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THE DEMOBILISED AIRMAN

A VITAL PROBLEM

What does Australia offer to her demobilised airmen?

Colonel Watt who, a few days ago, brought back nearly a thousand officers and air-mechanics of the Australian Flying Corps, and whose remarks are printed on another page, points out that the opportunity to secure their services cannot possibly exist for long.

We have talked with many of these men and disappointment is freely expressed that so little aerial progress had been made here during their long absence.

The cost of producing a fully trained A.F.C. pilot is from £600 to £700. As a contribution towards the cost of winning the war this expenditure has been amply justified—but if the now fully-trained pilot who wishes to continue flying is forced to seek a clerkship or some equally monotonous occupation, then the loss to the community will be irreparable.

Nor is it a simple matter to apportion the responsibility for this improvidence. Admittedly the Commonwealth Government may have lacked promptness in granting registration to the two or three bona-fide companies which applied, towards the end of 1918, for permission to commence aerial surveys—but the official delay was a matter only of a month or so.

The initiative should have been taken years ago, either by men sufficiently far-sighted to anticipate the present situation or by local representatives of aircraft manufacturers overseas.

We know of a number of business houses established in the capital cities of Australia which for years past have been entrusted with the representation of certain reputable British aircraft interests; but no machine has reached this country except to the order of the Department of Defence, and it is only within the last two or three months that action has begun in the matter of floating local companies for that purpose.

So far as the aeroplane industry in Australia is concerned there have been a few experiments, culminating in a report that the necessary raw materials *can* be produced—but beyond this, practically nothing.

That our eight flying squadrons have returned from active service without one aeroplane—leaving behind even those donated to them by public and private subscription among our own citizens—is some-

thing which has yet to be explained. "Our orders were that no equipment must be brought back to Australia," we are told—and there, apparently, the matter is supposed to end.

Of the very few possible remedies, the soundest—in our opinion—would be the immediate acceptance of the Imperial Government's offer of one hundred gift aeroplanes, and their presentation, in turn, to demobilised A.F.C. pilots; in other words, to the men who have already proved their ability to fly them. Carrying passengers and merchandise over various portions of the Commonwealth these aeroplanes would do far more to stimulate practical interest in aviation than the tying up of aircraft agencies to apathetic agents, some of whom would no doubt sell their interest for a trivial sum rather than risk financial loss by importing a single one of the machines which they nominally represent.

Apathy such as this must eventually lead to the Government stepping in and controlling the entire industry—a position which, in the light of past experience, is highly undesirable.

Meanwhile the rteurned airman—the man for whom, to quote Colonel Watt, the Royal Air Force in England would give its eyes—will either take up a pre-war job in his own country or depart to another country which can offer some practical use for his services.

To the man who would keep in touch with subsequent developments in Australian aviation—and we can foresee no likelihood of anything really definite being completed within the next six months—the Australian Aero Club is the one rock of salvation.

Rumours continually reach us of a Federal project to absorb 500 airmen at Point Cook, Victoria, and an equal number at a proposed flying school to be formed at Botany, New South Wales; but official confirmation is lacking.

Readers may be assured that this journal will spare no effort to obtain whatever authentic information may be available concerning the future of aviation in the finest flying country in the world. The situation as we see it to-day is that several hundreds of skilled Australian pilots and mechanics are looking for jobs; that Australia can produce the necessary material, and already possesses the necessary labour, to establish its own aircraft industry; and that her existing stock-in-trade is confined to an ideal climate and vast air spaces.

COMMERCIAL AVIATION IN AUSTRALIA

The Larkin-Sopwith Aviation Company of Australasia was registered in London on June 11 with a capital of £31,500. The objects of the new company are to carry on business in Australasia as manufacturers of and dealers in aircraft. Two representatives of the company arrived in Sydney on June 19 in the *Kaiser-i-Hind,* these being Captain Roy King, D.F.C. (the New South Wales "Ace,") and Captain Gordon Campbell Wilson, M.C., D.C.M. Both are members of the Australian Flying Corps, and will be joined during the next few days by Captain Larkin, R.A.F., now on his way from England. The last-named officer is a son of the general manager of the Commonwealth Government Line of Steamers.

* * * *

For the purpose of surveying the route and mapping out landing grounds and aerodromes between Melbourne and Adelaide, Major Lee Murray, R.A.F.—Chief Engineer of Aerial Transport Limited—left the former city on July 1.

A company is to be formed in Sydney with a capital of £15,000 for the purpose of importing two Curtiss aeroplanes and one flying boat. The prospectus of the proposed company may be obtained from Mr. Sylvan Ginsbury, General Manager of Thompson, Meggitt & Co., Ltd., Daily Telegraph Building, Sydney.

* * * *

Mr. Reginald Lloyd, Managing Director of Aerial Services Limited, is in Sydney on a brief visit. Mr. Lloyd's survey party left Sydney on January 31st, and reached Port Darwin on June 10, the overland journey of 4,000 miles being made on motor cycles. Mr. Lloyd returned to Sydney on June 27 in the *Mataram,* and a report on his tour will be published in the next issue of this journal.

* * * *

Mr. H. C. Macfie, F.C.P.A., F.C.I.S., Chairman of Aerial Company Limited (Sydney,) will sail for England this month in the *Orlando.*

OUR FLAGSHIP RETURNS TO SYDNEY

ENTHUSIASTIC WELCOME

Especially Written for "Sea, Land and Air"

After an absence of several years H.M.A.S. *Australia,* the flagship of the Royal Australian Navy, returned to Sydney at 10 o'clock on Sunday morning, June 15.

It was an ideal day for a spectacular event. Long before the time of arrival, the wall from Man-o'-War Steps towards the Gardens was lined with people all armed with blue Australian ensigns or the white ensign, and the Domain was dotted with thousands of persons curious to see Australia's biggest warship come to her moorings.

There was a haze over the harbour—a soft, pearly mist—which softened the grim outlines of the old *Encounter* and the long, lean hulls of the destroyers lying in Farm Cove.

As 9.30 boomed out from the city clocks, the faint *cock-a-doodle-do*-ing of Manly boats near the Heads, told the waiting thousands that the flagship was entering the port, and shortly afterwards her huge bulk could be half seen rounding Bradley's Head. As she drew nearer the guns of the *Encounter* spoke in salute, enveloping her in smoke, and as the *Australia* drew to her moorings she dipped her ensign and returned the salute, while the band on board played "Advance Australia Fair."

Prior to the big war vessel shackling on to her buoy in Farm Cove there had been only one or two launches, official and otherwise, on the scene, but within five minutes the waters of the Cove were alive with craft of every description from "fours," dinghys and skiffs to tugs and launches.

As soon as the *Australia* had moored, Commodore Glossop, C.B., proceeded on board, followed immediately by Captain Robins, of H.M.A.S. *Encounter,* both being received by Commodore John S. Dumaresq, C.B., M.V.O.. the new Commander of the Australian Navy, who is himself an Australian, born at Rose Bay, in 1873, his grandfather having settled in New South Wales as far back as 1825. His brother, Capt. H. L. Dumaresq, was A.D.C. to Lord Chelmsford when he was Governor of this State. Commodore Dumaresq was entered on the *Britannia,* at Dartmouth, when 12 years of age; was given his lieutenancy in 1894; promoted commander in 1904, and captain in 1910. He saw service in command of H.M.S. *Shannon* at Jutland. Previously Commodore Dumaresq had been in command of H.M.A.S. *Sydney* when she was on the Australian station. He hoisted his pennant as Commodore on the *Australia* in April of this year. His captain is Captain Claude Cumberledge, well-known in Australia when captain of the *Brisbane.*

Since the *Australia* slipped silently out of Sydney Harbour in August, 1914, she has covered 94,654 miles of sea on her lawful occasions. She proceeded first of all to Rabaul, when the accompanying destroyers entered the harbour in the hope of surprising the *Scharnhorst* and *Gneisenau* and luring them out to be dealt with by the big guns of the flagship. The quarry had flown, however, and the squadron, then under the command of Admiral Patey, moved on to New Guinea.

