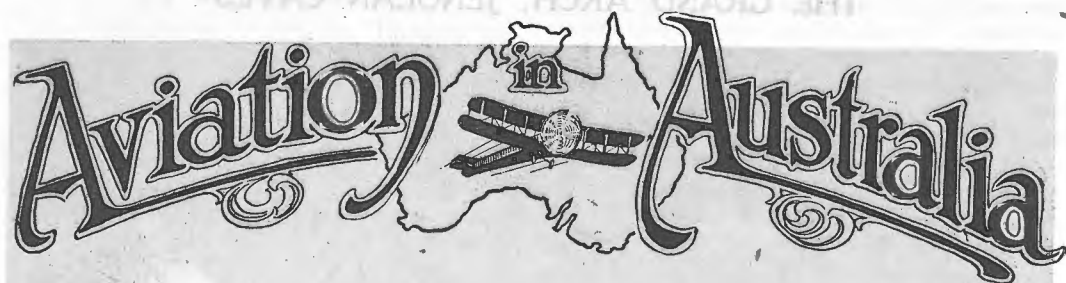
We feel sure your many readers will be interested to know that the extensive tour described was carried out with an *Avro-Dyak* machine manufactured at the Mascot works of this Company.

This machine is fitted with a six-cylinder water-cooled *Sunbeam-Dyak* engine of one hundred horse-power, the features of which are extreme reliability, simplicity and economy.

It is capable of speeds up to eighty miles per hour, while its landing speed is thirty-eight miles per hour with full load.

THE AUSTRALIAN AIRCRAFT & ENGINEERING CO., LTD.,

(Sgd.) N. J. Langford, Secretary.
Sydney, September 22, 1921.



Aviation in Australia

Queensland Aerial Enterprise.

AT an enthusiastic meeting at Townsville recently Mr. Fergus McMaster, chairman of directors of the Queensland and Northern Territory Aerial Services, Limited, explained the Company's plans for developing commercial aviation in Western Queensland. Their first objective is to secure the contract for the aerial mail service between Charleville and Cloncurry, which the Federal Government proposes to throw open shortly. Later it is hoped to establish aerial communication between Mungindi (N.S.W.) and the head of the railway at Darwin (N.T.), which will mean the opening up of an immense tract of western land. In addition it will bring the Northern Territory into close communication with the capital cities of Australia.

Mr. McMaster stressed the value of aviation from a humanitarian point of view in cases of sickness and accident, and quoted a number of instances which had come under his observation where help had been rendered much more speedily through the agency of the aeroplane than would have been possible by any other means.

The meeting pledged itself to assist the objects of the Company as set out in its recently issued prospectus.

Air Force Mission to London.

In accordance with the programme of development of the Royal Australian Air Force, as laid down by the Air Council, Wing-Commander S. J. Goble, Director of Personnel and Training, left for London recently. His mission is to study the latest training methods and the aerial co-operation between the Army and Navy in the Old Country.

Commander Goble's career has been rather an eventful one. Early in the war he was rejected as a candidate for admis-

sion to the Australian Flying Corps, but nothing daunted he paid his own fare to England, and his reward came when he obtained a pilot's certificate in the Royal Air Force. Three years as a pilot in France, eighteen months of which were spent in a fighting machine, equipped Commander Goble for the responsible post of adviser in aviation to the Australian Navy Department, to which he attained in March, 1919. In November of the following year he was transferred to the Air Force by permission of the Royal Air Force, and was given the position of Director of Personnel and Training.

It is expected that Commander Goble will be absent from Australia for about twelve months, during which time he will be attached to the Air Ministry in London. While abroad he will interview applicants for appointment to the flying boat service.

Should the proposed programme be adhered to, Victoria will have the Central Flying School, the Central Depot, one flying boat squadron of six machines, one fighting squadron of twelve machines, and one corps reconnaissance squadron of twelve machines. In New South Wales there will be one seaplane squadron of six machines, one fighting squadron of twelve machines, and one corps reconnaissance squadron of twelve machines.

Air Service for English Mails.

The delays which have occurred recently in the transport of English mails from Western Australia to the Eastern States, have revived the proposal for a trans-continental aerial service. In all probability this proposal will be seriously considered after the various other aviation services which are now being established have been well tried out.

The Civil Aviation Branch of the Defence Department has prepared an esti-

mate of the probable saving of time in the carriage of mails by air, which works out at two and a half days between Fremantle and Melbourne, and three and a half days between Fremantle and Sydney. To extend the service to Brisbane would mean a saving of five days. It will not be surprising, therefore, if the Government takes definite steps to inaugurate this service soon after the other services now pending are in full operation.

An Amusing Mistake.

The layman who is not fully acquainted with the significance of the various technical terms commonly used by motorists and aviators, frequently blunders when attempting to translate such terms into language understandable by the man in the street. An instance occurred recently, the innocent victim being the de-coder of cables in London, who translated the expression that Lieutenant Parer's engine was "missing," i.e., mis-firing, into reading that it was "lost." It is easy to imagine the consternation which the newspaper announcement that the engine had fallen off Lieutenant Parer's plane created amongst flying men. The real meaning of the occurrence, however, soon became known and the joke was enjoyed immensely.

Links of Empire.

Mr. Holt-Thomas, the pioneer of military aviation in England before the war, and of civil aviation since the war, is keenly enthusiastic regarding the possibilities of aerial communication between Australia and Great Britain. In the course of a statement regarding the future of aviation, Mr. Holt-Thomas pointed out that practically all the great flying feats up to the present have been accomplished without organised assistance. This, he contends, is evidence of what could be accomplished if the task of spanning the vast distances at present unconquered were taken in hand by a thoroughly efficient organisation. The knowledge that Australia can be brought within five days of London and that, all things considered, the cost of carrying mail matter between the two countries is by no means prohibitive, should make thinking men realise the immense value, from an Empire point of view, of the establishment of such aerial links.

Flight Through Central Australia.

Mr. Francis Birtles, the well-known explorer, accompanied by Lieutenant F. S. Briggs (pilot) and Mr. G. Bailey (mechanic), left Melbourne recently in Mr. C. H. de Garis's *D.H.-4* aeroplane on a flight through Central Australia.

It will be remembered that some time ago, when Mr. Birtles was touring through Central Australia in a motor car, his machine, together with all accompanying belongings, was destroyed by fire, and the explorer himself severely burned. The report which he had prepared for the Federal Government was also destroyed. On the present trip Mr. Birtles proposes to use the landing grounds which were selected on previous motor journeys through the country. It is his intention to search for pastoral and mining country in the centre of the continent, and also to examine from the air the Macdonell Ranges, with a view to selecting the most suitable point for the proposed north-south railway to cross the mountains. Mr. Birtles will also chart air currents for the information of the aviation authorities.

Famous Aviators Honoured.

The Governor-General, Lord Forster, P.C., K.C.M.G., held an investiture of the Order of the British Empire at Federal Government House recently, and presented military orders and medals to members of the A.I.F., the Navy and the British forces.

Included amongst those honoured were two famous airmen, Lieutenant R. J. Parer and Captain G. C. Matthews, both of whom were presented with the Air Force Cross in recognition of their services in the great war.

Aviation in New Zealand.

Captain Douglas, accompanied by an observer and a mechanic, recently flew from Christchurch to Wellington, a distance of two hundred and seventy miles in three hours fifteen minutes. The machine was an *Avro*, fitted with a *Rhode* engine, and owned by the Canterbury Aviation Company.

Flying to Dance.

An up-to-date method of travelling to a country ball was adopted by three men, Captain Lees, and Messrs. G. Campbell and B. Millingen recently, when they flew from Cowra to Young to attend the final dance

of the Winter Social Club. The trip occupied thirty-two minutes, and a safe landing was made on the showground, which the authorities had previously declared dangerous. Happenings like this indicate that it is only a matter of time until a very extensive use is made of the aeroplane for pleasure as well as for commerce.

Shearers' Aeroplane Trip.

Time was when the shearer travelled from one shed to another carrying his swag, or if he were more fortunate than most of his fellows, a saddle-horse provided a (then) luxurious means of getting to his destination. In later years motor cars have been availed of to convey parties of shearers around the country, but the two men who recently chartered an aeroplane at Forbes to convey them to a shearing shed some miles distant, can surely claim a record in the way of up-to-date locomotion. Contrary to the usual order of things, country residents will always have an advantage over city people when it comes to using aeroplanes. The open spaces in the country provide suitable landing places which the city or suburbs can never hope to offer.

Sydney-Brisbane Aerial Service.

There is every indication that the Government will not lack tenderers for the aerial mail service between Sydney and Brisbane. Some months ago Lieutenant F. L. Roberts, a well-known aviator, visited the North Coast of New South Wales for the purpose of initiating a financial scheme to enable him to tender for the contract. Lieutenant Roberts has addressed numerous meetings, and his experience is that the residents of the North Coast are keenly alive to the value of aerial communication with the two capital cities. Lieutenant Roberts estimates that allowing for running costs, including insurance of aeroplanes and passengers against all risks, the machines will cost about 3s. 11d. per mile to run. It is expected that at least one or two other firms will lodge tenders for the service; a fact which indicates the keen interest that private enterprise is taking in the development of civil aviation.

Pilots for West Australian Service.

Major N. Brearley, managing director of the West Australian Airways, Ltd., has engaged six pilots to conduct the aerial

mail service between Geraldton and Derby, for which he was the successful tenderer. The men engaged are all former members of the Australian Flying Corps, and it has been arranged that they shall undergo a "refresher" course at the Central Flying School, Melbourne, prior to commencing on the mail service. While acting as licensed pilots in Western Australia the airmen of the Company will be members of the reserve of the Royal Australian Air Force.

Melbourne Man's London-Paris Trip.

The experience of a Melbourne man who recently returned from London, indicates the advanced stage of civil aviation in other countries. This man breakfasted in London, had lunch in Paris, and was back at his hotel in London again in time for afternoon tea. The flight was made in a twin-engined biplane, having accommodation for twelve passengers; and despite the fact that in crossing the Channel the machine ran into a violent thunderstorm, in which she bumped and rolled a great deal, due to the presence of "air pockets," the journey was, according to the pilot, quite an ordinary one. In the middle of the storm the machine rose to a great height, and in place of the dense, swirling clouds which had a few minutes before enveloped them, the passengers were able to gaze through the windows at the cloudless sky above them, while far below they could see the still raging storm. A brief time after his arrival in Paris the pilot of the 'plane on which the Australian travelled, boarded another machine and set out on the return journey to London.

A happening which the public took as a matter of course, but which greatly interested the Australian visitor, was the departure from Paris within an hour of two "special" air expresses, one for Berlin and one for Moscow.

Aerodrome at Essendon.

The Home and Territories Department has acquired an area of ground at Essendon (Vic.) on which it is proposed to erect an aerodrome for the use of the civil aviation department.

The first official aeroplane—a *Bristol-Coupe*—for the use of the Controller of Civil Aviation (Lieutenant-Colonel Brinsmead) recently arrived from London, and after undergoing a few minor alterations

to suit Victorian conditions, the machine will be placed in commission. Probably the first flight which will be taken in the official 'plane will be from Adelaide to Sydney, *via* Mildura, over the route chosen for the mail service for which tenders are now open.

Air Pockets.

There are few people who have not heard of "bumps" and "air pockets" in connection with aviation, and it is quite a common belief amongst laymen that once a 'plane strikes one of these serious trouble is almost sure to follow. Experienced airmen, however, know that this is not so, and that apart from the discomfort associated with running into an "air pocket," such an occurrence has never of itself been solely responsible for a serious accident to any aircraft.

Contrary to the usual belief, "bumps" are caused more by changes in wind velocity or direction than by variations in the actual density of the air.

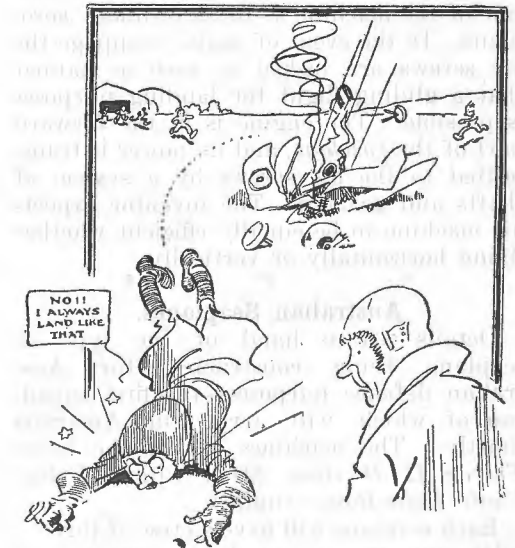
The effects of "bumps" are invariably greater in light and slow machines than in heavier and faster types, but machines are nowadays designed in such a way that they can be righted from the effects of a "bump" almost immediately. Perhaps no better illustration of the degree of safety with which aeroplanes can now negotiate "air pockets" is the fact that certain distinguished aviators have actually flown into the crater of Vesuvius. If the air might be expected to be treacherous any-manner of contrary currents.

Rolls-Royce Aero Engines.

The Rolls-Royce *Eagle* is perhaps the best known aero engine in the world—a distinction achieved on account of its wonderful record for reliability in long distance flights. Amongst them being the direct flight across the Atlantic; the flights from England to Australia; England to South Africa, and England to India. The *Eagle* engine, of 360 h.p., embodying all latest improvements, is now on the market at a cost of £1,000.

Sydney Airman's Long Tour.

Mr. Nigel Love, of the Australian Aircraft & Engineering Company, Limited, of Sydney, recently returned from a six weeks' aeroplane tour of North-west Queensland, undertaken expressly for the purpose of investigating flying conditions in those districts, especially in regard to the effects of heat and wind on aeroplane engines. Mr. Love found flying conditions ideal between Sydney and Mungindi, but between the latter town and St. George, a distance of one hundred and fifty miles, the country is heavily timbered and offers no landing facilities in case of engine or other trouble. A great portion of the country between Mitchell and Morven is



Hello! Old Thing—Crashed?

—Flight.

also densely wooded, but there are numerous patches on which an emergency landing could be safely made. From Nive Downs station right through to Longreach, Winton and Cloncurry the climatic and other conditions are described by Mr. Love as ideal. He speaks highly of the work being carried out by the Queensland and Northern Territory Aerial Services, Limited, which will shortly have a number of regular air services in operation in Northern Queensland.

During the trip Mr. Love performed the novel task—for an airman—of collecting two flocks of sheep into one. The animals were scattered over a very large paddock, but

they responded quickly to the movements of the aeroplane, and the work was done hours quicker than would have been possible by any other means. Mr. Love expressed the opinion that he could very easily have driven the sheep through a gate had it been necessary to do so.

Australian Helicopter Design.

An investigation of the helicopter design, the work of an Australian inventor, Mr. F. R. Rawlinson, is being conducted by officials of the Royal Australian Air Force. A model of the invention was recently on view at the Victoria Barracks, Melbourne. It embraces a number of original features. The wings, which also act as variable air screws, are set on each side of the machine as in an ordinary aeroplane. In the event of engine stoppage the air screws are locked in such a manner that a gliding flight for landing purposes is possible. The engine is in the forward part of the fuselage, and its power is transmitted to the air screws by a system of shafts and gearing. The inventor expects his machine to be equally efficient whether flying horizontally or vertically.

Australian Seaplanes.

Details are to hand of the type of seaplane being constructed for Australian defence purposes—the first squadron of which will arrive in Australia shortly. The machines are of the latest *Fairey III.D* class, fitted with 375 h.p. *Eagle Rolls-Royce* engines.

Each seaplane will have a crew of three—pilot, gunner, and wireless operator—and will carry guns, ammunition, wireless apparatus, bombs, and sufficient petrol for a flight of five hundred miles at a speed of one hundred miles per hour.

The wings, fuselage and tails have been coated with aluminium varnish to ward off the active rays of the sun which would otherwise cause the fabric to deteriorate.

The machines can attain a speed of one hundred and ten miles an hour, and will climb five thousand feet in six minutes forty seconds. The first squadron will be delivered at Melbourne, but its ultimate destination is Sydney, where the machines will be used for training purposes.

Overseas Aviation.

An order for six *Centaur-4* training aeroplanes has recently been secured by the

Central Aircraft Company, of London, from Belgium. Previous to the purchase being effected the Company sent over a demonstration machine which competed with other well-known makes, and so highly did its performance impress the Belgians that they insisted on retaining it for immediate use, leaving the other five machines to be delivered in due course. One feature of the *Centaur-4* was that it was fitted with a third seat to allow of an extra passenger being carried. Its maximum speed is eighty miles per hour and the landing speed twenty-eight miles.

Aeroplanes swooping and gliding, circling the great arena and dashing across the middle of the bowl, was one of the sights that greeted Carpentier as he climbed into the ring for his historic bout with Dempsey. The appearance of the French boxer seemed to be the signal for the greatest aerial display of the day—a display, incidentally, that was in violation of the urgent requests of the Jersey City authorities. The popular temper was clearly shown as one aviator, more reckless than his fellows, cut across the corner of the big bowl and glided a few hundred feet over the heads of the spectators. There were many muttered imprecations, threatening gestures here and there, and murmured protests against the activities of the fliers. A few of the crowd cheered, but most of the spectators seemed to resent the circling and swooping so close to their heads, relates *Aerial Age*. Only four of the aeroplanes that hovered around the arena during the day, however, took a course that led them across the amphitheatre.

(Government Notices.)

DEPARTMENT OF DEFENCE.
AEROPLANE SERVICES
between
SYDNEY and BRISBANE,
and
SYDNEY and ADELAIDE.

It is notified that the date for the receipt of tenders for the above Services has been altered from October 1, 1921, to 12 (noon) on November 12, 1921, and the date of the commencement of the Services from February 4, 1922, to March 18, 1922.

G. F. PEARCE,
Minister of State for Defence.

A NIGHT IN THE TROPICS

By M. J. McGRATH

I KNOW perfectly well that it should be all about the star-spangled vault of the heavens, and the soft night breezes whispering to the tropic sea. But it isn't about star-spangled spaces, and there weren't any soft night breezes. There never are! This is just a perfectly truthful account of a poor human's efforts to rest during a tropical night.

Perhaps it would be as well to start by introducing Billy, not that he figures overmuch in the night's doings, but he's worth mentioning, anyway. Billy was a rat of immense size and colossal impudence, who, having taken a fancy to the wireless cabin, refused to go elsewhere, and abode with me, for my sins, sleeping on my best "goashore" shirt, nibbling my feet at night, and making himself generally at home. Once in a moment of lavishness, having drawn many months' retrospective war bonus, I bought a suit of "civvies" for eight guineas. This is a thing which I am not in the habit of doing. In fact, I rarely do, and that suit was the apple of my eye. Consequently, when Billy chewed the whole stern part of the pants to rags, I felt hurt, and a trap was set for Billy from out of which he was eventually ejected into the Indian Ocean. But that is another tale, and I digress.

We were proceeding, at the time I am writing of, up the Red Sea to Kameran. The Red Sea, of course, is a place of great interest, historical, biblical, topographical, and so on. Its advantages, however, in this direction do not compensate for its evils: for its fever-ridden atmosphere, its blazing sun, sand storms, flies, its sweltering nights—in short, for its general "cussedness." The first time you see it you believe that yarn about Moses. For its waters to roll back in direct defiance of Nature's laws while Moses and his crowd passed by, and then to roll down and engulf the next unsuspecting bunch that came along, was just the sort of thing the Red Sea would delight in doing.

But to think that of Moses, who did the

stunt, there is no sign, while of the Red Sea, which was only the medium after all, there is every sign, almost makes one believe in that doctrine which has so many unrealising followers—the Faith of the Futility of Human Endeavour. If only this insignificant piece of water would do one of its fancy "standing-on-end" effects, perhaps the world would stop arguing about miracles and signs and wonders. But it doesn't—it doesn't even roll, and, consequently, Moses's prestige suffers considerably. However, I'm getting off the track again. Possibly the best way to continue this account of my endeavours to get a night's sleep would be to enter things up in their proper sequence. It was something like this:

Eleven-thirty p.m., local time. After having sat for four hours bathed in perspiration, listening to the operator of an Australian ship using—er—Australian language, in defiance of Regulation 43A, I finally took a sort of rub-down and turned in. Carefully covered up my feet with a view to depriving Billy of his supper, and prepared to slumber.

11.35. Very hot. Turned over.

11.40. Warmer on this side. Perspiring heavily. Turned back again.

11.45. Billy arrived. Appeared annoyed about my feet being covered up, and commenced to chew counterpane. Endeavouring to remonstrate with a pillow, I eventually smashed glass in bookcase. Billy departed positively chuckling.

11.50. Turned pillows over. No good. Then reversed myself, placing my head where my feet originally were. Again no good. Billy came back and jumped on my face. Reverted to position No. 1.

11.55. Got up and changed pyjamas. Wrung first suit out and hung them up to dry. Went back to bed. Second mate came in singing, "Christians, Awake!" Regret to say that I swore. Second mate said his feelings were hurt, and went away with half-a-dozen cigarettes and a box of matches. Cheap at the price. Back to bed.

Midnight: graveyards not the only things yawning just now. Pulled down venetian and stuck my feet out. Second mate poured hot tea on my feet from the bridge while a cockroach laid foundation of new home in my left ear. Regret still more to say that I swore still more. Got up and took a small whisky, and, arming myself with the "Winning Post Annual," 1913, raided cockroaches. Killed three, also one mosquito and several flies. Smoked a cigarette and went back to bed.

1.0 a.m. Gave it up and decided to sleep on deck. Rolled up mattress and two pillows, and departed. In trying to get bundle out of cabin door eventually woke up the skipper. The "Old Man" has been in sailing ships for many years. But why continue? The subject is fraught with painful memories. Having received much gratuitous information, of which I had previously been in ignorance, concerning my parentage, mental state, probable end and future rating in the hereafter, I again took up my bed and walked. Arrived safely on deck, but it being very dark had not gone far before I trod on stomach of sleeping native boy. Boy eventually brought round, and having rated him severely to hide my embarrassment, I again carried on.

2.30 a.m. Bed finally set up.

3-3.45. Slept fitfully, only disturbed by rats, cat and an occasional Lascar falling over me.

3.45. Awakened by the *secunni* (native Q.M.) under the impression that I was the Chief Officer. Politely pointed out his error, and was again dropping off when at 4.5 a.m. the stretcher of bed collapsed. Extricated myself, and smiling in a pained

but resigned manner, made bed on deck.

4.10 a.m. Awakened after five minutes undiluted slumber by the second mate wanting to know what the Blue Alsatian Mountains I meant by breaking up his bed stretcher. Told him it wasn't his.

4.10-4.45. Spent arguing the point with second mate.

5.0. Awakened by heavy, sand-laden winds. Retired into the galley.

6.0. Sand-storm over. Resumed bed and found sand in it warm but very sharp.

6.30. Sleep, blessed sleep!

6.35. Awakened by boy with "Chota hazri" (morning tea). Lost one of my only pair of white shoes through throwing same at boy, who, being well acquainted with my little idiosyncrasies, side-stepped skilfully, shoe skipping over ship's side into sea. Boy retreated in disorder.

7.0. Awakened by *serang* (bo's'n), requesting me to remove my august presence as the men were waiting to wash down. Got up feeling helpless, homeless, hopeless, nerve-racked and generally washed out. Cut myself three times while shaving.

8 a.m. Being washed, clothed, and more or less in my right mind, sat down to read until breakfast. Selection of book unfortunate. Opened at page reading as follows:

"Above them the pale glory of the eternal stars shone forth, dimly reflected in the phosphorescent waters of the tropic sea. Gleaming through the velvet pall of the sable sky, the incomparable splendour of the Southern Cross shed its answering radiance over the bosom of the sleeping ocean; softly through the rigging came the murmur of the cool night breeze"—Gr—r-r-r! I repeat it. Gr—r-r-r-r-r!!

BREVITIES

The policeman, having held up the car with the dickey seat, and satisfied his curiosity as regards the license, remarked:

"Carry on."

The driver turned round, and found that the dickey was empty.

"The trouble is," he remarked, "that Carrie is no longer on. How far back was that corner?"

* * *

If silence is golden, a secretary's value can be based on the gold standard.

A motorist was baled into Court, and when his name was called the Judge asked what the charges were against the prisoner.

"Suspicious actions, your Honour," answered the policeman who had made the arrest. "Suspicious action?" queried his Honour. "What was he doing that seemed suspicious?" "Well," replied the officer, "he was running within the speed limit, sounding his horn properly, and trying to keep to the right side of the road, so I arrested him."—*Roadcraft*, London.

HISTORY OF ENGLAND

By ERNEST A. S. WATT

Henry VIII. (1509-1547).

HENRY VIII. is chiefly remembered to-day for his excessively corpulent figure, for the fact that he was married six times, and for the famous divorce of his first wife which, by leading directly to the breach with Rome, brought into existence the Church of England as a separate entity.

That his reign was one of the great landmarks in our history, that he left the impress of his strong personality upon the institutions of Church and State, that under his helmsmanship the vessel was piloted successfully 'twixt reefs of a perilous and tortuous nature, and his wise and cautious policy raised England to a position she had never previously occupied in the eyes of Europe, are facts all too often lost sight of. It has indeed been customary not only with his contemporaries, but with most of his subsequent historians to slur over Henry's merits and to magnify his defects, to suppress his many great achievements and to emphasise his failures.

The new reign opened under the most brilliant auspices. The lad of eighteen, possessed of all the charms of youth, endowed by Nature with at once a rare intelligence and a comely appearance, festive and gay, and a diligent student and scholar of merit, was a striking contrast to his dour, austere and loveless predecessor. The younger Henry appealed strongly to the imagination of his people and England rang with tales of his prowess, princely qualities and learning. The young King's early marriage was intensely popular, for Catherine, during her eight years' residence in England, had endeared herself to every class of the community.

The new King's methods of administration during the first few years of his reign formed a happy contrast to the rigidly careful policy of his predecessor. Money was freely spent and war indulged in both with France and Scotland. The year 1513 saw English arms victorious, the French being defeated in the Battle of Spurs, and the Scots overwhelmed at Flodden Field.

With the advent of peace Henry's policy suddenly underwent a remarkable reversion to the methods which had marked his father's reign; foreign entanglements being henceforth sedulously avoided and rigid economy made the order of the day.

Henry was fortunate at the very outset of his reign, to find in Thomas Wolsey—long his intimate friend and advisor—a counsellor of consummate wisdom and remarkable ability, who was appointed to the Council, shortly afterwards becoming Lord Chancellor and Archbishop of York. He exercised paramount influence over the mind of the young King.

Wolsey was certainly ambitious, arrogant, grasping and fond of display, but throughout his career was a faithful servant and a cautious, industrious and capable administrator, to whose hands the King, during the first epoch of his reign, entrusted the destinies of the people he ruled.

Wolsey's arrogance and his supreme disdain for all who crossed his path made him *persona ingrata* with the leading nobles, who objected to the government of the country being entrusted to the hands of one who was in reality but a child of the people.

To the merchant classes as well Wolsey's name was anathema, owing to his extremely heavy taxation, necessitated by that vast expenditure of public money which marked the early years of Henry's reign.

Prone to excessive caution, Wolsey, despite his many weaknesses, was a remarkably capable statesman, whilst his open patronage of the new learning should also be remembered to his credit.

Throughout his career Wolsey's cherished ambition was his ultimate election to the Papal chair, and his dream was almost realised.

In 1520 Henry paid a visit to the French King, and on the "Field of the Cloth of Gold," near Guisnes, a compact of mutual amity and life-long devotion was solemnly entered into between the two young Kings. The sincerity of these proceedings may, however, be accurately summed up by the

fact that just prior to Henry's journey to France, and again soon after his return Charles visited England, and that upon both of these occasions the two monarchs exchanged precisely similar compliments and entered into almost identical oaths of friendship to those passed between Henry and Francis upon the "Field of the Cloth of Gold." After inclining first towards one side and then the other, Henry in 1522 actually went so far as actively to support Charles, but after the overwhelming defeat of Francis in the Battle of Pavia (1525) the English King once again changed sides and entered into an alliance with France. England's foreign policy during these years was variable and inconsistent, and altogether inexplicable unless we realise clearly that Wolsey's desire throughout the period of his administration was to see the duel between the Emperor and King of France indefinitely prolonged, to England's ultimate advantage.

Such a policy may seem at this distance of time, on ethical grounds, highly unjustifiable, but the fact has to be taken into consideration that moral principles counted even less with Charles and with Francis. Moreover, it must be remembered that, single handed, England possessed not the remotest chance of success against either of the two great antagonists.