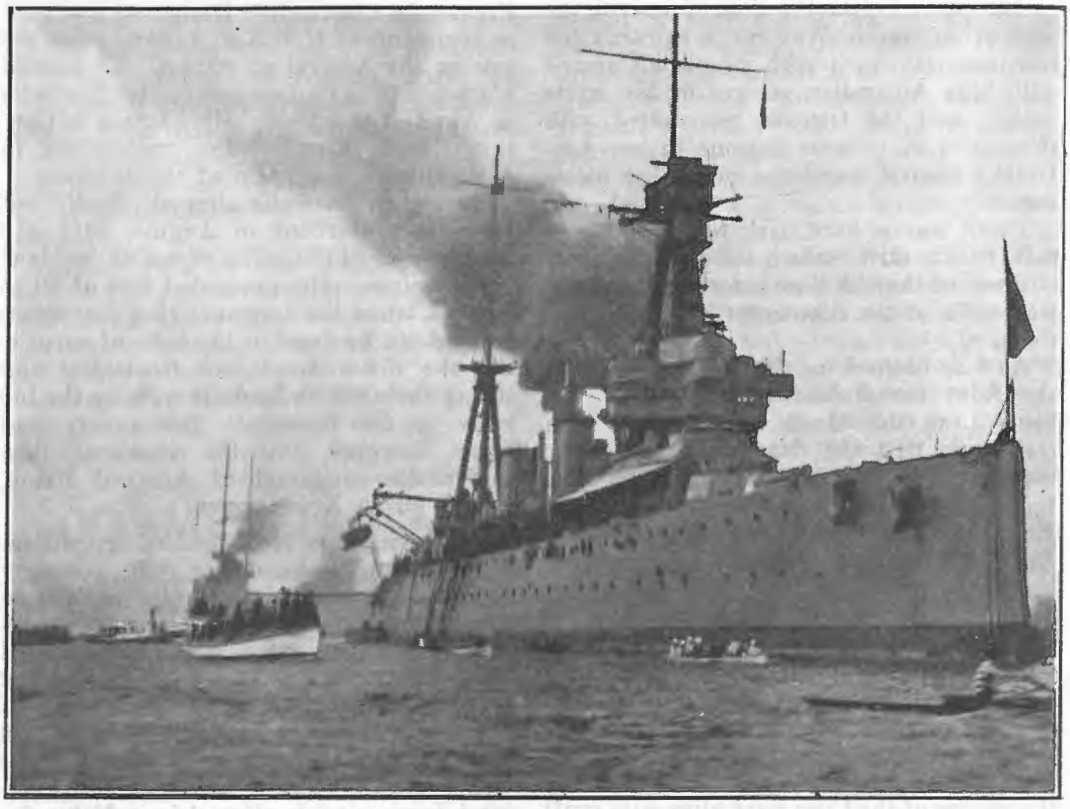
Convoying the New Zealand expeditionary force to Samoa followed, in company with the French cruiser *Montcalme,* and on the completion of that job the squadron returned to Rabaul, when a force was landed from the destroyers and the only fighting occurred. When the news of the battle of Coronel was received the flagship started off for South America, accompanied by the collier *Mallina,* bringing up at the Falkland Isles a week after Admiral Sturdee had avenged the loss of Admiral Craddock's British squadron by sinking all the ships commanded by Von Spee. The only time the flagship used her guns during the war was at the sinking of a German auxiliary cruiser while on the way to England after leaving the Falklands. Plymouth was reached in January, 1915, and for the next four years the Firth of Forth was the *Australia's* base. Though, through a collision with the *New Zealand,* she missed the Jutland scrap, the *Australia* was one of that mighty Armada known as the Grand Fleet, which, by its ceaseless vigilance,

bottled up the German fleet in Kiel and kept the seas open.

When the German High Sea Fleet surrendered without firing a shot, H.M.A.S. *Australia* led the starboard division up to await the German ships and acted as rear-guard.

The *Australia* has undergone many alterations, although these would hardly strike the landsmen who visited her. A series of searchlight control stations have been erected around the armour was accordingly bolted on to all the gun-turrets before she was allowed out into action or on patrol again. This extra armour is to be seen by all, and has added immensely to the strength of our flagship as a fighting unit.

Speaking of the time when the *New Zealand* crashed into the *Australia* in the fog on the way to Jutland, a petty officer said that what struck him most was the utter absence of panic among the Australians on board.



Back Home.
H.M.A.S. *Australia* re-enters Sydney Harbour, Sunday, June 10, 1919.
[Copyright *Sea, Land and Air.*]

middle funnel, but the most extraordinary addition she has been subjected to are the extra armour plates bolted to all the turrets. After the battle of Jutland it was found that the high-angle armour-piercing shells of the Germans were so superior to ours that they could penetrate our armour almost as a knife could cut butter. After her collision with the *New Zealand*, and on her return to the Firth of Forth, extra

"Their only grievance was that owing to the mishap they were out of the scrap. They were all very sore about that, but on learning that N.S.W. had downed the All-Blacks at football the day before the *Australia* arrived in Sydney, they perked up and reckoned that they had got a bit of their own back for the *New Zealand* ramming the *Australia* just when she hoped to be in the thick of it all."

ADMIRAL VISCOUNT JELLICOE

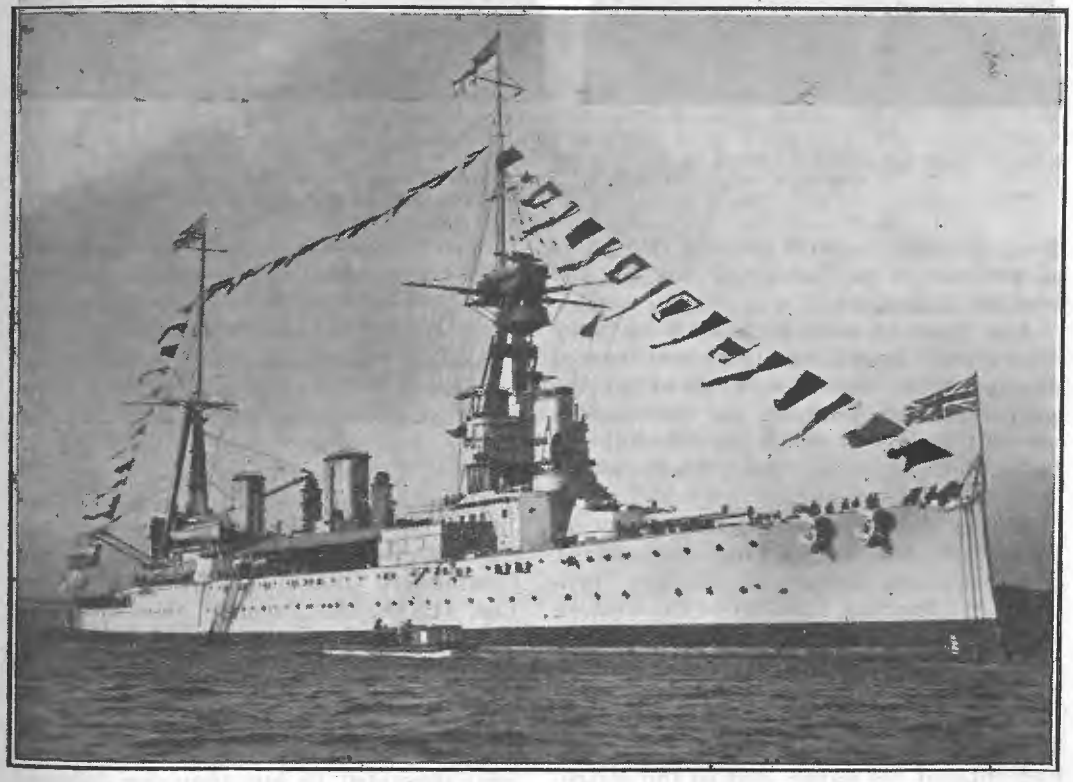
AQUATIC RECEPTION IN SYDNEY

"I have never before seen an aquatic reception. It is a most stirring sight."—(Admiral of the Fleet, Viscount Jellicoe, at Sydney Town Hall, June 23.)

It was thought by those who had arranged for the reception on the Prince of Wales' Birthday, of Viscount Jellicoe, —the first Admiral of the Fleet ever to fly his flag in these waters—that the influenza epidemic would prevent the public from congregating in large numbers ashore, and that the real welcome should be accorded the visiting Admiral on his own element—the water.

Everything conduced to make this aquatic welcome one worthy of the occasion. The sun brilliantly lit the waters of Farm Cove, bringing out in bold relief the grim outlines of the *New Zealand* and the *Australia,* dressed as they were, from stem to stern, in gay-coloured bunting, the *New Zealand* flying a large white ensign at the fore and the Admiral's Union Jack at the main. Big overseas sailers, passenger and cargo boats, also dressed ship in honour of the visitor.