The Emperor Charles V. had, as Charles I., been King of Spain for some years prior to his election in 1519 to the Imperial throne, a triumph which he owed, so Henry alleged, largely to English support.

Charles was the son of Catherine of Aragon's eldest sister, the daughter of Ferdinand and Isabella, who had married the Archduke Philip of Austria, a son of the Emperor Maximilian and Mary of Burgundy. Charles' empire was indeed a vast one, comprising not only his German and Spanish dominions, but also a large slice of Italy, the low countries and the "new world," and but for the opposition of France and the inroads of the Turk it is difficult to see how any limits could have been placed upon his world-wide sovereignty. His ambition was insatiable, his methods ruthless, and his general policy selfish and inconsistent, though not nearly to the same extent as the more subtle methods of his unprincipled rival, the King of France.

That England's foreign relations were therefore somewhat kaleidoscopic is hardly to be wondered at.

From Pope Julius, Henry, in 1521, received the title of "Defender of the Faith," the F.D. (*Fidei defensor*) that to this day figures upon our coinage. It was the Pope's reward for a treatise which Henry, with More's assistance, had compiled in refutation of the doctrines of Martin Luther. It is indeed the irony of fate that the first of our Kings to win recognition at the hands of the Papacy should also be the one directly responsible for the breach with Rome.

Early in the new reign it became obvious that Parliament, despite its long submission to the royal will, had in reality relinquished none of its rights or privileges, for Wolsey's constant demands for grants of money were more than once seriously curtailed. Once during this period his proposal to exact a forced loan met with such fierce resistance in the House of Commons that Wolsey wisely—though reluctantly—decided to abandon his project. It is indeed significant how on these occasions the all-powerful minister felt constrained to accept the decision of the nation's representatives.

Throughout the reign Parliament met at comparatively regular intervals, and although both Houses supported the King's policy with remarkable consistency, the fact remains that Henry never once failed on any really important question to consult his Parliament and that he almost invariably treated its opinion with the greatest respect.

Under Henry VIII. the House of Commons became more potent a force in English politics than at any previous period of its existence, its advance, of course, coinciding with the rapidly diminishing importance of the House of Lords.

It was in 1527 that Henry first openly expressed doubts as to the validity of his marriage with Catherine of Aragon, the question which suggested itself to his mind being whether the obvious irregularity of his union with his late brother's wife, which the laws of the Church so expressly forbade, was capable of condonation, even at the hands of the Pope himself. Those who would scoff at his doubts and maintain that his action was prompted by the mere desire to discard a wife of whom he

had grown tired are apt altogether to overlook three important points, which if not conclusive, are at any rate worthy of serious consideration: (1) That Henry was a learned student of theology and ecclesiastical law; (2) that it was extremely doubtful whether the Pope's dispensation was in the form required and, even if it were, whether his action in granting it was not *ultra vires*; (3) that the birth of a son and heir was a matter of the greatest possible importance to England. To its urgency Henry was perhaps himself more fully alive than even the most farsighted of his counsellors, for he realised to the full that failure in this respect must, upon his death, inevitably plunge the nation once again into civil war.

It is true he was sorely disappointed that after eighteen years of married life only one child, a delicate girl, survived out of the four that had been born to them—a circumstance which tended to estrange him from Catherine.

It is true also that there were other motives at work. Catherine, although a faithful and indulgent wife, was not only six years his senior, but totally devoid of good looks, whilst her education had been a very meagre one. Henry, on the other hand, was remarkably intelligent, highly educated and endowed by nature with every possible advantage. Small wonder then that his wife was not considered a suitable consort.

Moreover it is a significant fact that Henry had already fallen a victim to the charms of Anne Boleyn, one of the Queen's ladies-in-waiting.

Granted this combination of circumstances, what could be more natural than an appeal to the Pope, asking him to enforce the laws of the Church and declare the marriage void? The difficulties which stood in the way of his divorce the King may, at this juncture, have regarded as trivial, for the Queen had so far proved submissive to his will and had shown no resentment towards his already numerous infidelities.

Royal marriages had in the past frequently been annulled. In many of these cases, moreover, there had been no apparent pretext, whereas on this occasion there could be no doubt that Henry's cause was *prima facie* a good one and that the interests of England were vitally involved.

Clement V. was undoubtedly anxious to gratify the wishes of the King whom his predecessor had honoured with the title of *Fidei Defensor*, but he soon discovered that difficulties of a formidable character beset his path.

Docile she may have been in the past, but on this occasion Catherine was adamant. She had no intention of allowing herself quietly to be discarded, and to the suggestion that she should take the veil she refused to listen. Not only was she prepared herself to resist Henry's plea, but she called upon her nephew, the Emperor, to uphold the dignity of her position.

The relations at the moment existing between the Emperor and the Pope were somewhat strained; for Rome had but recently been overrun by Charles' savage hordes of Lutheran soldiery, the Pope's servants slaughtered before his very eyes and his territory ruthlessly taken from him. Towards such an Emperor the Pope had little cause for any feeling of gratitude or affection, and to Wolsey's limited vision Charles undoubtedly loomed as the arch-enemy of the Church. Wolsey, therefore, intent upon maintaining the integrity of the Papacy and hoping not only to serve his master's ends, but his own, determined to make Henry's divorce a weapon wherewith to force England to join with France in defence of the Papacy. He succeeded in persuading Henry that in such a course of action alone lay his chance of success and that the Pope, once his independence had been re-established, would assuredly accede to the wishes of his deliverer.

Thus it was that the King allowed himself to be drawn into a close alliance with France, despite England's traditional animosity towards that country and regardless of Charles' prestige and personal popularity in England.

Francis proved a dangerous ally and a false friend, for in his subsequent negotiations with the Pope he completely overlooked his engagement to support Henry's divorce, and his demeanour throughout the ensuing contest with Spain was one of brazen dishonesty and callous indifference. English troops were sent out to assist the French army in Northern Italy, whose mission it was to drive the Imperialists out of Italy, but the Pope evinced little eagerness to throw himself headlong into the arms of his would-be protectors. He had no intention of making a definite move

until the result of the struggle in Northern Italy was known, and while he waited it was obvious that he was by no means inclined to under-estimate the value of co-ordination between the Empire and the Papacy.

The demolition of the French army at the hand of pestilence proved the downfall of Wolsey's hopes, and, Charles remaining in possession of Northern Italy, Clement's Fabian policy was amply justified, for as a result of the Emperor's triumph the alliance between Empire and Papacy became more firmly cemented.

If Henry had acted in accordance with his own inclination and had made full use of his personal influence with Charles, all might have been well. Had the Emperor been once convinced of the true urgency of Henry's divorce, he might have induced Catherine to accept a situation which had now become virtually inevitable, and once this had been accomplished Clement would have had no hesitation in granting Henry his divorce.

Wolsey had, however, adopted a different course of action. Charles being rigidly opposed to the divorce being granted, all hope of the Pope meeting the King's wishes had for ever disappeared. Anxiety not to displease Henry and thus goad him into the arms of the Lutheran forces of heresy, now drew Clement into that fatal policy of temporisation, which eventually compelled the King to take the matter into his own hands. His treatment of Henry's demand was henceforth peculiar. The King was given to understand that the divorce would be granted, whilst Charles and Catherine were at the same time assured that such a plea would never for a moment be seriously entertained. To shift the responsibility on to other shoulders the question was now referred to the Cardinals Wolsey and Campeggio, the latter being despatched to England, with instructions to delay his arrival in every way and, upon his arrival, to prolong the hearing of the case.

Campeggio played his part to the letter, and the Cardinals had not much more than opened the hearing of the case when, at Catherine's urgent request, the cause was suddenly withdrawn from their hands and taken to Rome. Such a course of action not only entailed endless delay, but was claimed as a distinct breach of faith, the Pope having promised, upon granting the

two Cardinals their commission, not to interfere with their hearing of the case. It was of course obvious that the King would not consent to plead his cause before a foreign potentate.

Cranmer was, as a last resource, despatched to Rome, armed with the verdicts of the universities, in favour of the divorce being granted. But ere this stage had been reached Wolsey had fallen from power. England was no longer satisfied to leave her destinies in the hands of ecclesiastical statesmen, and the nation demanded that the province of the Church should be at once drastically defined and its machinery so amended as to render it capable of once again exercising those spiritual functions, which, in its eagerness to gain political power, had of late been so neglected.

The reformation of the Church was of inestimable benefit to England, and Henry has certainly never yet received full credit for his handiwork in this direction. Wolsey had served his King loyally, but the weapons he had fought with were out-of-date and recoiled upon his own head.

Amongst Wolsey's enemies none certainly was more vehement than Anne Boleyn, who was an exceedingly beautiful woman. According to the verdict of the majority of her contemporaries her character contained not one single redeeming quality, although we must remember the friendship that existed between Cranmer and herself, and the Archbishop's subsequent dismay at hearing of her guilt.

It is possible that Wolsey's aversion to seeing a woman such as Anne Boleyn raised to the proud position of Queen of England tended in some measure to quench his enthusiasm for Henry's divorce. It is certain that Henry had once again relied upon the Chancellor and that Wolsey had once again failed him. This failure, coupled with his unpopularity, induced Henry to dismiss him in 1529. Wolsey's successor as Chancellor was Sir Thomas More, but it was the Dukes of Norfolk and Suffolk who in reality became the leaders of the new Government. Wolsey's plurality of benefices had been loudly denounced and he was deprived of the Sees of Winchester and Durham and of the Abbacy of St. Albans. He still remained Archbishop of York, but he had hardly settled down there before he was arrested on a trumped-up charge of high treason, and whilst on his way to London fell ill and died. Henry's

success was now complete, and in 1531 he was acknowledged as the "Head of the Church of England so far as the law of Christ will allow."

A year later Cranmer became Archbishop of Canterbury, and pronounced the illegality of the King's marriage and granted him the long-looked-for divorce. Henry, however, had not waited for Cranmer's decision, but had already married Anne Boleyn.

Between 1533 and 1535 Parliament ratified what had already been done by passing statutes which (1) disallowed appeal to Rome; (2) abolished the payment of "annates"; (3) swept away the authority of the so-called "Bishop of Rome," and finally, (4) by the Act of Supremacy (1535) conferred upon the King the title of "Supreme Head of the Church of England."

Thus was Henry's divorce legalised and the breach with Rome definitely established.

Catherine, who, even more than her own loss of rank, resented her daughter's consequent illegitimation and the settlement of the succession upon the children of Anne Boleyn, never once doubted that her imperial nephew would eventually intervene on her behalf. In 1536, however, the ex-Queen died, her health having been fatally impaired by her various misfortunes and sufferings.

Upon the subject of the breach with Rome public opinion was far from being unanimous, and it was on account of an audible undercurrent of dissatisfaction and a very natural dread lest, in the event of the Emperor's intervention, the discontented ones might openly assist the invaders, that Parliament exacted from all holders of official positions, and also from certain others whose fidelity seemed doubtful, an oath of allegiance to the new settlement, involving the acceptance of Henry's position as Head of the Church.

The penalty for refusal to take such an oath was death, and there can be no doubt that at the time it was considered urgently necessary, England's danger being a very real one.

As is always the case under such circumstances, those few who suffered the extreme penalty of the law were amongst the noblest in the land: honest, upright souls who

would stoop to no subterfuge, even to save their own lives.

Numerous as were the Pope's partisans in England the vast majority felt themselves constrained to accept the situation.

Certain monks, however, there were whose sense of honesty forbade them to save their lives by means of a meaningless lie and who were prepared to suffer death rather than admit what their innate convictions so earnestly urged them to deny.

Of other victims there were but few, but included amongst the number were two of the most prominent men of the day, Sir Thomas More, who had only recently resigned the seals, and Fisher, the aged Bishop of Rochester.

More's career, both as a lawyer and a statesman, had been a distinguished one, but it is as the author of "Utopia" that he is chiefly remembered to-day. Henry's detractors have naturally revelled in the task of extolling More's virtues, and loud has been their chorus of execration against him whom they judged responsible for his tragic fate. Of More's great ability there can be no doubt, and it is to his everlasting credit that he remained to the end true to his faith and died with admirable courage. Yet for all that, More was assuredly not the immaculate creature he has been so often painted. That he and Fisher were for so long intimately associated, and that the Bishop of Rochester was proved to be not only in direct correspondence with England's enemies, but also one of the prime instigators of a rebellion which aimed at ousting the King and re-establishing the old religion, is certainly significant.

More and Fisher were adjudged guilty and sentenced to death, but months elapsed before their executions took place, and there is no doubt that the King was desirous of saving their lives had it been humanly possible.

Henry's critics, whilst reviling him for the murder of More and Fisher, have deliberately slurred over the causes which rendered so abundantly necessary the taking of the oath these men rejected. They have also grossly belittled the intrinsic value of the great reformation, which abolished so many abuses of long standing and brought the clergy within the province of the common law. "Benefit of clergy" was indeed not actually swept altogether away until the reign of George IV., but

from 1535 it practically ceased to exist and the clergy were henceforth on an equality with laymen.

The confiscation of monastic property formed, of course, a vital part of Henry's ecclesiastical reformation. The great monasteries had long ceased to be the almshouses of earlier times, within whose hospitable walls all who were sick or poor or needy might be sure of a kindly welcome and material assistance. There were still, of course, certain houses which remained true to the old traditions, and these were not interfered with. For the most part, however, the monks had come to live indolent lives, and the large revenues which the various institutions enjoyed were spent in maintaining their inmates in luxury.

Some thirty of the smaller houses, which obviously served no useful purpose, Wolsey had already dissolved, with the full consent and approval of the Pope; and in 1539 Henry decided to go one step further and to apply the same methods to the larger monasteries.

The task of superintending the details in connection with the dissolution of such of the monasteries as testimony proved to deserve the fate, was entrusted to Thomas Cromwell, Wolsey's late secretary, who now with the title of Vicar-General became the King's chief adviser in ecclesiastical matters.

An admirable innovation of this time was the placing of an English translation of the Bible in each Church, the various congregations being thus encouraged to study the wording of the Holy Scriptures for themselves. The first complete translation of the Bible had been Wycliffe's, but two later versions had since then made their appearance, one being the work of Tyndale, who had not completed his task when executed in 1536 at Antwerp as an heretic, and the other by Miles Coverdale. The translation now made use of was a combination of these two, edited by Rogers.

Printing being now a comparatively easy matter, several new versions made their appearance during Henry's reign, the most important of which is known as Cranmer's Bible, which was further revised during Elizabeth's reign and published as the Bishop's Bible. Finally, in 1611, was issued the authorised version, which remains in general use to-day.

It was not to be expected that so fundamental and far-reaching a revolution as

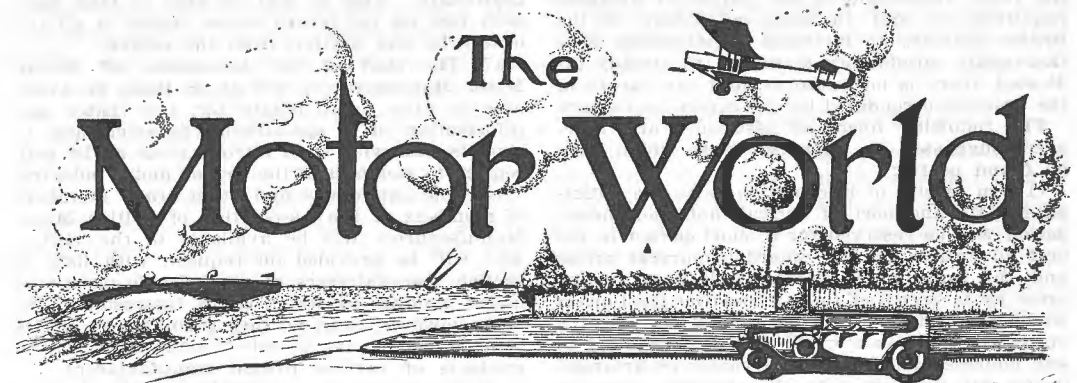
the breach with Rome would be carried through without strenuous opposition, and in 1536 an insurrection broke out in the north, which is generally spoken of as the "Pilgrimage of Grace." It does not appear to have reached formidable dimensions and was easily crushed, many of the ringleaders being put to death.

The year this insurrection occurred saw the King's second marriage brought to an abrupt and tragic termination. There can be no doubt that Henry was sincerely attached to Anne Boleyn, but such has been the malignity of historians that his second wife had been painted as but one more innocent victim of a ruthless and savage despotism. The evidence of Anne's guilt is, however, to all who are content to view the various facts and circumstances without bias, incontrovertible. She was a vain, frivolous and worthless woman, and she stands convicted upon the evidence of those with whom she offended, and whom justice compelled to share her fate. It is unreasonable to suspect that men in such a dire predicament as those with whom she was accused of having committed adultery should volunteer false evidence against the woman whose fascination had lured them to their downfall. The specially constituted court appointed to decide the question of her guilt was composed of twenty-seven of the most eminent men of their day, several of whom were closely related to the Queen.

The case was a most unsavoury one, Anne's own brother being arraigned as one of her seducers, a charge which might well seem incredible but for the fact that he apparently acknowledged the justice of his sentence. There is no doubt that the discovery of Anne's guilt was a cruel blow to the King, although the fact that he married again the very day after her execution is certainly difficult to satisfactorily explain away. Between the discovery of Anne's guilt and her execution only a few weeks elapsed, and there is no reasonable doubt that the finding of the court was entirely justifiable and that Anne deserved her fate.

Henry's third wife was Jane Seymour, who died whilst giving birth to the long-looked-for son and heir. Upon Anne's condemnation her marriage with Henry had been declared null and void, the Princess Elizabeth, her daughter, sharing therefore her sister's illegitimacy. Under these cir-

(Continued on page 619.)



By "SPARKING PLUG"

Trouble at State Motor Garage.

RUMOUR has it that trouble is brewing among the employees of the State Motor Garage at Glebe. The manager recently retrenched several employees on account of insufficient work, but the latter contend that there would be ample work for all engaged if Government cars were treated at the Government garage instead of at a private firm in Princes Street, Church Hill.

The matter is likely to become the subject of a deputation to the new Minister for State Enterprises (Mr. C. C. Lazarini).

* * *

Motor 'Buses Multiplying.

Motor 'buses seem to be multiplying with the rapidity of the much-abused bunny. The pioneers of the various suburban services have achieved such excellent results that the inevitable opposition has arrived to the greater delight of a patient public.

It is understood that the Government refuses to give a license for more than a limited period to owners of 'buses, as there is an idea on foot to acquire existing services on behalf of the people and to further supplement the rolling stock by catering for suburbs not at present served.

It is nothing new for the Government to be shown by private enterprise the business-like way of performing its duty to the travelling public. But whoever has control Sydney can look forward to a still greater fleet of motor 'buses honeycombing suburban areas in the near future.

Visitors to Old World.

All visitors to Great Britain who are in any way connected with the motor cycling trade, have had special facilities provided for them by the British Cycle and Motor Cycle Manufacturers' and Traders' Union, of the Towers, Warwick Road, Coventry, and the Association of British Motor Manufacturers Limited.

No effort has been spared to relieve visitors of any and every inconvenience usually encountered in a strange land.

We publish herewith a memo from the Overseas Motor Traders' Centre, which sets out in detail the arrangements entered into.

The Association of British Motor Manufacturers are desirous of drawing the attention of motor traders throughout the world to the establishment by the Association of an organisation known as the Overseas Motor Traders' Centre, with rooms at 40-41 Conduit Street, London, W.1, where the Association itself is housed.

The centre will be under the management of the General Secretary of the Association and all overseas motor traders visiting Great Britain for the purpose of doing business in the products of the British motor and connected industries are cordially invited to use the services of the centre in the ways suggested below and also to apply to it for any other information or assistance that may be required before or during their visits to Great Britain. It is the desire of the staff of the centre to do everything possible to make the visits of overseas motor traders both effective from a business point of view and pleasant from a social standpoint.

The members of the Association of British Motor Manufacturers, therefore, wish to extend a most cordial invitation to overseas motor traders to utilise the facilities provided for them. British motor manufacturers feel that, if traders will regard this organisation as in the nature of a club or information bureau, the result cannot fail to be the establishment of closer touch,

the fuller realisation of the nature of overseas requirements, and an improved ability of the British industry to fill these requirements in a thoroughly satisfactory manner. As already indicated, there is no desire to limit the nature of the assistance rendered by the centre to visitors.

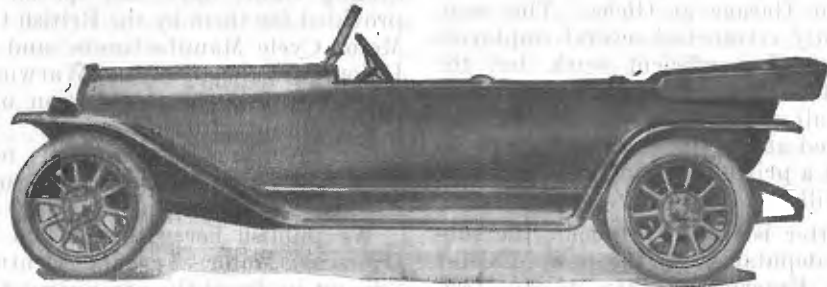
The following forms of assistance are, however, suggested as amongst those which may be found useful:

(1) On receipt of information as to the anticipated date and port of arrival, hotel accommodation will be reserved for a short period to the best advantage, having regard to current prices and the instructions of the visitor as to the price he is prepared to pay and the position in which he desires to be accommodated. Details of the arrangements made will be forwarded to any address indicated by the visitor or arrangements will be made with the shipping company for the information to be handed to him on landing.

(2) The visitor may arrange in advance to give THE OVERSEAS MOTOR TRADERS' CENTRE, 40-41 Conduit Street, London, W.I., Telegrams: Abritimam, Phone, London.

Telephone: Mayfair 6524.

to all probable correspondents as his business address during the whole of his stay in Great



Latest model (510) 6-cylinder 20-30 h.p. "Fiat." Garratt's Ltd., 173-75 Elizabeth Street, Sydney, agents.

Britain. The centre will then, if supplied with the necessary instructions, see that all letters are promptly forwarded to him and telegrams and cables repeated to him without delay. The centre will also communicate to him at his temporary address, anywhere in Great Britain, the substance of any telephonic messages received for him.

(3) If desired, notices will be inserted in advance in trade journals indicating the prospective arrival of the visitor and the nature of the business relationships into which he desires to enter.

(4) The visitor may make arrangements in advance to keep business appointments at the offices of the centre.

(5) The visitor may use the offices and rooms of the centre to any extent that he may desire. Shorthand typists will be available without charge to take down and transcribe his business letters, and note paper and envelopes will also be provided free.

(6) Duplicates of the visitor's correspondence will be correctly filed in a private file of his own, so that he will at all times during his stay have means of ready reference to his correspondence

up-to-date. Also he will be able to take back with him on his return home, copies of all the letters he has written from the centre.

(7) The staff of the Association of British Motor Manufacturers will at all times be available to give, or to obtain for, the visitor any information of a specialised character, and to provide him with such introductions as he may require to members of the British motor industry.

(8) The catalogues and other trade literature of members of the Association of British Motor Manufacturers will be available to the visitor, who will be provided on request, with lists of British manufacturers of any specific classes of motor product in which he is interested. The staff, however, is in no case permitted to advise visitors in matters of selection as between the products of various British manufacturers.

(9) Current issues and files of the leading technical journals will be available at the centre.

(10) Visitors desirous of touring in the provinces will be assisted in respect of their railway and hotel arrangements, etc., and assistance will be rendered in respect of passports, hotel arrangements, etc., to those who wish to tour on the continent of Europe.

(11) Visitors will be assisted as regards legal and other formalities in connection with the im-

port and export of their own private motor cars, the use of those cars within Great Britain, and temporary membership of motor clubs or associations.

The Silent Cop.

Considerable difference of opinion exists as to the utility of the silent cops at the intersection of city streets.

The traffic authorities are adamant in their determination to adhere to them insisting that they have proved successful wherever tried.

Only recently Mr. Ely, M.L.A., asked in the Assembly that the silent cop at the intersection of Hunter and Macquarie Streets be removed and a live cop substituted to check "scorching" at that corner.

A couple of nights later the writer was walking down from Parliament House with a limb of the law when some eager North

Sydney motorist was racing apparently for a punt just about to leave Fort Macquarie. The motor took everything that came in its path, including the silent cop, and seemed to bounce somewhere in the vicinity of Government House. The impact of car and cop could be heard some distance away. Whether a capsizing would be possible if the "cop" were struck at another angle or not is a matter for the future. At any rate the limb of the law was not a bit impressed with the suggestion of Mr. Ely to substitute a "live" cop for the silent one.

Stolen Fruits are Sweet.

The owner of an *Itala* car, who is now exploring the country round about Leeton and Griffith, drove a party of friends to Bondi Beach when on a visit to Sydney recently, and was returning to the city via Bellevue Hill line. Nearing Victoria Road his supply of petrol ran out, holding him up about fifty yards from the crest of the hill. One of the party went on a reconnoitring expedition, hoping to bring back a tin of benzine. The driver meanwhile backed the car down the hill in the hope of finding a level stretch, but eventually, on the suggestion of a passing driver, backed up the hill and reached the old Bellevue Hill tram terminus where a halt was made to pick up the friend with the oil. A motor 'bus plying to the railway made its appearance and before starting on the return journey the driver emptied the contents of a benzine tin into the "fo'c's'le" and left the empty on the kerbstone. When the 'bus had vanished the driver of the *Itala* turned to one of his party and said, "Eh, Mac, slip over and see if there is any oil left in that tin—a thimbleful will do nicely till we get home." Mac obliged and to his great delight found that the contents had not been drained to the extent of a dipper full or more.

Quick as a flash the seat of the *Itala* was upturned whilst the remains of the tin were being purloined before the next 'bus arrived. But some of the oil spilt on the seat whilst being poured into the tank and, not soaking into the wood as "dinkum" oil always will, the driver exclaimed, "Good Lord, what's this?" He tasted it. It was water!!

The car was coaxed along to a garage near Bondi Junction and left overnight for the necessary treatment.

Moral: when your tank is dry—your car will not take water—neither will Mac after his experience at Bellevue Hill.

Cautious Drivers Preferred.

An English exchange reports that a timid old lady who had succumbed to the seductive charms of owning a *Rolls-Royce*, set about the task of securing just the right type of driver for the outfit. She approached a labour exchange with a sheaf of "musts" and "mustn'ts" ranging from "must go to bed early" to "musn't drink, etc.," until the director of the exchange began wondering if some hidden force had suddenly wafted him into that celestial region where chauffeurs know not the temptations of red wine, etc. However, after considerable sifting and "third-degreering," he selected three cautious drivers—one from an English agency, one from north of the Tweed, and the third from the Emerald Isle, and, after arranging a joint interview with the old lady, retired from the scene conscious of having acquitted himself with favour to none and justice to all.

Sandy and his southern rival were not long in trying to persuade the owner that each was the very man required if the *Rolls-Royce* had to be steered through the many pitfalls encompassing the career of a valuable motor car.

"How near to the edge of that precipice over yonder could you drive?" she asked Sandy, in testing his qualifications for the post. "Within eighteen inches," was the reply. "And you?" she asked, turning to the Englishman. "Twelve inches, madam.,," "And what about you?" she asked of the Irish chauffeur, who seemed hopelessly flabbergasted at the thought of disputing inches with a *Rolls-Royce* on the edge of a precipice. "I'd keep as far away from it as I could," he replied, evidently valuing his neck before the position. "You're engaged," was the timid old lady's rejoinder as two wiser men retraced their steps meditating on the genius of the Irish in dodging whatever traps are ready to snare them.

The Limit in Traffic Control.

I was turning left into New Street, writes a contributor in *The Motor*, when, for no apparent reason (the road was totally devoid of traffic), the semaphore-like arm of a policeman barred my gentle

progress and his other welcomed me to proceed in another direction. As the road was not up and there was no signs of a fire, riot, strike, mob procession, or other form of obstruction I sweetly asked why my path was thus ordained. To my utter amazement he replied that there was now a new rule which made it necessary for all drivers to hold out their left hands when turning left as otherwise they would be forced to go straight on or be arrested. Really, it seems just a little too thick. Presumably, the driver of a closed car always ends up in trouble, for he cannot extend his left hand by ordinary means.

Here's Another.