The landing was timed for 10.40, but long before that hour the slopes from Government House to the Cove and the heights of the Domain were densely crowded with citizens anxious to see the big ships and the man upon whose shoul-



H.M.S. "New Zealand," with Admiral Viscount Jellicoe aboard, enters Sydney Harbour on the Prince of Wales' Birthday, June 23, 1919.

Admiral and Premier.

Admiral Viscount Jellicoe arrives in Sydney, on he Prince of Wales' Birthday, June 23rd, and is welcomed by the Premier of New South Wales, Mr. W. Holman.

ders, through the first terrible two years of war, rested the burden of carrying the buckler of Empire.

Also from an early hour craft of every description began to line the buoyed passage from the *New Zealand* to the gaily-decorated pontoon on the eastern side of the Cove at which the Admiral and Lady Jellicoe, with their Staff, would land.

Sailing yachts, auxiliary and otherwise, motor-launches of varying dimensions, double-scullers, skiffs and dinghys, brilliant with bunting, lined up on the western side of the passage, whilst on the eastern side the rowing clubs turned out in force in eights and fours.

Promptly on the stroke of 10.30 a gun boomed out, denoting that the Admiral had entered his barge, and to the watching and waiting thousands on the Domain slopes came the cheers from those aboard the innumerable water-craft, swelling—as the barge reached the landing-stage—to a solid roar, almost drowning the attempts of the motor-launches to outdo the ferry boats with their smaller sirens.

Among those who welcomed Admiral and Lady Jellicoe on landing were Rear-Admiral Grant, the First Naval Member of the Australian Naval Board, and his nephew, Captain Duncan Grant, recently in charge of the Royal Australian College, Jervis Bay; Commodore Dumaresqu and Captain Cumberledge of the *Australia*, Commodore Glossop, C.B., Major-General Lee, D.S.O., the Premier (Mr. Holman), the Lord Mayor and Lady Mayoress, the Chief Justice (Sir William Cullen,) and other naval, military and civic dignitaries.

Hardly had the last frock-coated civilian been presented to him than the Admiral, turning to one of his staff, said, "I want to see the guard," and, without waiting for more introductions, walked over to the

main guard, made up of members of the Naval Comrades' Association, under Chief Petty Officer T. D. Edmond. Most of these veterans, with their rows of medals and their hair now turning white, had served under the Admiral during the Boxer Rebellion nineteen years ago, and he had a cheery word for more than one of his old command. He then crossed the reserve and inspected the guard of honour of *Tingira* boys, before ascending the long line of steps to the waiting motor cars which would convey him and his staff to Government House.

As the Admiral commenced his ascent the cheering broke out anew, but not in the volume evidently desired by some strong-lunged individual, who called out: "Come on! Three cheers for Jellicoe! Let 'em go!" And go they did, in a mighty, rousing chorus, so much so that the little Admiral came to an abrupt halt, standing to attention with his hand at the salute.

After visiting Sir Walter and Lady Davidson at Government House, Viscount and Lady Jellicoe motored to the Town Hall, and were accorded a civic reception by the Lord Mayor (Alderman Richards). Here the Admiral, in responding to the toast of his health, remarked that the honours showered upon him in Australia culminated that day. He had never before been accorded an aquatic reception, and he found it a most stirring sight.

AUSTRALIA'S AIRMEN RETURN

GALA NIGHT AT HER MAJESTY'S THEATRE

Approximately one thousand airmen returned to Australia last month in the *Kaisar-i-Hind* which left Southampton on May 6 and reached her terminal port, Sydney, on June 19.

Among the privileged few who met the transport at Woolloomooloo Wharf we noticed two of our pioneer flyers, Captain J. W. Niesigh and Mr. C. A. James, Minister for Education. The former, it may be recalled, flew from Sydney to Liverpool on May 3, 1911, as a passenger in Mr. J. J. Hammond's Bristol biplane, while Mr. James, in November, 1917, made the first flight from Sydney to Goulburn, his pilot being Mr. W. J. Stutt, of the N.S.W. School of Aviation, and the machine a Curtiss biplane.

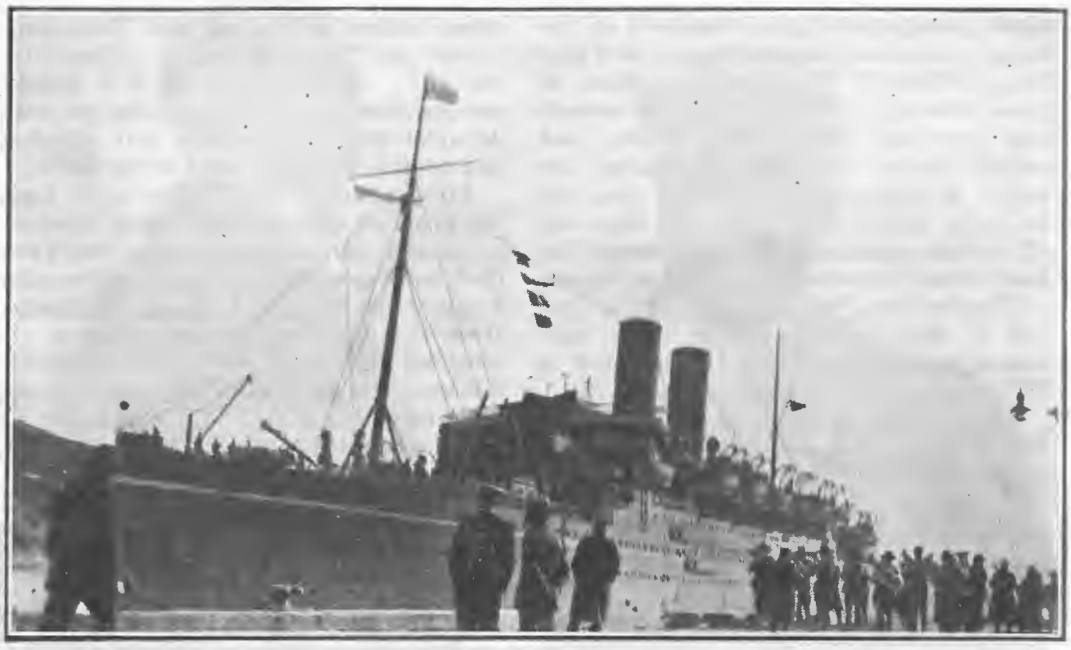
The returned airmen were welcomed *en masse* at a gala performance, given at Her Majesty's Theatre, on June 24, the entire theatre having been taken over by the A.F.C. Entertainment Committee, a body formed for that particular purpose, and comprising members of the A.F.C. Comforts Depôt and the Australian Aero Club (New South Wales Section). The Joint Honorary Secretaries of this Committee were Messrs. George Wright—father of Captain J. W. Wright—and E. J. Hart, honorary secretary of the Aero Club.

The cost of providing the entertainment was guaranteed jointly by Messrs. George Wright and Arthur Eedy; the latter has two officer-sons in the A.F.C. A donation of £50 was received from Mr. Hugh Ward, while Mr. E. T. Fisk generously undertook the despatch, without cost, of wireless messages from the committee to the O.C. of the transport—Lieutenant-Colonel W. O. Watt, O.B.E.—thus facilitating the transaction of all preliminaries before the vessel reached her destination. Boxes were taken, at fancy prices, by Mrs. David Clark, President of the A.F.C. Comforts Depôt; Mr. George Wright and Mr. W. B. Malley—father of Captain G. F. Malley, M.C., the revenue being further swelled by the profits on souvenir programmes which carried advertisements to the value of £73 3s., the production of which was undertaken by *Sea, Land and Air*.

Some seven hundred complimentary tickets had been accepted—by wireless—and an enjoyable evening reached its climax when half a dozen officers crept stealthily into Colonel Watt's box and literally hauled him on to the stage amid shouts of "Speech!" from all parts of the house.

"The reception which you have given us this evening," said the Colonel, "makes one feel that wars are really worth fighting, after all."

At an informal gathering, during the interval, Colonel Watt, the Minister for Education and Mr. Hugh Ward were elected members of the Australian Aero Club.



Our Airmen Return.
The *Kaisar-i-Hind* coming alongside Woolloomooloo Wharf, Sydney, June 19th. She brought from England approximately a thousand members of the Australian Flying Corps.

Flashlight photograph taken during the interval of the gala performance to returned airmen at Her Majesty's Theatre, Sydney, on June 24.
—Reproduced by courtesy of the *Sun*.

AN INTERVIEW WITH LIEUTENANT-COLONEL WATT, O.B.E.

SOME IMPRESSIONS OF FIVE YEARS' ACTIVE SERVICE WITH THE FRENCH AND AUSTRALIAN FLYING CORPS

Especially Written for "Sea, Land and Air"

It has been our privilege to interview Lieutenant-Colonel Walter Oswald Watt, O.B.E., who returned to Sydney on June 19, in command of the troopship *Kaiser-i-Hind.*

Few Australians have a wider or more varied knowledge of aviation and its ultimate value to this country than Colonel Watt, and his remarks on the subject will be accepted with more than usual interest.

"Here in Australia," said he, "the conditions for flying are absolutely ideal, and in the Service Pilots and Instructors of the A.F.C. we have men who would ensure the success of any scheme in which they took an active part.

"They are men of a type that the R.A.F. people in England would give their very eyes to have over there with them—but the majority will shortly be absorbed in their pre-war occupations, or busy making their way in new ones; and the opportunity of securing their services cannot possibly exist for long."

Colonel Watt's career as an airman dates back to July, 1911, during a visit to England, where he flew the original Bristol biplane. He returned to Sydney in September, 1911, and two years later, while in Egypt, had a Blériot monoplane sent to him at Heliopolis. After flying for a few months in the land of the Pharaohs he took his machine to France.

From May, 1914, until the outbreak of war he was flying at Blériot's aerodrome at Buc, near Paris, and on August 3, 1914, enlisted in the *Aviation Militaire* section of the *Légion Etranger* (Foreign Legion for Flying).

Colonel Watt explains that in joining the French Army it was then generally believed that Great Britain would not participate in the war. His military rank was that of *soldat de deuxième,* which in the Flying Service is equivalent to Third-class Air Mechanic, the daily rate of pay being one *sou* (½d.).

The flying ground at Buc was at once converted into a military aerodrome and the pupils transferred to the staff college at St. Cyr, which—according to recent cables—was destroyed by fire on June 22nd of this year, damage to the extent of £160,000 being sustained, together with the loss of 100 aeroplanes. Here the first Blériot squadron was formed.

Of the 500 airmen stationed at St. Cyr only two were British, one being Colonel Watt, the other Bernard Howard, who was shot down about a fortnight after the commencement of the war and reported killed. Escaping, he subsequently put in some very good work with the R.F.C., into which he transferred with the rank of flight lieutenant.

Among other ha'p'ny-a-day airmen at St. Cyr were Garros (France's "Ace of Aces"), the late Jules Védrines, Pégoud, the first to loop the loop; Louis Noël and Verrier (both from Hendon); Prier, the first to fly from London to Paris; Pierrol, who, later, as *liaison* officer, made 113 double cross-Channel flights before being killed; Bonnier, who raced Védrines in the first cross-country flight from Paris to Cairo; Marc Pourpe, the first to fly from Cairo to Khartoum and who, in 1910, flew a Wright machine over Melbourne.

The Blériot Squadron (B.L.30) was known as the International Squadron, and comprised Greeks, Russians, Portuguese, Danes and Spaniards. It was with this that Colonel Watt left Paris on September 20, 1914, the squadron chauffeur being the famous French pugilist Géorges Carpentier.

The "B.L.30" was attached to the Sixth French Army, known at that period as "the taxi-cab army"—having motored from Paris to the front in taxi-cabs—and took over from the British at Soissons, where they remained until April, 1915. The squadron then changed its Blériot machines for Maurice Farman Shorthorns ("Rumpety's") and moved up to join the First Army at Toul, on the Franco-German border, remaining in this district until April, 1916. It was while stationed at Toul, under the guns of the German forts at Metz, that Colonel Watt received

Lieutenant-Colonel Walter Oswald Watt, O.B.E., C. de G., L.d'H.

Flight Commander of No. 1 Australian Flying Squadron, Founder of No. 2 Australian Flying Squadron, and Commanding Officer of No. 1 Australian Training Wing. He enlisted in Paris as Third Air Mechanic on August 3rd, 1914, and was demobilised in Sydney on June 19, 1919.

from the hands of General Joffre, the decoration of the *Légion d'Honneur* and, later, the *Croix de Guerre*, with two palms and two stars. Here, too, he qualified for the French military *brevet* and was restored to the pre-war rank of honorary captain, which he had held in the 5th Scottish Rifles.

Colonel Watt now transferred into the A.F.C., and in May, 1916, went out again to Egypt as Flight Commander to No. 1 Australian Squadron, under Major Rutledge, in which he served until October, 1916.

Promoted to Major, he was entrusted with the raising of No. 2 Squadron from officers and men of the Australian Light Horse.

No. 2 Squadron was duly formed and sailed from Alexandria in January, 1917, with three Australian Flight Commanders from No. 1, all of whom had previously served in the Royal Flying Corps; these were Captains Guilfoyle, M.C., Muir, M.C., and Bell.

On completion of the squadron training at Grantham (Lincolnshire,) pilots were allotted for final training in D.H.5's, and on September 21, 1917, fifteen of these machines were flown overseas. All arrived in France on the day of their departure from England, the achievement constituting a record for a Rotary Scout Squadron.

Another record of which No. 2 Squadron is justly proud is that during the operations against Cambrai, in November, 1917, the Military Cross was awarded to no less than six of its pilots, the recipients being Major Phillips (bar), D.F.C., Captain G. C. Wilson, D.C.M., Captain Huxley, Captain Holden, Captain Howard (killed), and Lieutenant Taylor (killed).

In February, 1918, Colonel Watt left No. 2 Squadron to take over No. 1 Australian Training Wing at Tetbury, Gloucestershire. Prior to this date all A.F.C. pilots had been trained promiscuously by the R.A.F. Under the new order they received from the latter none but theoretical training, the practical side being handled entirely by Australian instructors.

Colonel Watt remained on duty at Tetbury until May 6 of this year, when the entire wing embarked at Southampton for return to Australia.

The homeward voyage, says Colonel Watt, was a happy family party. Shore leave was granted at Port Said, Aden and Colombo, and during the trip he was able —as the result of a special appeal to the airmen on board—to hand over £97 to Merchant Seamen's Charities.

To induce Colonel Watt to speak of his own services is a matter of extreme difficulty, and we may add that most of the information concerning him which appears herein is supplied by officers and men who have served in his command. But of the work of the Australian Flying Corps as a body he is lavish in his praise. "Very few people in Australia," said he, "recognise what an extraordinary debt

Officers of No. 2 Australian Flying Squadron, photographed prior to their flight in D.H.5's from Harlaxton, England, to France.

Left to right (standing): Lieut. (now Capt.) Robertson, Lieut. Morrison (killed), Lieut. (Capt.) Howard (killed), Lieut. Griggs (killed), Lieut. James, Capt. (Major) McClaughrey, Major (Lieut.-Col.) Watt, Lieut.-Col. Burdett (commanding 24th Wing, R.F.C.), Capt. J. Bell (killed), Lieut. (Capt.) G. C. Wilson, M.C., D.C.M., Capt. (Major) Phillips, M.C. (and Bar), D.F.C., Lieut. Taylor (killed), Lieut. (Capt.) G. C. Matthews.

Seated: *Lieut. Johnson, Lieut. Pratt, *Lieut. L. Williams (Squadron "Mascot"), Lieut. (Capt.) Holden, M.C., Lieut. (Capt.) Huxley. **[*Were not included in the cross-Channel Flight.]**

the whole of the A.F.C. owes to Major Rutledge who, from the very rawest of raw material, organised our No. 1 Squadron. In this work he was brilliantly succeeded by Major (now Lieutenant-Colonel) Williams, who, at the close of the war, was actually commanding the entire Flying Service in Palestine and who is now attached to Headquarters in London as Staff Officer for Aviation."

Touching on the question of instruction, Colonel Watt stated that the methods have completely changed since the early days of flying. The credit for this, says he, is due entirely to Colonel Smith Barry, who closely analysed the uses of aeroplane controls and founded the first Instructors' School, where his famous "Gosport" system was taught. Under this system instruction is given by means of telephone, the principle being that once the machine is taken off the ground the instructor hands it over to the pupil, not touching the controls himself but merely directing the pupil through the 'phone and checking his mistakes. The system was adopted in the First Training Wing by Captain G. C. Matthews, A.F.C., who held the rank of Wing Examining Officer throughout its operations until his services were lent to the Experimental and Navigation Section of the Royal Air Force, Captain Matthews' duties being then carried on by Captain G. C. Wilson, M.C.