I heard an amusing story the other day of a certain well-known motor cycling celebrity who, on account of his skill in getting the last ounce from an engine, was approached by a well-known car manufacturer with an offer to drive at Brooklands. He duly took the car over, had the engine on the bench test, made such alterations as seemed fit, reassembled the car, received praise for his prowess from a director, and waited for the day of the race. Forty-eight hours previous thereto, the head tester of the concern received orders to go to the track and see the speed-wizard. Judge his surprise when he was met by the words, "I say, old man, I've managed to get the hang of the steering, but what on earth do you do with these pedals and levers?"—"Contact" in *The Motor*.

Why It Runs Faster.

There have been several examples on record of a Stepney wheel becoming detached from a car in motion, and surprise has been expressed because it has careered along the road at a faster pace than the car. The following is probably the reason, says *The Motor*. The effective diameter of the Stepney is greater than that of the deflated tyre. Consequently, although the Stepney and the punctured wheel both have a similar circumferential velocity, the former, on being released, would cover a greater distance in a given time than the deflated wheel, owing to its slightly greater diameter. This would be a simple matter to prove mathematically.

Gradient Sign-Posts.

In the days when I used to travel by rail mostly instead of by road, I was often

puzzled by the "direction" posts which I caught sight of by the side of the lines (remarks "Au Courant" in *The Light Car and Cyclecar*). The arms of such posts were usually tipped up at some unexpected angle, the object of which was at first baffling. Later on I learned that these were gradient posts, and that the arm upon each side was "graded" so that it gave some idea of the "lie of the land." Thus, 1 in 50, a very severe gradient for a railway, would be marked upon one arm, the angle of which would be about 45 degrees, the other arm indicating a downward gradient, of, say, 1 in 2,500, would be practically level. I wondered whether under the new road sign-posting scheme it would not be possible to incorporate the same idea. Thus, at the foot of Hindhead, the fact that one was faced with a long, stiff climb would be unmistakable if the direction arm were pointed upward at an angle, whilst on roads like that between Peterborough and Boston, horizontal direction arms would be a sure guide of the flatness of the country. After all is said and done, an internal-combustion engine requires quite as much nursing as the engine of a locomotive, and what is good for one surely would be beneficial for another.

The "Oldsmobile-Four."

The best in a motor car is never attained in the first model. It is only through constant change and improvement that any mechanism can closely approach perfection. The new *Oldsmobile* four-cylinder car is the result of the work, the experience, and the tests of a quarter of a century. During all this time the *Oldsmobile* engineers have been improving the car, increasing the efficiency of the engine, making the body more attractive, and changing the design to give greater riding ease and comfort to the passengers. *Oldsmobile* has always been recognised as a leader in automobile design and construction.

The *Oldsmobile-Four*—the new model of the line—will have its official introduction to the New South Wales motoring public during the first week in November, when Boyd Edkins, Limited, the New South Wales distributors, expect the first shipment of these cars per the *Port Hacking*.

This new car, by its sensational feats in Canada and the United States, has already passed the test of public trial and presents a wonderful record of achievement to the buying public.

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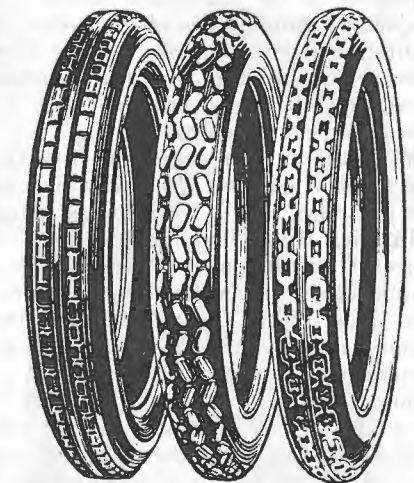
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Extreme care has been given to the development of this new model, and a great deal of special machinery of the most modern kind has been installed at the new factory which has been built at Oshawa (Canada) to take care of the export requirements. The new *Four* is the product of our sister Dominion. It has been honestly built for good service, and is a low-priced car.

The new model has a one hundred and fifteen inch wheel base, and the motor is a regular overhead valve type *Four* with cylinders cast *en bloc*. The bore is 3 1/4 inches, stroke 5 1/4 inches, giving a displacement of two hundred and twenty-four cubic inches. On a block test it develops 43.8 horse-power at two thousand and four revolutions per minute. The rear axle is the spiral bevel type; semi floating. Differential housing and wheels mounted on Hyatt roller bearings. All models are mounted on wire wheels, fitted with cord tyres, and are being imported complete with standard body, the coach work being finished in first-class style.

Motor Tyre Industry in America.

When the Government of the United States was taking the manufacturers' census in 1905 it took notice for the first time of the tyre industry.

In the census report for that year there appeared in the discussion of the general subject of automobiles about three lines of printed matter on tyres. These lines expressed the opinion that the manufacture of automobile tyres was in a fair way to become a real industry.

With this brief recognition from that department of our Government which records the rise and fall of the tide of American industries both tyres and rubber disappeared from the pages of the reports of the manufacturers' census for ten years. By this time—1914—the rubber industry had become a lusty young giant, and so well thought of that the Bureau of the Census brought out from its dusty archives figures showing the rate of growth of the industry in those earlier days when its slow progress carried no indication of the bigness it was

soon to attain, says a bulletin of the United States Rubber Company.

Prior to 1914 the figures obtained by the Bureau of the Census were lumped under the one head of "Rubber." Under this arrangement automobile and bicycle tyres took their place with rubber boots, hot-water bottles, and jar rings as one of a miscellaneous lot of articles manufactured from rubber. There was no reason before that to allot to tyres a special place in Uncle Sam's table of statistics regarding manufactures of large importance.

Because of the fact that these early statistics on the rubber industry show the extreme limit which tyre manufacture might have attained had it monopolised instead of forming only a fractional part of rubber production, they have an interest to the student of the growth of the tyre industry, and for that reason are given here: 1879, \$25,309,648; 1889, \$42,853,817; 1899, \$99,880,817; 1904, \$148,015,391; 1909, \$197,394,638.

By the year 1914 rubber had arrived at a position of importance and had a place of its own in the census reports. Rubber tyres had also come to an important position, and there is no doubt that the recognition given to the rubber industry was dependent on the enormous increase in the manufacture of tyres. Rubber manufactures for the year totalled \$300,993,796. Forty-eight per cent. of this total represented the production of tyres, the amount being \$146,421,561.

A recently issued preliminary statement of the Bureau of the Census covering the results of the 1920 census of manufacturers with reference to the rubber industry, shows that four hundred and seventy-five establishments, devoted principally to the production of rubber goods, manufactured during the year 1919 goods to the value of \$1,138,216,000. The value of tyres and tubes produced was \$828,424,000.

Manufacture of rubber has come to be an essentially American industry, for in this field the United States easily predominates. It is estimated that seventy per cent. of all crude rubber consumed in the world is manufactured into useful articles in that country.

ELECTRICITY IN THE HOME

ELECTRICITY plays a very large part in our every-day life, in industry, transportation and communication. Not so very long ago it was regarded as a luxury in the home, but to-day we find electricity and its appliances within reach of and used extensively throughout the modern household.

The innumerable benefits and advantages of electricity are, perhaps, more fully appreciated if we "think of going on foot or using a horse every time we ride in an electric car!" Think of using kerosene or candles to light our streets and buildings! Think of writing a letter every time we now use the telephone, telegraph or wireless methods of rapid communication! Think of past days, if you know of the conveniences of the electric fan, the electric heater, the electric iron, and the electric vacuum cleaner, and imagine what it would mean to be without these comforts and conveniences again.

The Ideal Home.

Desired by all, yet attained by few, is the "Ideal" home. However comfortably furnished and tastefully decorated, almost invariably in the average home a few disadvantages will be heard about that do not altogether harmonise with the word "Ideal." Possibly it does not occur to the average person when discussing these various disadvantages, however small they may be, that electricity and electrical appliances will no doubt help to solve their problems.

With the rapid progress of science, electrical appliances are now procurable that will not only cook as well as the ordinary utensils used on gas and fuel stoves, but which are cleaner, quicker, more reliable and always efficient, as they will work twenty-four hours per day if necessary. One particular outstanding feature of electrical appliances used in the home is labour-saving.

It would absorb too much space to enumerate all the electrical appliances now on the market, the selection and number required, of course, depending on the family, the mode of living, and the size of the home.



Briefly, these appliances divide themselves into three classes:

Labour Saving—Pressing Iron, Vacuum Cleaner, Washing Machine, Ironing Machine, Stove, Utility Motor, Refrigerator, etc.

Household Convenience—Heater, Toaster, Percolator, Griller, Kettle, Clothes Washer, Mangle, Water Heater, Dish Washer, Hot Plate, etc.

Personal Comfort—Electric Fan, Heater, Curling Iron, Vibrator, Cigar Lighter, Hair Dryer, Shaving Mug, etc.

The modern housewife is always on the look-out for new appliances that will save her work and inconvenience, and is no doubt familiar with some of the items above mentioned.

Cooking by Electricity.

Imagine the difference between the old-fashioned kitchen range and the electric cooker! In the latter there is no fire to lay, no wood to chop, no handling of coal, no search for mislaid matches, no manoeuv-



Electric Griller.

ring with dampers to check or increase the draught. Instead, the electric oven is clean, handy, compact and portable—its keynote being simplicity, the heat being regulated by turning a switch.

Another appliance deserving mention here is the *Magnet* (Pedestal) Heater and Cooker, most useful and economical for the home. Used as a heater it gives a sun-like glow and throws out the heat rays similarly to a searchlight, and can therefore concentrate them in a certain direction by means of a swivel point which enables the heat to be localised as required. It can be used for boiling an ordinary kettle, toasting, frying and cooking small dishes. It is of course portable and can be used in any part of the house. On a cold evening it is not necessary for everyone to squeeze around the fire to get warm, they can sit in comfort in any part of the room in which there is an electric heater.

The Utility Motor.

This appliance is an ordinary small electric motor, and like all other electrical appliances, secures the power necessary to operate it from a wall-plug. By means of various attachments it will do numerous small jobs, including beating cake dough, whipping cream, cleaning knives and utensils, polishing silver, etc.

Electric Iron.

The old method of placing the iron on the stove and waiting for it to heat up is gone. The electric iron is a well-known boon to every home. It is economical to use and is always ready for instant use in any room.

Quite a number of people travelling about carry an electric iron in their kit, as it is so convenient and no encumbrance.

Grillers and Toasters.

The special characteristics of the electric griller and toaster are cleanliness and



Electric Toaster.

compactness. They, like most of these modern appliances, may be used with the greatest of ease in any part of the household where there is a power "point." Dust and dirt are entirely eliminated where this wonderful natural force electricity is tamed, domesticated and brought under easy control.

Electricity in the Living Room.

As this is the room in which most time is spent it is everybody's aim to make it as comfortable as possible—otherwise the quest for the "Ideal" home would not be realised.

In the evening, after a hot summer's day, what is more conducive towards pleasure and comfort than the cool breeze from an electric fan? In the winter time the room must be as warm as possible, and by using an electric heater or radiator the whole room will be warmed up in a few

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minutes. The heater or radiator, in addition to dispensing with the necessity of laying a fire and then coaxing it to burn, has also a decorative value.

Other Rooms.

A special wall-plug can be fitted in the power point in any room, and so enable kettles, toasters, hot plates, coffee percolators and egg boilers to be operated. Other appliances that can be used include the electric sewing machine, phonograph and pianola.

In bed-rooms, such appliances as special reading lamps, electric curling tongs, milk heater, electric shaving pot, etc., are of great convenience.

For the bath-room electrical equipment includes an electric radiator to avoid chills in winter time; a special gown-stand for drying robes, towels, etc.; an electric hair dryer and vibrator.

Some servants object to washing, and when it is decided to send clothes to the laundry, awkward questions arise: "Will the laundry tear the clothes, spoil their whiteness, etc.?" These questions are answered by the electric washing and wringing machine, always ready, quick and reliable. When washing day arrives all that has to be done is to put water and the clothes into one of these machines, switch on the current, and shut down the lid. In about a quarter of an hour the first batch will

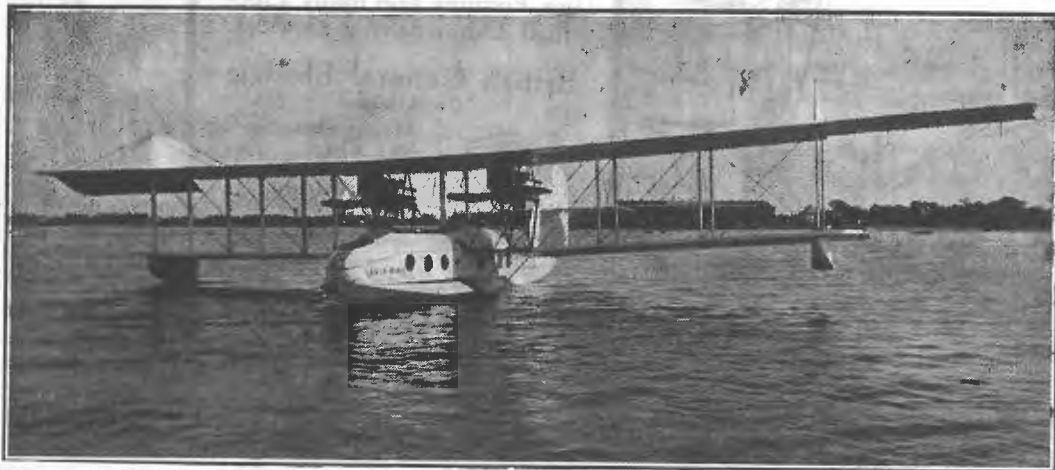
be ready for wringing, which is just as simple. It is obvious, therefore, that the application of electricity to the washing of clothes simplifies one of the housewife's most troublesome tasks.

For general house cleaning the electric vacuum cleaner is invaluable. No brooms, mops or dust-pans are necessary, and it is found in most homes where this form of house cleaner is employed that the services of at least one maid can be dispensed with.

The lighting of the home by electricity is the most general way in which the current is used in the majority of households at the present time. Yet every home that is lit by electricity can enjoy the comfort of the various appliances above mentioned.

Possibly some people will say that electricity is too costly, but that is wrong. Nothing is more certain than that within a few years, those who do not now enjoy the pleasures of electricity in the home will wonder at the antiquated, expensive and wasteful methods of to-day, simply because electricity will take charge of the domestic routine in the home, eliminate all unnecessary work and make such work as remains a pleasure. Then the house which uses electricity, in as many of its modes of application as may be convenient, will be well on the way to becoming an "Ideal Home."