"I would like," continued Colonel Watt, "to make special mention of the truly magnificent work done on the technical side of the A.F.C. The pilot, of course, is the man who does the deeds and gets the ribbons. But the technical officer toils from dawn till dark, and long after the pilot is snugly tucked away in bed you'll find the T.O. still hard at work. And without this work not a single machine could leave the ground. He battles along quietly and with no limelight, yet throughout the war the work of our technical officers and their constant devotion to duty have been altogether astounding."

To our request for a word regarding the "Ak-Emma," Colonel Watt said: "The work of the Australian air mechanics, both in England and overseas, has been wonderful, and their qualities have been fully appreciated by the English Flying Services. I happened, once, to have a section of men working with the Royal Flying Corps and, having a vacancy for one corporal, I asked the officer in charge of the section to give me a name. He replied that he simply could not do so; in his opinion they *all* ought to be made corporals! This applied in every branch of the work, and almost without exception when our air mechanics were lent or attached to R.A.F. units to study something new they were eventually put in charge of the whole caboose. As an instance: A 2nd Air Mechanic was sent to the Royal Naval Air Service to study airships. Within three months he was engineer-in-chief of the whole gas bag!"

Colonel Watt flew with Hawker at Brooklands, England, in 1915, and describes him as an exceptionally able pilot, absolutely unspoilt.

The interview, which took place while motoring through the Domain in the Colonel's new Buick car, concluded with his reply to our question as to whether he intended to fly in Australia. "One finds it extremely hard to give up flying. It possesses so many natural advantages. Suppose you want to look at something from a different angle—say a house, for example, or a plot of land—you simply carry your hill with you and look down on what you want to see—from any height you like to go."

LANDMARKS OF PROGRESS

Especially Written for "Sea, Land and Air."

By THOMAS MAXWELL.

The valiant attempt of Hawker and Grieve and the success of Captain Alcock and Lieutenant Brown in flying across the Atlantic brings prominently before us the historical importance of the points of departure and landing of the successful aeroplane which started from St. Johns, Newfoundland, and landed by the Marconi station at Clifden, County Galway, in Ireland. This advanced British post in the Atlantic, Newfoundland, occupies a romantic spot in the history of British achievement and progress.

A remarkable contrast is found between the prize of ten thousand pounds won by the successful aviators and the reward given to John Cabot. The note of this reward is the only existing official record of his wonderful voyage, and it consists of the following entry in the Privy purse expenses:—

To hym who found the new Isle 10 pounds.

Newfoundland's distinctions in British history include those of being the first British colony, the first landing place of

St. Johns, Newfoundland.
The starting point of the First and Second Transatlantic Flights, and terminal point of the Third.

The country was discovered by John Cabot long before the celebrated voyage of Christopher Columbus, who crossed the Atlantic from Bristol in the year 1497, from which time, with but one short interval, it has remained entirely British. Judge Prowse, of Newfoundland, refers to Cabot's discovery as "the most momentous event in modern history, the great voyage which gave North America to the English by the indefeasible right of discovery."

the Atlantic cable, the country in which Marconi's first wireless messages were received across the Atlantic, the point of departure of the first transatlantic flight, and the nearest to London among all the British Dominions.

Aviation and wireless are the most remarkable engineering sciences of our day; both offer the great benefits of reducing time and space and linking more closely the scattered populations of the earth, and it is a fitting parallel that the first

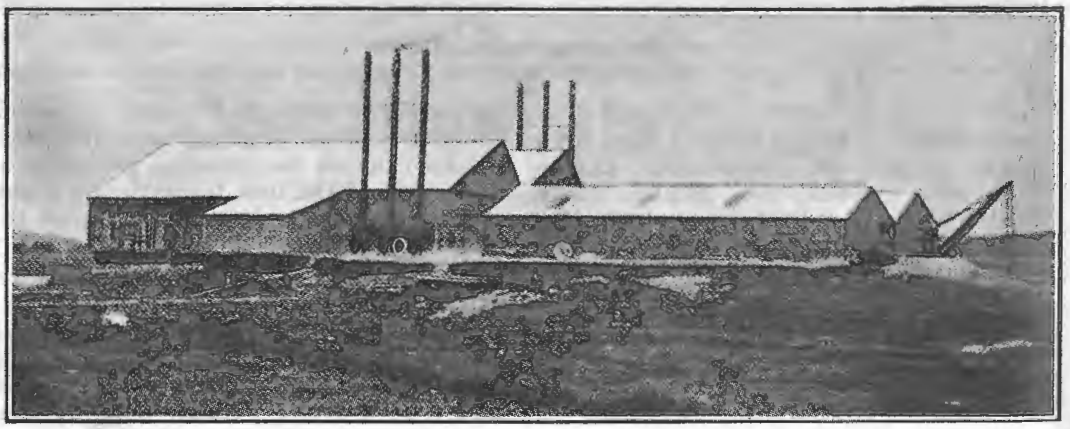
Vickers "Vimy" Biplane.
Winner of *Daily Mail* £10,000 Prize.
Machine in which the Transatlantic Flight was made by Captain Sir J. Alcock and Lieutenant Sir A. Whitten Brown, A.M.I.E., M.I.M.E., A.M.F.A.I.E.
Leaving St. Johns, Newfoundland, at 4.13 p.m. (Greenwich Mean Time), Saturday, June 14, and travelling at 130 m.p.h., they landed at the Marconi Wireless Station at Clifden, County Galway, at 9.40 a.m. Sunday, June 15.
The Vickers "Vimy" is fitted with twin Rolls-Royce Eagle 8-cylinder engines, developing 350 h.p. Span 68′ 1″; overall length, 42′ 8″; width of planes, 10′ 6″; height from ground, 15′; petrol capacity, 865 gallons; oil capacity, 50 gallons. Weight: loaded, 10,000 lbs.; empty, 6,901 lbs. Range of flight, 2,440 miles.

successful attempts to cross the Atlantic Ocean should have been made from St. John's, Newfoundland.

It would seem something more than coincidence that Captain Alcock made his famous landing at the Marconi Station in Ireland, which was the first to establish a permanent transatlantic wireless service.

Still one more parallel, of which we can be justly proud, exists in the fact that the British Empire enjoys the distinction of laying the first Atlantic cable, establishing transatlantic wireless communication, and the first direct flight across the ocean on which so much of her history has been made.

(N.B.—Senatoré Marconi is, of course, Italian by birth, but most of his great work has been carried out within the Empire with the aid of British capital and British assistants.)



The Marconi Transatlantic Station at Clifden (Ireland).

A WAR PRISONER'S DIARY

BY ROY H. ALEXANDER.

[Mr. Alexander at the time of his capture was wireless officer in the *Wairuna* (Union Steamship Company of New Zealand). The seizure of this vessel, during her voyage from Wellington to Vancouver, by the German raider *Wolf*, was narrated in the March issue of *Sea, Land and Air*.—Ed.]

Sunday, 17th June, 1917.

"This morning his Imperial Germanic Majesty's Pacific Squadron left its base at Sunday Island and proceeded to sea."

So spoke the wag of our party early this morning on the poop of the *Wolf* as she steamed out to sea, the doomed *Wairuna* on her starboard quarter, and the graceful schooner *Winslow* (her latest victim) beating to windward on her port beam.

It had been determined to make a gala occasion of the sinking of the *Wairuna*—the raider's personnel, over 300 strong, lined the rails in full white uniform while the ship's band mustered on the bridge deck to send our vessel to the bottom with musical honours.

At about 8.30 a.m. both vessels hove to—an expectant pause following. Then came the exploding of two time-bombs in the *Wairuna*—a signal for the band to crash into "*Deutschland Über Alles.*"

The *Wairuna,* however, was not to sink so easily (the large quantity of flax and wool in her cargo kept her afloat); no sooner was this evident than the *Wolf's* bulwarks dropped and her 5.9's came into action.

The first shell gashed a hole amidships, just above the water line—the resultant flames bursting sheer over the funnel. For some time the fire was directed amidships; the gunnery, however, was poor.

One shell burst in the water midway between the two vessels, when they were only a couple of hundred yards apart, and very few shots were placed right on the water line.

At about 11.30 a.m. direct hits were scored in Nos. 1 and 2 holds—the good old ship now listing heavily to port, her cargo afire, and smoke pouring from her hatches. Two more shots finished her, and at 12.40 p.m. she settled right over on her side with the burning cargo bursting from her hatches as she disappeared in a swirl of smoke and steam.

Friday, 22nd June.

At 11 a.m. we again left the Sunday Island base—for the last time, as it happened. The American four-masted schooner *Winslow,* a well-known Sydney-San Francisco trader, was in tow.

Since last Sunday our Hun hosts had been busy stripping the *Winslow* of her stores and coal. Now empty she was to be sunk.

A mile or so out from the island the *Wolf* hove-to and time-bombs were placed in the sailing vessel, these, however, proving quite impossible to sink her.

Two huge bombs, each half the size of an ordinary mine, were then substituted; these caused terrific explosions which, however, expended their force in an upward direction and, while shattering the poop and displacing the mainmast of the schooner, did not sink her.

The big guns now opened fire, and during the entire afternoon the *Wolf* bombarded the little ship in an attempt to destroy all traces of identity in case the wreck should happen to be found.

Shelling stopped at dusk.

The *Winslow* had received about forty 5.9 shells, the sea was covered with burnt and splintered *débris,* and the beautiful sailing ship of a few hours before was a shattered wreck, blazing from stem to stern.

Finally, at about 6 p.m., the burning derelict and Sunday Island dropped astern in the gathering darkness as the *Wolf* steamed off on a westerly course, bound for the Tasman Sea—with mines.

Wednesday, 27th June.

Last night the prisoners' guard was doubled, none being allowed to come up from the hold under any pretext, and the *Wolf* swung off her westerly course in towards the North Cape (New Zealand).

In No. 3 hold, separated from us by a quarter-inch bulkhead, are over 200 complete mines, resting in long rows of cradles.

At about 9 p.m. last night mine-laying commenced.

Group of Officer Prisoners aboard the German Raider "Wolf."

Through a concealed rivet-hole in the bulkhead we took turns in watching the *Höllenmaschinen* (machines of hell)—as the Huns call them—trundled to an elevator in the mine-chamber.

From the elevator they were propelled along the rails on the main-deck to apertures in the sides of the poop, through which they were pushed into the sea while the vessel was proceeding at full speed. Twenty-five mines were laid—scattered at intervals between the North Cape and the Three Kings, we believe.

Thursday, 28th June.

In the Tasman Sea, heading toward the Australian coast.

Clear, calm weather.

Last night a big mine-field was laid at the western entrance to Cook Straits; about 45 mines went over the side. The prisoners are undergoing a severe "strafing" at present; among other "strafe" items we are not to be allowed out of the hold for 28 days, except for one hour daily.

The Herr Kommandant has ordered this because * Chief-Officer Steers and 2nd Engineer Clelland (of the captured steamer *Turritella*) swarmed down a shark line hanging over the stern and attempted to swim ashore one evening while the *Wolf* was lying off Sunday Island.

Their escape was not discovered until recently and, since they are beyond the reach of our captors, with typical Hun mentality, punishment is being inflicted upon us.

Thursday, 5th July.

For three days we have not been out of the hold; the penalty for venturing near the deck was to be shot immediately.

When we were allowed up this morning, blinking like owls in the unaccustomed daylight, it was to find the *Wolf* a ship transformed. Her telescopic masts and funnel had been lowered to give her a low, squat appearance—she was running on a *S.E.* course before a heavy following sea.

The raider has been up to her old business again—this time off Gabo.

All day Tuesday mines were being lifted from the mine-chamber to the rails under the poop, preparatory to laying a very large field.

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*These two officers were never heard of again The water was infested with sharks in the vicinity of the ship.

When darkness fell she crept in toward the coast, and at about 9.30 p.m. the mines began to go over the side.

Thirty-one had been laid when an interruption came; it was probably only a merchant vessel which approached too close to the raider, but the cautious *Wolf* was taking no risks and made off at full speed—not forgetting to discharge a torpedo at the approaching vessel as she left. The torpedo missed.

The remaining mines were brought down from the main-deck to the mine-chamber again. We were running *S.E.* at full speed all day yesterday—and finally, late this evening, we turned north; bound for the clearer waters north of the Tasman Sea.

Wednesday, 11th July.

Position 26½ *S.* 166¾ *E.*

A rattling good joke relieved things generally on Monday.

A sail was sighted at 3 p.m.; the *Wolf* gave chase and came up to the vessel (a three-masted barque) at about 4.30 p.m.—a boarding party starting off at once to board the prize.

This party had scarcely left when a heavy smoke-cloud appeared on the horizon. Our gallant Kommandant suspected a trap—that the barque was a "Mystery Q" ship and that her cruiser escort was even then coming over the sky-line.

Nerger, brave man! left his boarding party to their fate and bolted at full speed.

He ran all night, heaving-to at dawn to launch the * *Wölfschen.* The sea-plane had been dismantled during the cruise in the Tasman and was now hastily refitted, and sent on a scouting flight. The 'plane reported the coast clear, so the *Wolf* steamed slowly back to the barque, now in command of the German boarding party.

She was what she appeared to be—a harmless trader, and the "cruiser" which had jangled the raider's nerves, was—the C.S.R. sugar boat *Fiona!* She had passed the barque soon after the *Wolf* had made her unceremonious exit.

The barque was the *Beluga,* with case oil from San Francisco to Sydney. She was destroyed by shell-fire in the afternoon, being smashed to pieces by over 40 shells. It was a wonderful sight as we drew away from the shattered *Beluga* at nightfall; the oil cargo had been scattered over the surface of the water for hundreds of yards, the sea itself appearing to be in flames.

* The *Wolf* carried a sea-plane, and christened it *Wölfschen.*

Sunday, 5th August.

Since the schooner *Encore* was sunk on July 15th, we have sighted nothing.

The patrol on the Suva-Sydney track was abandoned owing to an accident to the sea-plane, which made a faulty descent, smashing a wing, the floats, and damaging the engine.

Repairs were effected whilst we were steaming up towards Rabaul, and we are now waiting for one of Burns, Philp's steamers. The sea-plane patrols twice daily, but so far there is no sign of the steamer.

Monday, 6th August.

The 'plane had just been hauled on deck on returning from her afternoon flight yesterday, when she was quickly relaunched under orders from the bridge.

Our victim-to-be had wirelessed. It was just about 6 p.m. as the *Wölfschen* rose, and in ever-widening circles tried to locate the vessel.

Then, when but a speck against a mass of indigo clouds on the horizon, the raiding bird sighted its quarry.

A white Verey light trailed across the cloud-bank from the sea-plane—then a red—another white light—and yet another. He was marking out his victim's course to the watching *Wolf.*

Fifteen minutes later the *Wölfschen* was again hoisted to the raider's deck; the prisoners were bundled below, and the *Wolf* was on the trail.

She kept on at full speed all night, and in the early morning the crash of the bulwarks as they fell and the roar of a for'ard gun announced that another British lamb had fallen to the *Wolf.* It was the *Matunga.*

Sunday, 26th August.

At midday the two ships left the bay where the *Matunga* had been stripped, and once again safely passed the narrow, winding channel that led to the open sea.

We shall not forget Offak Bay, in the Dutch island of Waigiou—that beautiful, treacherous harbour, a vision of gorgeous tropical beauty and a hellish centre of malaria and stifling humidity where we endured such agonies of heat, thirst and semi-suffocation in our crowded, sweat-drenched prison-holds.

At about 2.15 p.m. the two vessels hove-to in the straits off Waigiou, and two time-bombs were placed aboard the *Matunga.*

She reeled heavily as they exploded; her bulkheads collapsed with tearing crashes, her bow rose into the air—and she had gone.

The *Wolf* steamed off on what is to be one of the most daring acts of her cruise—Nerger intends to pass the Allied patrols in the Java Sea and to mine the naval base of Singapore.

Monday, 3rd September.

Last night was quite exciting.

We are in the Java Sea, steaming right on the trade route.

The raider is depending absolutely on her disguise to bluff her way through to Singapore—the *Wölfschen,* which would so surely betray her if seen on deck, has been dismantled and placed in No. 3 hold.

Last night the ship was pushing steadily along as usual when the clanging of the big electric alarms aroused us to find the *Wolf* clearing for action.

All those among the prisoners who had "traded East" had said that our pirate ship would never reach Singapore with her death-dealing cargo—that the patrols were too vigilant.

We had met a patrol boat now, and it was quickly coming up on us.

The hatches were clamped down above the prisoners (there were to be no survivors among the *Englische schweine* if a * *verdammte kreuzer* sent the *Wolf* to the bottom)—the guns cleared away and manned behind the hinged bulwarks which would conceal till the last moment these curious appendages of a "harmless merchantman"—the torpedo doors were dropped and the deadly tubes trained on the fast approaching two-funnelled cruiser.