GIANT AEROMARINE NAVY 11-PASSENGER FLYING CRUISER



This huge craft, the "Santa Maria," equipped with two 400 h.p. "Liberty" motors, has a wing spread of 104 feet, maximum speed of 100 m.p.h., and loaded weight 15,000 pounds.

(Continued from page 608.)

circumstances it was of course essential that Henry should marry again and as soon as possible, but this hardly justifies the indecent haste with which he proceeded to espouse Jane Seymour. The birth of a son was, of course, loudly acclaimed and greeted with the wildest enthusiasm, but as a matter of fact Henry's anxieties were far from being yet at an end, for the young Prince was a sickly child and seemed at first unlikely long to survive his mother. Under the circumstances, therefore, it was imperative that the King should marry again. His fourth wife was Anne of Cleves, the marriage forming an important link in Cromwell's deep-laid scheme of cementing an alliance between England and Protestant Germany. The marriage ceremony was solemnised by proxy, and upon the Queen's arrival in London the King found her homely appearance so different to what he had been led to expect that the marriage was never consummated, Parliament, at the King's request declaring its instant annulment. The breakdown of the matrimonial venture upon which he had set his heart proved instantly fatal to Cromwell's dream of uniting the Protestant forces of Europe into one solid phalanx, and the all-powerful Minister was not destined long to survive Anne's relegation. A natural feeling of irritation at the part he had played in the Cleves' marriage cost Cromwell the King's favour, and just at this moment a war of reaction, sweeping headlong over England, sounded the knell of the Minister whose foreign policy, religious views and humble origin had combined to provide him with a galaxy of powerful and relentless enemies. Meteoric indeed was the fall of him whose ambition it was to bind together the various forces of Protestantism into one solid and formidable whole.

Cromwell was undoubtedly strongly imbued with the doctrines of Luther and of Calvin, whereas the King as yet felt little or no sympathy with—and the more conservative of Englishmen a profound abhorrence for—the Protestantism of the Continent. The pendulum had suddenly swung backwards, and not only was Cromwell executed, without even being so much as heard in his own defence, but the Act of the Six Articles (1539) was passed, making the denial of any of the fundamental beliefs of the Catholic Church a severely punishable offence. On this basis, there-

fore, was Henry's reformation of the Church established, the doctrine and ritual remaining unaltered, and the only innovations being the Pope's supercession as Head of the Church, the submission of the clergy to civil authority and the use of English instead of Latin in the services of the Church.

From the date of Catherine's divorce the danger of war with the Empire was ever imminent, and when the war clouds gathered it was but natural that England and Protestant Germany should drift together, the latter being fully conscious of the Emperor's ultimate determination to eliminate heresy throughout his dominions.

Charles V., however, was always able by the display of a modicum of tact to prevent an alliance between England and Protestant Germany reaching any degree of performance or stability.

Henry discovered early in his reign that he could place no reliance in the King of France, and after the fall of Wolsey it was his policy to propitiate Francis in every way possible, without allowing himself to be drawn into any possible entanglements. With Scotland, in spite of the Marriage Treaty and of Henry's persistent efforts to maintain peace, the relations throughout the reign were decidedly strained.

James IV., as already mentioned, lost his life in the disastrous battle of Flodden Field (1513), whilst twenty-nine years later his son and successor, James V., was defeated at Solway Moss with almost equally tragic results.

James V. came to the throne at the age of two, and the period of his minority was an epoch of turbulence and anarchy rarely equalled even in Scottish history. After the battle of Flodden the Queen Mother assumed the regency, but this she was compelled, upon her marriage to the Earl of Angus, to resign in favour of the Duke of Albany, the King's first cousin and heir presumptive to the throne. Albany, a man of little ability, now attempted to maintain his authority with the assistance of French troops. He was, however, a feeble leader, and his abject incapacity and notorious cowardice eventually cost him the support even of his French partisans.

The Government of the country now reverted to the hands of the ex-Queen and her husband, it being Angus's ambition to rely upon English rather than French sup-

port. He was eager to see Henry's statesmanlike proposal to effect the union of the two crowns by the marriage of James V. with his daughter Mary carried into effect, but the opportunity of bringing about a lasting alliance between the two countries was unfortunately thrown away by the misconduct of Mary Tudor, who, tiring of Angus, formed a mad infatuation for the Earl of Methuen. This unfortunate *contretemps* threw the ex-Queen into the arms of the French party and confusion was worse confounded. The young King, who at this juncture himself took over the reins of government, had been reared in an atmosphere in which reliance upon France and mistrust of England formed the main elements and, his preceptors being Catholics, it is small wonder that he was deaf to his uncle's entreaties and refused to grant him the personal interview by means of which Henry hoped to persuade his nephew to break with Rome and France and henceforth rely upon English support.

James rejected his uncle's overtures, and went so far as to send assistance to Henry's Irish rebels, a course of action which he was destined bitterly to regret, for it led directly to yet another invasion of Scotland and to eighteen months' of wild devastation and plunder.

The peace which followed was of the nature of a truce, Henry's efforts to bring about a permanent understanding between the two countries proving once again unsuccessful.

The young King's marriage in 1536 to Magdalen de Valois further widened the breach between England and Scotland. The young Queen died within a year of her marriage, but a year later, James married yet another French Princess, his second wife being Mary of Guise, whose father was the recognised leader of the Catholic party in France. Cardinal Beton, Archbishop of St. Andrews and Henry's avowed enemy, was restored to power and all hope of reconciliation between the two Kings was now out of the question. In his dealings with Scotland Henry throughout displayed a moderation and sincerity which deserved better results. He certainly utilised every means within his power to discover a *modus vivendi* between the two countries, but his statesmanlike efforts ended in failure. The reformers were as yet but a small minority in Scotland, and the laws against heresy were still strictly

enforced. This persistent persecution, as cruel as it was ill-advised, played eventually into the hands of the reformers.

James was in many respects a farsighted monarch, but his religious zeal cost him the support of the major portion of the Scottish nobility, and when in 1542, after his failure to meet Henry at York and discuss their differences, Scotland was once again invaded, many of his more important subjects failed to respond to his summons and his army, thus weakened, was overwhelmingly defeated at Solway Moss.

A year prior to this James's two sons had died, and shortly after the battle the wretched King himself passed away. His daughter and heiress Mary was then an infant, but destined to play a tragic part in the history of the next forty years.

It was now Henry's ambition to bring about a union of the two crowns by the betrothal of the infant Queen to his own Edward. A treaty to this effect was accordingly drawn up, but the Scottish Regent, the Earl of Arran, was weak-kneed and eight days after the ratification of the treaty he renounced Henry's friendship and threw himself into the arms of the French party, at whose head Cardinal Beton still remained.

The result of Arran's treachery was that Scotland was again invaded, by the Earl of Hertford in May, 1544. Hertford, whilst doing untold damage and inflicting appalling sufferings upon the unfortunate people, failed in his mission and was in the end compelled to retreat. Henry's crude and brutal methods of wooing tended to unite every class and section of the community in opposition to the unpopular match.

War between England and France was but the natural corollary to Hertford's invasion, and crossing the Channel with a formidable army, Henry succeeded, after a protracted siege, in capturing Boulogne.

Before entering upon hostilities he had come to an understanding with Charles V., but the two allies failed to work together, and Charles denounced Henry's methods as being too dilatory. The Emperor was not anxious to see England in possession of a second port on that side of the Channel, and the relations between the two allies became so strained that eventually Charles repudiated his treaty engagements

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and entered into a separate peace with France.

A combination of the two great Catholic powers at England's expense now seemed probable, and Henry found himself constrained to come to terms with the King of France (1546). By the terms of the new treaty Francis acknowledged his indebtedness to Henry for certain loans in the past, and guaranteed repayment within eight years, at the end of which time Boulogne was to be restored to France. Ere these terms had been agreed upon Henry had to face what threatened to be a great French invasion. His hastily improvised fleet, thanks to brilliant leadership, had put the French to flight and thus saved the situation.

In the treaty with France Scotland was expressly included, and for the last year of Henry's reign peaceable relations existed between the three countries.

The reign of Henry VIII. is chiefly memorable for the fact that he was the first English sovereign to adopt the title of King of Ireland.

At the accession of Henry VIII. "the pale," alone, remained amenable to English law. The Anglo-Norman colony had either disappeared altogether or become absorbed in the native population. There was no English army and no trace of an English Government.

Thomas Howard, the Earl of Surrey, afterwards the Duke of Norfolk, was able for a time to overawe the various Irish chieftains, but upon his withdrawal in 1522 confusion was worse confounded, and it was a simple matter for Charles V. to foment an insurrection in Ireland. The leader of the insurgents was Thomas Fitzgerald, a son of the Earl of Kildare, but, despite Spanish assistance, the rebellion proved a fiasco. Fitzgerald was compelled to surrender, his five uncles were lured to a banquet, seized and put to death, and by means of a brilliant victory over O'Neill, the leading chieftain of the north, Lord Grey, who had been appointed Lord Deputy when danger first threatened, reduced Ireland to a state of subjection which augured well for England's future ascendancy.

The Irish Parliament consisted of Grey's followers, and one by one the various statutes which in England had brought the Pope's supremacy to an end were gradually

introduced. Such legislation was markedly unpopular in Ireland, but by parcelling out amongst the various chieftains the rich possessions of which the Church had been denuded the Irish were lured into a comparatively peaceful acceptance of the English reformation.

Grey's career terminated tragically, for after rendering invaluable services to the crown he was accused of treason and executed.

The further colonisation of the island was throughout Henry's reign consistently encouraged, the lands of the dissentients being at the same time gradually confiscated.

Like Ireland, Wales also was, during Henry's tenure of the throne, brought into closer connection with England than ever before.

Henry VII., being the son of a Welshman, might have been expected to interest himself in Welsh affairs, but he found his hands too full and it was left to his son, Henry VIII., to bring about that country's incorporation with England, English laws being introduced into Wales and the principality henceforth represented in the English Parliament.

Another outstanding feature of this remarkable reign was the growth and expansion of the Royal Navy.

During Henry VII.'s tenure of the throne ships were first built expressly for war purposes. The vessels built during his reign were, however, insignificant in size and number. Under Henry VIII. it was that shipbuilding began upon an altogether unprecedented scale. The vast majority of such vessels were of course built exclusively for commerce, but His Majesty's Navy was also at the same time considerably extended, and it came to include some of the largest ships afloat, the *Henry Grace de Dieu* being over one thousand tons and capable of carrying nearly a thousand men. This type of ship was slow-sailing, square-beamed, heavy and cumbrous, somewhat reminiscent of the Chinese junk, with port-holes so near the waterline that they must have been extremely difficult to handle in anything like rough weather.

For the great boom in shipbuilding Henry was himself largely responsible. Dockyards were established at Portsmouth, Woolwich and Deptford, whilst Italian experts were induced to settle in England,

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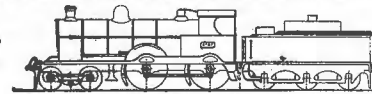
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the King taking the greatest interest in the new undertaking and being a constant visitor at the various dockyards.

Henry's motives in encouraging ship-building on a large scale were at first purely commercial, but once the breach recurred with Rome he came to realise the immense possibilities of defence by sea and set himself to encourage the industry and to increase the output of his yards. His enterprise in this direction was destined ere long to prove of the utmost value to England, for twice in the next five years did the great opposing powers have their navies marshalled, once on the mouth of the Scheldt and once at Boulogne, ready to cross the Channel with a force capable of overcoming all resistance and of effectually restoring the old religion. Twice did King and people, in a feverish outburst of patriotic enthusiasm, collect a fleet to defend their shores, every available ship being commandeered and each man at all suited to the task made use of. Twice without any attempt at testing the endurance of the defenders, did the opposing armada melt away.

Henry it was who had been foremost in thus meeting the danger which threatened England's existence, and the chroniclers actually allude to the King "going down to Portsmouth to watch the fighting."

Towards the end of his reign we hear of a special Board being constituted to deal with naval affairs, the first step towards the establishment of the Navy as a separate branch of the fighting service; although curiously enough it was not until nearly two hundred years later that a regular Naval service, distinct altogether from the Army, first came into existence.

We have already spoken of the economical nature of Henry's government. During the last few years, however, he found himself at war both with Scotland and France, and finding his Treasury exhausted he induced his Parliament to release him from all his debts (1546). Such a step was not without precedent, a similar measure having been adopted earlier in his reign (1529). That his debts had been incurred in the national service may have been deemed sufficient justification at the time, but it was a clumsy method of meeting his pecuniary liabilities and entailed the ruin of his unfortunate creditors.

A "Benevolence" of twenty pence in the pound was exacted in 1545 in the face

of violent opposition, but as Parliament had declared the King's proclamations to be as binding as Acts of Parliament, all thought of resistance was out of the question.

Despite these flaws, it must be admitted that Henry's Government, taking into consideration the immense difficulties it was called upon to face, deserves great credit for financing its operations in the way it did.

Money was never squandered, nor, except upon rare occasions, could Henry's subjects, with any degree of justification, complain of being overtaxed.

The number of executions which took place during his reign has been held as a fatal blot upon Henry's character, but few historians have taken into account the immense difficulties he was compelled to face. There were individual cases certainly when the law acted harshly, but in times of stress there always must be such cases. The execution of the Countess of Exeter, the aged daughter of Edward IV.'s brother, the Duke of Clarence, cannot fail to arouse our sympathy.

Towards the close of the reign the Duke of Norfolk and his son, the Earl of Surrey, were arrested on a charge of high treason. The Earl, though still only thirty, had already both as soldier and a diplomat gained considerable distinction in the King's service, but it is as one of the greatest lyric poets of all time that he is chiefly remembered to-day.

Surrey, who, like his father, was a staunch Catholic, had but recently acted as Governor of Boulogne and was generally regarded as one of the ablest and most reliable of the King's administrators. His sudden execution on a charge of high treason was deeply deplored by a wide section of the community, but there can be little doubt that he, too, had been fatally attracted by Reginald Pole's propaganda and that he had consented to play a leading part in the revolution, for which Pole and his associates, with the connivance of the Spanish authorities, had long been working. The plot was to materialise immediately upon the death of Henry VIII., which was by this time known to be imminent.

Surrey's father was more fortunate, for the day before his execution was to take place Henry died at the comparatively early age of fifty-three.