Then a strained silence as the Huns waited for the cruiser to challenge—a silence broken only by the sinister hissing of the compressed air in the charged torpedo tubes, and the rhythmic beat of the raider's screw.

Perhaps ten minutes, and † *alles klar* sounded on deck above our heads—we had not been challenged.

It was not the first time (and it would not be the last), that the Hun pirate bluffed a hostile patrol.

* Lit.—"Damned cruiser"; † "all clear."

Wednesday, 5th September.

Off Singapore, at the entrance to the Malacca Straits, the *Wolf* last night laid the last of her mines in a series of small fields.

In all 110 mines went overboard.

Wednesday, 26th September.

Patrolling the Colombo-Cape route.

The sea-plane rose this morning and hastily returned to report a vessel in the vicinity. The raider came up to her intended prize at about 3 p.m., when the usual stopping shot was fired.

A number of prisoners were staring curiously through the hatch at the black-eagle ensign, capped by the white pennant, floating from the mainmast, when a sheet of flame shot across the hatch. We were bowled over by the air concussion, and the hold filled with thick yellow fumes.

The other vessel was showing fight. A couple of broadsides were sufficient to bring everything movable down about our ears—dust, lyddite fumes, bolts, splinters rained down upon us.

It needed little urging to induce us to lie flat on the deck to avoid splinters. The survivors came alongside in lifeboats later—dozens of Japanese, English, Portuguese and Indian passengers. They were bundled into the now-empty mine-chamber in No. 3 hold—men, women and children together.

Thursday, 27th September.

This morning we steamed through a section of the Maldive archipelago, finally entering a gap in a reef and anchoring in the centre of a huge lagoon—an enormous circle of dazzling coral, with verdant islets strung on here and there, for all the world like jade beads on a white necklet string. Many of these islets are inhabited by a Malay, *sarong*-clad type of people; a number of small *dhows* are visible in the offing.

The crippled prize limped in and anchored alongside the raider, to be looted at the Huns' leisure—a case of history repeating itself.

This beautiful group of islands, together with the not-far-distant Cocos group, was a famous retreat during the early half of the nineteenth century for those who raided and looted on the old East India routes under the Black Flag.

The latter-day pirate's prize is the *Hitachi Maru,* the monthly mailboat of the

Nippon Yusen Kaisha line *en route* from Yokohama to Liverpool, and now two days out from Colombo.

The beautiful vessel was sadly battered during yesterday's scrap; the decks are scarred and smashed by splinters, cane lounges heaped with cushions, quoit pins, and all the other impedimenta of a passenger liner's deck, lie around in pools of blood.

The gun aft (a modern 4.7) is surrounded and splashed with blood and ghastly fragments of human flesh—what was yesterday a Jap. gunner is now spattered over the after wheel-house in hideous clotted lumps. The after-companionway and portion of the rail have been shot away, the wireless cabin and the funnel smashed by shell, a woman's fan lies in a pool of blood on the hastily vacated deck. It is a sad aftermath of a gallant fight against odds—a forlorn hope that failed.

Twenty were killed.

Thursday, 8th November.

The *Hitachi Maru* has gone; it was sad to see the fine vessel go under, her propellers flashing high in the air as she dived.

The Hun's quarters are now luxuriously furnished from the Jap's cargo; crêpe de chine curtains, silk cushions, and silverware from her saloon are in evidence everywhere; one even sees the denizens of the German fo'c'sle flaunting round in gorgeous silk kimonos. For himself Nerger has thieved a wonderful kimono, embroidered with peacocks in natural colours, which was intended for the Japanese Ambassador in London.

Another officer has looted a case full of Satsuma and carved ebony *objets d'art.*

We have had typhoid on board, and a number of Japanese have died of *beriberi,* but no excitement beyond the unsuccessful chase of a big Blue Funnel liner, a fire in the bunkers, which was extinguished after a few days, and a hurried exit from the neighbourhood of Mauritius when a Japanese cruiser in search of the *Hitachi Maru,* advertised her close proximity by using her wireless.

The *Wolf* is now crammed with prisoners, the women (about eight) and their husbands are fairly well off amidships, Nos. 3 and 4 holds being closely packed with the remaining prisoners. The various groups of prisoners are segregated more or less strictly (probably to prevent conspiracy); the poop is sacred to the Merchant Service (the starboard side for officers, the port for men); the starboard after well-deck is for passengers and the port side for Japanese. The women are permitted to visit the starboard well-deck at certain times, and one *chic* little lady who, by some mysterious means, still manages to appear in well-laundered whites—usually above a foundation of cerise or emerald silk hose—little knows the havoc she has wrought among the young and impressionable on the raider's poop.

The well-deck is clinging to semblances of civilisation to the last, and views with pained horror the sun-burned semi-nudity on the poop.

This grim disapproval affects me to such an extent that I attire myself in a once-white tennis shirt and a pair of slippers, in addition to my usual "shorts" when visiting the well-deck to sit among the Highly Respectable and munch the manna which a providentially (for me) dyspeptic friend saves me from his own meals.

En passant, food is scarce and of poor quality; for months our principal meal has consisted either of thick, vile-smelling pea-soup or a malodorous mixture of rice, dried potatoes, and what is known as "Mrs. Crippen."

"Mrs. Crippen" is of German origin and comes from tins, but her earlier history is veiled in merciful mystery.

For many weeks we have been regaled on Sunday with soup extracted from the bones of horses which were slaughtered aboard the *Matunga.*

After each cauldron of soup is brewed the bones are carefully collected and utilised over and over again, and by this time the soup is a little weak.

A special treat at a celebration on my twenty-first birthday was a massive shoulder-blade, erstwhile the property of a Sydney draught horse, and which now served as the *pièce de résistance* of our festive board. This "joint," alas! had been used before for soup, and was decidedly lacking in nutriment.

Monday, January 28th, 1918.

We are steering north, our position being roughly on the English-American trade route. Terrific seas are running and the semi-crippled *Wolf* was yesterday in grave danger of foundering.

Many of her plates were started by the heavy bumping she got from the Spanish prize *Igotz Mendi* during several partly-successful attempts to coal from that vessel in mid-Atlantic, and water is pouring into the raider at the rate of 40 tons an hour.

She was rolling on her beam ends yesterday when the pumps choked for some considerable time, and one could almost immediately hear the water rising in the compartment beneath the hospital amidships. The flow is now again under control.

Saturday, 2nd February.

The ship this morning presented a beautiful spectacle. Decks and hatches were buried under a thick cover of snow; spars, rigging, and ventilators outlined in white, and the heavy flakes falling so thickly that the lead-coloured seas swelling away on our beam were visible only for a few yards from the side.

At midday the fall ceased and the heavy armament had scarcely been cleared of snow when the alarm sounded.

The approaching vessel, however, was no British patrol, being one of the "Skandanavien-Amerika" liners and unmistakably bound from the Frozen North. Coated in ice from stem to stern she glittered in the wintry sunlight like a toy ship on a Christmas tree.

Wednesday, 6th February.

The Cunarder *Tuscania*, transporting American troops, was last night torpedoed to the south of us—so our Hun friends tell us.

Thursday, 7th February.

All prisoners, including the privileged neutrals who have hitherto lived amidships, were to-day placed in the holds aft, presumably to enable them to be more easily *spurlos versenkt* should the *Wolf* be caught.

The women are aboard the *Igotz Mendi*, which is to make the dash through the blockade lines after the raider has made her attempt.

The weather is frigid.

We are inside the Arctic Circle: Nerger is attempting to get through the Denmark Straits (the passage separating Iceland from Greenland), thence cutting across to the Norwegian coast north of Iceland and thus avoiding the southern Allied patrols. The raider is a glittering mass, and the drift ice is becoming thicker on the almost black swell.

During the afternoon it finally developed on our port side into a solid formation of field ice.

It was like land—flat, frozen, plain-land—stretching as far as the eye could see, its hummocks scintillating in the chill, yellow rays of the afternoon sun.

Friday, 8th February.

Last night in the prisoners' quarters the now-battered old piano from the *Matunga's* saloon was jangling out "So Long Letty," when the guard came down to search the holds.

Captain Tominaga, of the *Hitachi Maru*, was missing.

The search was fruitless; the Japanese captain had obeyed the strict traditions of his race and had suicided rather than live as a vanquished captive.

The *Wolf's* attempt to pass through the Straits has failed; all night the ice grew thicker till the raider was finally crashing into a continuous field of drift ice, and making no headway.

In the early morning she turned south again.

Thursday, 14th February.