After the annulment of his union with

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Anne of Cleves the King had married Catherine Howard, like Anne Boleyn a niece of the Duke of Norfolk and, also like her, executed on a charge of adultery. Henry's fifth wife bore him no children, nor did her successor, Catherine Parr, who had the good fortune to survive her husband. It will thus be seen that his three children were the offspring of his first three wives. It is said that Catherine Parr, whose sympathies with the reformed religion were most marked, narrowly escaped the fate of her predecessor, whom many consider to have been unjustly condemned.

The story of Henry's married life strongly suggests the presence of some terrible and remorseless malady, which the physicians of his day were totally unable to combat. The ulcerations from which he suffered so severely during his later years, his extreme corpulence and his insensate fits of uncontrollable temper all tend to support this theory. The development of such a disease may well, on certain occasions, have warped Henry's judgment and inclined him towards sundry actions of an extreme nature which have been attributed by historians wholly to a ruthless tyranny and remorseless cruelty.

Be that as it may, it is certain that severe measures were often urgently necessary in view of the fact that the Emperor's intervention in English affairs was throughout the reign more than a mere possibility, and that a large section of the community were ready to urge Charles into taking such a step and were prepared, upon his landing, to support him by all means within their power.

Henry's memory has undoubtedly suffered from the fact that his religious establishment was palatable to neither the Catholics nor the Reformers, for he has been reviled even more bitterly by the bigotry of the ultra-Protestants than by the adherents of the old religion. A *via media* is seldom a popular policy, but in this particular case it is impossible to believe that

any other solution could have proved a practicable one.

The mistake is often made of regarding the English reformation as the creation of Henry VIII. Nothing could be more misleading, for between every one of our greater Kings, from William the Conqueror onwards, and the Pope of his day there had existed a patient and enduring antagonism, and the eventual breach with Rome was all the time gradually, though perhaps unnoticeably, becoming more and more inevitable.

The Papal encroachments had been one by one put an end to and England's independence in spiritual matters more clearly asserted, and all Henry did was to sever the last link.

The breach with Rome was in reality but an incident in the history of the English reformation, and Henry's great achievement was not the establishment of England's spiritual independence so much as the putting into order of the ecclesiastical machinery, thereby making the Church once more capable of undertaking its spiritual duties, untrammelled by political cares and worldly considerations.

Few indeed of our Kings have been attacked with so much venom and vituperation as Henry VIII., who has been depicted as a veritable monster wantonly indulging in every sort of cruelty, depravity and crime.

Yet every single charge that has been made against him falls into comparative nothingness if only the facts and circumstances are viewed without bias. Mistakes he certainly made, errors of judgment in plenty, yet none who study the records of his reign with an unprejudiced mind can fail to realise that the ulterior motive from which throughout he acted was in every single case England's ultimate advancement and glory, and it was surely idle to deny that under his administration the country prospered exceedingly and that he left England richer, greater and more highly considered in the councils of Europe than ever before.

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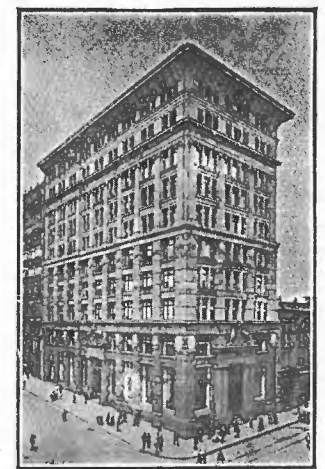
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WIRELESS INSTITUTE OF AUSTRALIA

NEW SOUTH WALES DIVISION

THE first meeting under the new syllabus (October, 1921-December, 1922) was held on Tuesday evening, October 11, at *Wireless House*, Sydney. There was a large attendance of members, and Mr. J. F. Wilson occupied the chair.

The minutes of the previous meeting were read and confirmed.

The Chairman then read the new syllabus, which is most comprehensive. A copy is published hereunder.

The matter of unregistered experimental wireless stations was again mentioned by the Hon. Secretary, who stated that the authorities had already taken definite action.

Mr. C. Maclurcan detailed the forthcoming competition, full particulars of which appear in this issue of *Sea, Land and Air*.

The business of the meeting, "Impromptu Questions," was then entered upon.

Briefly, the following points were fully discussed by the members:

Why a valve must be stopped oscillating to receive speech.

What capacity condenser should be used across a Tickler Coil for 1,400 metres.

Why a "T" or "L" type aerial is generally more suitable than an Umbrella type aerial for reception.

What effect aerial dimensions have on intensity of sounds in receivers.

If a grid leak is absolutely necessary for Valve reception.

The easiest method of determining the capacity of a Condenser.

The formula for calculating the inductance of bank wound coils.

If the efficiency of a transmitting station is impaired very much by using an earth mat or capacity instead of the general type of earth usually adopted.

The most efficient method of reducing wave length in valve circuit short of building a new tuner.

The comparative efficiency of a pair of 'phones wound to 2,000 ohms compared with those wound to 5,000 ohms.

The best position for an aerial, (a) at the base of a hill with a good earth, or (b) at the top of a hill with a similar earth.

If the position of the "B" battery in relation to the set has any effect on the efficiency of the receiver.

A further list of call signals compiled by the Institute will be published in the next issue of *Sea, Land and Air*, being supplementary to those published in the June issue.

* * *

SYLLABUS.

- October, 1921-December, 1922.
- 1921.
- October 11—
General Meeting:
Impromptu Questions.
Chairman: Mr. J. F. Wilson.
- November 8—
Calibration of Members' Apparatus.
Mr. E. A. Burbury.
- November 22—
Automatic Telephone Demonstration and
Lecture.
Mr. R. Mordin.
- December 13—
General Meeting:
Paper on "European Signals Amplified
by Twenty Valves."
Mr. S. N. Newman.
- 1922.
- January 10—
Lecture by Mr. F. Basil Cooke, F.R.A.S.
- January 24—
Discussion and Questions on Construc-
tional Details.
Chairman: Mr. H. A. Stowe.
- February 14—
General Meeting: Appoint Auditors.
Lecture by Mr. E. T. Fisk, M.I.R.E.
- February 28—
Visit to a Ship Station.
- March 14—
Annual Dinner.
- March 28—
Calibration of Members' Apparatus.
Mr. E. A. Burbury.
- April 11—
Annual General Meeting:
Presidential Address.
Election of Officers.
- April 25—
Members' Night: General Discussion.
- May 9—
Lecture by Mr. C. P. Bartholomew.
- May 23—
Lecture by Mr. J. W. S. Jones.
- June 13—
General Meeting:
Travelogue by Mr. W. J. Zech.
- June 27—
Exhibition of Apparatus: Australelectric,
Ltd.
- July 11—
Lecture, "Electrons."
Mr. J. F. Wilson.

- July 25—
Short Papers by Members.
- August 8—
General Meeting:
Visitors' Night.
Special Lecture.
- August 22—
Interference Test at Twelve Words per
Minute.
- September 12—
Debate on "Purchased" versus "Home-
Made" Apparatus.
- September 26—
Discussion and Questions on Construc-
tional Details.
Chairman: Mr. H. A. Stowe.
- October 10—
General Meeting:
Lecture by Mr. P. Renshaw.
- October 24—
Members' Night: General Discussion.
- November 14—
Open.
- November 28—
Calibration of Members' Apparatus.
Mr. E. A. Burbury.
- December 12—
General Meeting:
Visitors' Night.
Special Lecture.

SOUTH AUSTRALIAN DIVISION

The monthly General Meeting of this Division of the Wireless Institute of Australia was held at Alfred Chambers, Currie Street, Adelaide, on Wednesday, October 5.

Owing to the absence of the President, the chair was occupied by Mr. Hawke, one of the Vice-Presidents.

The minutes of the previous meeting were read and confirmed.

Correspondence was read and received from the New South Wales Division, stating that they were pleased to know that this Division is taking the matter of unlicensed stations seriously.

The report and balance sheet for the previous year of this Division was then read and adopted.

Four applications for membership were received and approved.

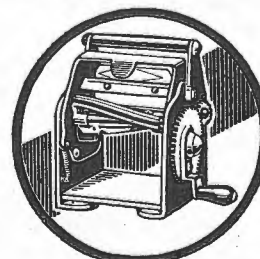
It was decided, that in future, on account of a number of applications for mem-

bership being received, and the applicants failing to appear when their subscriptions became due, that an entrance fee of 2s. 6d. for full members and 1s. for probationary members must accompany each application for membership. This amount will be deducted from the first year's subscription when the subscription is paid to the Secretary.

Mr. Williamson demonstrated a small crystal regenerative receiving set. He explained the construction of the set and gave diagrams of the circuit on a black-board.

A hearty vote of thanks was tendered by acclamation to the speaker.

At the next general meeting to be held on November 2, Mr. Austin will lecture on the maintenance and repairing of accumulator batteries.



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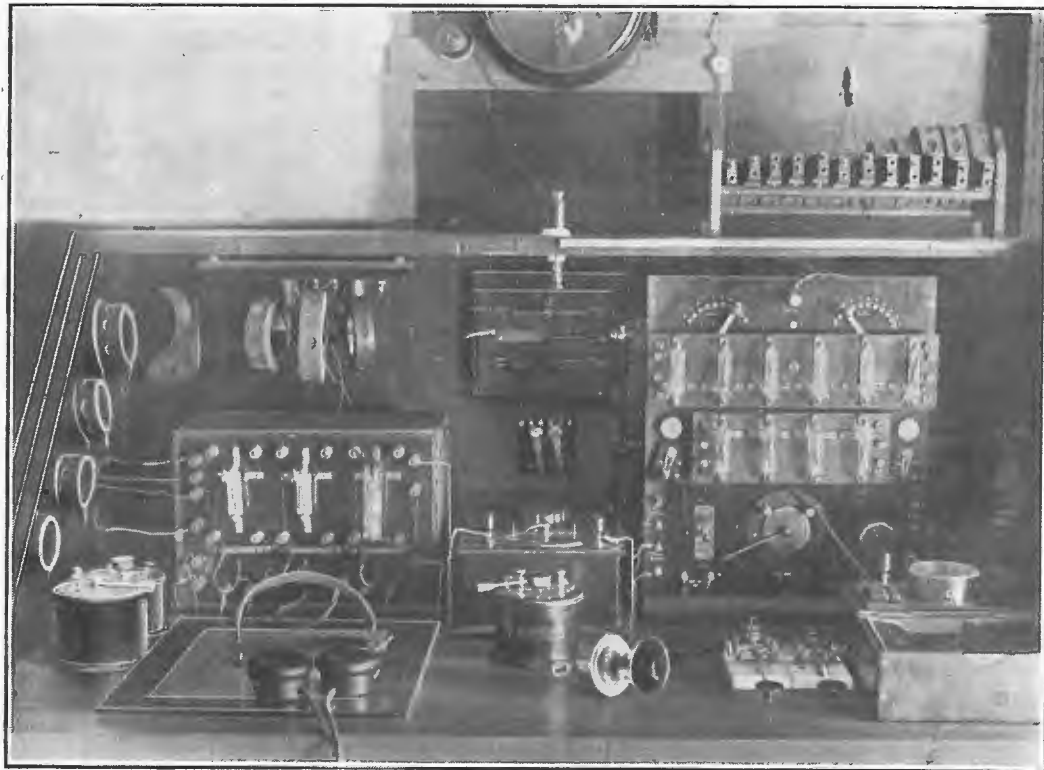
WIRELESS TELEPHONE COMPETITION

THE New South Wales Division of the Wireless Institute of Australia is about to conduct a Wireless Telephone Competition amongst its members.

The competition, which is the first of its kind to be held in Australia, is to commence on November 13, and will terminate on November 18. A very large number of competitors is anticipated, and the results will be announced at the meeting of the Institute on January 10, 1922.

Divisions in other States have been ad-

reception of wireless telegraph and telephone signals for all members of the Wireless Institute of Australia (New South Wales Division). Signals will be transmitted from Mr. C. Maclurcan's station, Strathfield, on six consecutive Sunday mornings, commencing at 11.30 a.m. on Sunday, November 13, and thereafter at the same hour on the following five Sundays. The transmissions will last for half an hour each Sunday and will be arranged as follows:



Mr. C. Maclurcan's station at Strathfield, from which the wireless telephone signals will be transmitted for the competition announced on this page.

vised of the competition, and have been requested to furnish particulars of any results obtained by their members. Prizes, however, will only be awarded to members of the New South Wales Division.

The official notice sent to all members of the New South Wales Division reads:

Competition in Receiving C.W., Tonic Train, and Telephony.

Direction: Mr. Charles Maclurcan.

A competition is to be conducted in the

Wave-Length 1,400 Metres.

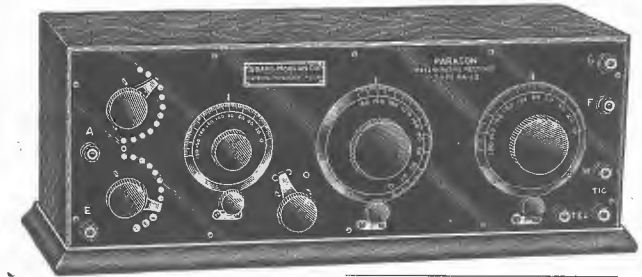
11.30 a.m.: A series of dots continuous wave for two and a half minutes. Then a series of dots buzzer modulation (tonic train) for two and a half minutes. This will be for tuning purposes.

11.35 a.m.: C.W. telegraphy for five minutes. A short phrase will be repeated again and again at a

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speed of about twelve words per minute.

- 11.40 a.m.: One minute pause. During which a series of dots (C.W.) will be sent for tuning.
- 11.41 a.m.: Buzzer modulation telegraphy for five minutes. Shrost phrase as before.
- 11.46 a.m.: One minute pause. Series of dots (C.W.) for tuning.
- 11.47 a.m.: Speech for ten minutes. A short phrase will be repeated slowly again and again.
- 11.57 a.m.: Word "finish" repeated six times, both by C.W. buzzer and speech.

Prizes.

Six prizes will be donated by the Wireless Institute, Amalgamated Wireless (Australia), Ltd., and Mr. C. Maclurcan, as under:

(1) For the best complete log of the whole series of transmissions. This log must give particulars of strength of signals, interference, atmospheric, etc.

First Prize: A de Forest inter-valve audio-frequency transformer. Value, £3 10s.

Second Prize: Open order on Australlectric Ltd. Value, 35s.

(2) For the longest distance over which reception has taken place, either C.W. buzzer or speech.

First Prize: A Room-2 filament receiving valve. Value, £2 10s.

Second Prize: An *Expanse* valve. Value, 35s.

(3) For the most meretorious performance (such as the best results with the simplest apparatus).

Prize: A Marconi V.T. receiving valve.

(4) For the best description (with photos.) of any set used in this competition (whether results have been obtained or not).

Prize: A French type receiving valve.

Members wishing to compete must forward to Mr. Maclurcan, 9 Brisbane Street, Sydney, not later than November 4, their names, addresses, and brief particulars of their stations, connections and aerials, with, if possible, the approximate air line distance from Strathfield. All competitors will then be provided with six log sheets as shown below to use for the test.

Form of Log and Suggested Method of Filling In.

Date.....
Name.....

Address.....

(1) Time..... Received C.W. Telegraph Phrase: "Audio-frequencies are those under ten thousand cycles per second." This repeated several times. Signals strong and clear.

(2) Time..... Received Buzzer Modulation Phrase: "Graphite makes a good resistance." This repeated many times. Signals rather weak, interrupted several times by VIS.

(3) Time..... Speech: Distinguished following words: "Volt," "dynamo," "cannot." Other words indistinct. Signals weak, interrupted by bad X's, etc.

Remarks.....

Rules.

Judges: P. Renshaw, H. A. Stowe, and C. Maclurcan.

The judges' decision shall be final and prizes will be awarded solely at their discretion.

(1) If results are obtained by eight competitors or under, one prize will be awarded. If by twelve or under, two prizes; by twenty or under, three prizes; or more than twenty, six prizes.

(2) All competitors must be either full or associate members of the Wireless Institute of Australia (New South Wales Division).

(3) No competitor can be awarded more than one prize.

(4) Each competitor must send to C. Maclurcan, 9 Brisbane Street, Sydney, during the week succeeding each transmission, reports of results or lack of same. This is to be done on the log sheet provided. Failure to do so will disqualify. This is essential as possibly through some fault in transmission badly modulated speech is radiated, and unless progress reports are obtained such a state of affairs would go on uncorrected. So that failure to receive signals must not be taken as a disqualification or cause the competitor to abandon the competition. It must be kept in mind that atmospheric conditions will play an important part in the campaign.

Reports will be appreciated by those not actually competing. Country members are particularly invited to compete.

WIRELESS OFFICERS

Are required during the next twelve months, and the Marconi Schools have been commissioned to supply them

SPECIAL DAY AND EVENING CLASSES NOW BEING FORMED

If you had the Opportunity offered you to travel all over the world, would you not take it? We have been commissioned to prepare a number of Wireless Officers during the ensuing year, and we are now starting special classes to cope with this demand

This is YOUR opportunity. Do not delay as the time is limited.

Call or write—

Manager, Department S.

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'Phone: City 4255

422-4 Chancery Lane . MELBOURNE

LIST OF WIRELESS OFFICERS ATTACHED TO VESSELS OF THE AUSTRALASIAN MERCANTILE MARINE
Revised to October 15, 1921.

SHIP.	OPERATOR.	SHIP.	OPERATOR.
Aeon	T. G. McEwan	Gilgai	A. S. Dening
Aldinga	G. I. Betteridge	Gorgon	I. R. Hodder
Arafura	C. W. Donne	Goulburn	A. R. Catford
Arahura	G. M. Gormlie	Hwah Ping	H. F. Hartley
Araluen	H. H. Black	Iron Baron	C. C. Ullman
Aramac	—	Iron Monarch	R. N. McKay
Arawatta	—	Iron Prince	J. M. Camps
Aroona	J. Doggett	Junee	J. R. Gilligan
Atua	—	Katapot	E. A. Miller
Australbrook	J. E. Cleary	Kaikorai	—
Australcrag	S. J. McVeigh	Kaimanawa	—
Australford	H. G. Reilly	Kaitangata	N. W. G. Scott
Australglen	W. A. MacDonald	Kaitoko	G. A. Guy
Australmead	S. V. Blight	Kaituna	W. A. Hawkins
Australmeant	G. Vincent	Kaiwarra	L. A. Ternes
Australpeak	J. B. Ponsonby	Kanna	K. H. McSwan
Australplain	A. Stuart	Kanowna	—
Australpool	E. J. Glaisher	Karoola	R. R. Pilmore
Australport	E. J. Giles	Karori	M. Webb-Watts
Australrange	E. F. Hayes	Katoa	F. E. Duggan
Bakara	G. Maxwell	Katoomba	T. A. Jones
Baldina	A. W. Hooper	Kauri	—
Bambra	R. C. Williams	Kawatiri	—
Barambah	M. L. Robertson	Kekerangu	R. P. Ginders
Barunga	H. E. Young	Koorunga	V. J. Foreman
Bingera	F. L. Scott	Kooyong	E. S. Bailes
Bombala	J. H. Hawkins	Koromiko	—
Boonah	F. A. Cook	Kowarra	H. Fullerton
Booral	T. V. Tressler	Kurow	J. B. Gibson
Boorara	T. Alexander	Lamaroo	J. Elmore
Burwah	W. R. Baird	Levuka	A. W. Watt
Bulla	R. T. Stephen	Loongana	—
Bunninyong	H. Bashford	Macedon	F. Ouvrier
Calulu	R. C. Dymond	Mackarra	S. L. Filer
Camberra	H. W. Barnfield	Macumba	H. F. Harman
Carina	V. E. Stanley (s)	Maheno	G. H. Hugman
Ceduna	H. F. Tye (2nd)	Makambo	J. A. Cooper
Changsha	A. C. Hickey (3rd)	Makura	F. A. Hunter (s)
Charon	E. T. Prentice	Malayan	G. Poole (j)
Chronos	B. Boni	Mallina	A. G. Dixon
Coocoe	A. G. Ross	Manuka	J. A. Heavey
Cooma	P. Gillon	Maori	R. S. Taylor
Delungra	A. W. Benn	Mapourika	L. H. Jones
Duga	P. J. Manley	Marama	C. F. Griffiths (s)
Dimboola	W. Hill	Marawah	C. W. Drew (j)
Dinoga	H. F. Giles	Mararua	J. L. Skinner
Dongarra	M. A. Prudence	Marella	G. Illingworth
Dromana	H. W. Barnes	Marsina	W. H. Harris
Dumosa	H. J. Byrne	Mataram	A. Cuthill
Dundula	F. Stevens	Maunganui	C. H. A. Kidman
Eastern	R. J. Webb	Melusia	—
Echuca	N. W. Marshall	Merriwa	J. H. Pullen
Emita	J. F. Hutton	Milluna	J. Overbury
Enoggera	W. Reithmuller	Minderoo	J. G. C. Higgins
Eromanga	F. G. Lewis	Mindini	R. Jordan
Erriba	A. H. Jeremy	Moana	—
Eudunda	—	Moeraki	—
Eurimbia	—	Moiria	F. Exon
Eureka	F. Marsden	Mokoia	—
Flora	J. G. Henderson	Monara	J. H. Hope
		Monowai	—

(Continued on next page.)

(Continued from last page.)

Montoro	A. L. Dixon (s)	Waiotapu	T. H. McWilliams
	W. S. Ringrose (2nd)	Waipori	—
	F. B. Harris (3rd)	Wairuna	F. N. Davidson
Morinda	F. C. Davies	Waitemata	D. W. Higgins
Nairana	C. F. Green	Waitomo	—
Navua	N. M. Leeder	Wanaka	R. T. Murray
Ngakuta	S. G. Bargrove	Werribee	R. G. Inglis
	W. J. Martin (s)	Westralia	D. N. Quinn
Niagara	E. W. Coldwell (j)	Whangape	A. O. Sutherland
Ooma	A. E. Sheppherd	Waingatui	A. E. Laurence
Oonah	F. G. Forrest	Wodonga	G. Pow
Paloona	G. M. Whiteside	Woolgar	J. Glennie
	K. L. Simpson (s)	Wyandra	—
Parattah	E. C. Bouel (2nd)	Wyreema	—
	E. Pollard (3rd)	Yankalilla	W. C. Lucas
	M. A. H. Ryan	Zealandia	A. S. Smith
Perth	—		
Rakanoa	—		
Riverina	L. G. Devonport		
Rotomahana	—		
Saros	H. W. Warner		
South Africa	S. R. Dixon		
St. Albans	T. Bannister		
St. George	S. G. Jones		
Suva	L. S. Lane		
	E. M. Bain (s)		
Tahiti	C. W. Taylor (j)		
Tatryan	J. H. Wilkin		
Talawa	K. J. Dines		
Tahune	—		
Time	T. J. O'Leary		
Tarawera	H. Kirk		
Tofua	L. R. Dickson		
Toromeo	M. Sedgers		
Ulmaroa	H. Tuson		
Urilla	A. D. R. Davis		
Victoria	W. H. Richardson		
Waihemo	C. Williamson		
Wahine	—		
Waihora	E. A. Hunter		
Waikawa	V. P. Nevins		
Waikouiti	—		
Waimarino	F. L. Dawes		

Amalgamated Wireless (Australasia) Operator Temporarily Attached to New Guinea Expedition.

Wattle L. N. Callaghan

Personal.

Mr. W. D. Bostock, of the Technical Department of Amalgamated Wireless (Australasia), Ltd., Sydney, was recently presented by the staff of the Company with a gold wristlet watch, silver kettle and silver-mounted tray, on the occasion of his resigning from the service.

Mr. Bostock has received an appointment as Flying Officer of the Royal Australian Air Force.

Mr. A. P. Vipan was also the recipient of a presentation of a set of cutlery from the staff of Amalgamated Wireless (Australasia), Ltd., on the eve of his marriage. Mr. Vipan was married to Miss L. Maclure, at Wangaratta, Victoria, on September 26, the honeymoon being spent in Tasmania.

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QUESTIONS AND ANSWERS

Under this heading the Editor will be pleased to reply to any questions within the scope of the magazine, provided the following conditions are observed:—

1. Questions to be numbered and written on one side of paper only, and not to exceed four in number.

2. All questions must be accompanied by the full name and address of sender, which is for reference and not for publication. Answers will be published under any initials or nom-de-plume selected by the questioner.

H.A.S. (Brisbane)—Asks regarding the construction of variable condensers.

Answer: We suggest you write to Austral-electric Ltd., 97 Clarence Street, Sydney. They can supply the parts necessary for the construction of variable condensers or ready-made condensers.

H.C.F. (Queensland).—Question (1): Will you advise me where to apply for a position as a wireless operator on board ship?

Answer (1): Write to the Traffic Manager, Amalgamated Wireless (Australasia), Ltd., Sydney, New South Wales.

Question (2): How much would I increase the receiving range of my radio set by the addition of an extra wire in the aerial?

Answer (2): The addition of an extra wire, as stated, will not materially increase your receiving range. If possible increase the height of your aerial.

H.W.E. (Caulfield, Vic.).—Question: Is there any likelihood of an open examination of boys between fifteen and sixteen years of age to enter the Military Flying School at Point Cook, Victoria?

Answer: We have not heard of the authorities contemplating any examination on the lines you indicate. We suggest, however, that you write direct to the officer in charge of the Flying School, who will advise you.

A. Bright (Dungowan).—Question (1): Is it possible to receive wireless signals with the set connected as shown in diagram?

Answer (1): Yes, but we suggest that you connect a variable condenser across the secondary coil of the tuner, this will produce better results.

Question (2): What is meant by 1,000 and 2,000 metres wavelength?

Answer (2): Wavelength means the distance between the crest of two consecutive waves, and is dependent on the inductance and capacity of the circuit. This among other kindred subjects is dealt with in simple language in "The Elementary Principles of Wireless Telegraphy," by R. D. Bangay, obtainable from The Wireless

Press, 97 Clarence Street, Sydney; price 5s., post free.

Question (3): Is an amateur permitted to use a transmitting set with a range of twenty or thirty miles?

Answer (3): Not at present. If you write to the Hon. Secretary of the Wireless Institute of Australia, Box 2, King Street Post Office, Sydney, he will gladly advise of the position regarding this matter.

Question (4): What is the range of the set shown in diagram?

Answer (4): It is impossible to say without knowing your aerial dimensions.

C.A.M. (Lithgow).—We regret to state we have been unable to locate a book dealing with the subject you mention. The Company you inquire about has been liquidated and the machine sold.

N.376 (Hamilton, N.S.W.).—The reply to your inquiry has been posted.

W.F. Sievers (East Richmond).—Your letter has only just reached us. In reply to your inquiries we recommend the perusal of "The Wireless Experimenters' Manual," by E. E. Bucher. This book is obtainable from The Wireless Press, 422 Chancery Lane, Melbourne. Price 18s.

Reader (Singleton).—Question: I will be seventeen on November 12, and would like to learn general or electrical engineering. What course would you recommend.

Answer: If you desire to take a correspondence course we suggest that you write to the International Correspondence School, George Street, Sydney, or any other institution or college for particulars that advertises in the daily papers in the Trades and Professions column. If you wish to serve an apprenticeship write to one of the big engineering firms in Sydney, stating your case. Whatever action you take will you kindly mention *Sea, Land and Air*.

Anxious (Jeparit, Vic.).—Our reply to your inquiries has been posted.

G.S.W. (North Castlemain).—For replies see this column next issue.

"SEA, LAND and AIR"

THE AUSTRALIAN NATIONAL MONTHLY

— OF —

TOPICAL INTEREST

OFFICIAL JOURNAL OF
THE WIRELESS INSTITUTES OF AUSTRALIA AND NEW ZEALAND.
THE MERCANTILE MARINE WAR SERVICE ASSOCIATION OF AUSTRALASIA.

Edited by S. E. TATHAM.

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The Editor will be pleased to receive, for consideration, contributions on Aviation, Wireless, the Navy, Mercantile Marine or other subjects within the scope of *Sea, Land and Air*. All MSS., photographs, drawings, etc., submitted must bear the sender's name on back and be accompanied by postage stamps for return if unsuitable. Although every care will be taken of all contributions received, no responsibility is accepted.

All business communications should be addressed to

THE MANAGER, THE WIRELESS PRESS, 97 CLARENCE STREET, SYDNEY.

All Editorial communications should be addressed to THE EDITOR, *Sea, Land and Air*, 97 CLARENCE STREET, SYDNEY.

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