The *Wolf* has safely crossed to the Norwegian coast and is now hugging the land on her way south.

The prisoners are below, but by means of pocket compasses the course can be roughly gauged.

We do not anticipate for one moment that we shall reach Germany; the Germans themselves are not too optimistic about the matter.

Saturday, 16th February.

Last night we rounded the Naze, and are now heading up the Skager-Rack; we have only to pass the British mine-fields safely and we shall be in German waters by the morning. The philosophic calm which has characterised the majority of the prisoners for many weeks was broken this morning; many, and heated were the arguments as to the efficiency or otherwise of our blockade-line.

Most of my fellow-prisoners seemed to lose their sense of proportion at finding themselves in the predicament of being "the exception that proves the rule."

Sunday, 17th, February.

We are safe in German waters.

During the morning the signal was given to allow prisoners on deck, and the hetero-

geneous collection of all ages and types, all colours and nationalities, streamed up out of the holds to obtain their first glimpse of the Vaterland.

All those physically able to do so, that is—for twenty-five per cent. of us are in a truly horrible condition with scurvy. It broke out many weeks ago; nothing could be done for the unfortunate sufferers on board, and for the last couple of weeks the loathsome disease has been literally rotting men alive in the fœtid, malodorous holds. Even Germany is preferable to this, and it was with a melancholy sense of relief that we stood on the raider's decks watching the little windmills and villages of the Schleswig-Holstein coast slipping past on our starboard beam.

Guarded by two light cruisers, the *Wolf* is anchored out in the Baltic, close to the entrance to Flensburg Fijord, waiting here for the double purpose of keeping her return to Germany secret until the *Igotz Mendi* is safely through the blockade-lines and to enable her own entrance into Kiel to be effectively stage-managed.

Fifty Iron Crosses have arrived by Imperial messenger—also a very small quantity of fresh provisions.

The various concert parties in the prison holds are busy making an "Absolutely last appearance before touring the Continent." (Concerts were a favourite form of amusement coming up the Atlantic.)

The concert party possessing most *éclât* is that whose members describe themselves as the "Lyric Lambs"; the "Lambs" have a decided *penchant* for "Mother Machree," "Excelsior," and similar sentiment rendered by budding John McCormacks and Peter Dawsons. Very different are the fo'c'sle *musicales,* which take place outside our mess-room. Here the concertina comes into its own; "Finnigan's Ball," and ancient classics of the London "'Alls" alternate with *risqué* repartee and clog-dancing; here, also, "I Love the Ladies" is rendered by the combined assemblage with all the fervour of a hymn at a revival meeting.

Sunday, 24th February.

Der Tag!

WE ENTER KIEL

The *Igotz Mendi* has been lost in the Skager Rack and this morning the *Wolf* left her anchorage for Kiel. A thick haze obscured the coast; we came up on deck at about 2 p.m. to find the outskirts of Kiel looming up ahead.

The sea-plane is on deck; it emerged from the hold yesterday, painted grey and marked—*for the first time during the cruise*—with black German crosses.

A huge ensign flies at the raider's stern, and an enormous white pennant, tipped with a golden ball, streams from her mainmast.

And—also for the first time during the cruise—the crew appeared wearing cap-bands printed *S.M.S. WOLF.*

Kiel, with its pretty villas and windmill capped hills, occupied little of our attention, for there, ahead of us, lay the Grand Fleet.

A huge lane of battle-cruisers, cruisers and lighter craft stretched down the Bay, their crews manning the decks. An aeroplane escort "stunted" and manoeuvred overhead as the returning raider steamed slowly up the harbour; as she came abeam the band on each vessel's deck would blare out and the crews would cheer wildly.

She finally anchored in a place of honour between the huge flagship *Bayern* and the notorious raider *Mōwe.*

The *tout ensemble* was wonderfully impressive, and to reflect that this magnificent fleet was unable to steam out of its own harbour, solely because of our own "R.N.," was a circumstance that gave us a warm glow of satisfaction.

The harbour was alive with mosquito-craft, and the *Wolf* was immediately boarded by boat-loads of Gold Braid, attended by the Females of the Species.

We prisoners, very conspicuous in our assorted uniforms on the raider's poop, had our own little "place in the sun," as the attentions of cinema-photographers showed, but the *Wolf* herself was *the* attraction.

She was home after a cruise of 15 months, having voyaged 64,000 miles and scattered death and destruction in seas where the weight of Deutschland's Mailèd Fist had not hitherto been felt; Kiel, consequently was *en fête.*

And we, a little colony of assorted Allies about to depart for unknown hardships in an enemy country, may be excused for looking forward to the morrow in no jubilant spirit.

[Mr. Alexander's experiences as a prisoner in Germany will be narrated in our next issue. —Ed.]

WIRELESS POSSIBILITIES

WIRELESS VERSUS CABLES

Especially Written for "Sea, Land and Air" by SANS FIL

Since hostilities have ceased letter mails between Australia and England have become more certain and regular, but telegraphic communication appears to be worse than ever.

Messages sent by either of the cable routes take anything from five to twenty-five days in transit. Thousands of people are anxiously trying to communicate with their soldier relatives, and because of the cable congestion the news often arrives too late to be of use.

In business and commercial work generally the conditions are most serious. Just now, when all circumstances, including prices, shipments, and even policies are unstable and changing from day to day, rapid communication with British and American business centres is most essential. Together with private individuals and business houses our daily newspapers are suffering from the cable congestion and delay, with the result that important news from Europe, where the future of civilisation is hanging in a slender balance, arrives most erratically and often much belated.

New Zealand is known to be suffering equally with Australia, and much agitation is being aroused for some remedy to be provided.

It is not only between here and the United Kingdom that our telegrams are delayed. With the exception of messages between Australia and New Zealand, we are almost isolated from all parts of the world.

All this trouble has arisen out of the main difficulty that it is impossible to operate a direct cable between Australia and England, the distance is too great and the route would be too devious. Consequently the only two cable lines which are available are both used for business other than ours.

Messages for the Pacific cable have to cross the Atlantic by one of the cables used for general Transatlantic business, and this can never be altered, because it would be manifestly impossible for the Australian Government to lay and operate a cable across the Atlantic exclusively for its own purpose. The policy of State ownership is liable to meet unknown difficulties when it gets beyond the boundaries of its own State.

Messages *viâ* Eastern, for a considerable portion of the distance, pass over one of several lines used also for Indian, Egyptian or African services.

Most of the difficulties of cable communication between Australia and other countries can be overcome by the use of wireless, which offers great advantages over the cable in cost of construction, operation and maintenance, operating speed, reliability and flexibility. Wireless communication has arrived at such a stage now that to sink large sums of money in additional submarine cables would be hazardous in the extreme.

Recent experiments have proved beyond question the possibility of direct wireless communication between Australia and England, and highly qualified experts in other countries have expressed the opinion that no long-distance cables will ever be laid again.

Four years ago few, if any, wireless experts would have believed direct communication across twelve thousand miles possible, but scientific achievements move forward so rapidly nowadays that it becomes unsafe to speak of anything as impossible. Even with the actual achievement of direct messages from England the practicability of a permanent service seemed doubtful because of the great difficulty caused by electrical storms, the results of which are spoken of in wireless vernacular as "Xs" or "static."

It is a remarkable feature of modern progress that most of the seemingly insuperable difficulties are no sooner recog-

nised than a solution is found and this has actually happened in the case of long-distance wireless. A prominent American radio engineer, Mr. Roy A. Weagant, chief engineer of the Marconi Company of America, has solved the problem after a long series of exhaustive experiments.

Weagant's greatest work was the discovery that the ether waves which disturbed the wireless receivers are propagated vertically, and that consequently their direction is perpendicular to the horizontally moving waves from wireless sending stations. Having discovered the law this inventor devised a highly scientific, but beautifully simple, method of eliminating vertical waves while allowing the horizontal waves to act fully and freely on the receiving apparatus.

Experts who have seen and tested the apparatus in operation unanimously agree that it acts perfectly, and so the last obstacle to a successful, high speed, direct wireless service between Australia and England has been removed.

These achievements, together with the earlier successful development of simultaneously sending and receiving messages with automatic apparatus working from 50 to 100 words per minute, open up possibilities as great as those promised by the advent of the aeroplane.

To erect a wireless station in any part of Australia to receive messages direct from the great Marconi Transocean stations in England, Canada, and the United States, would be but the work of a few days, while within 18 months a completely organised permanent service could be provided by linking with the Marconi organisation and erecting modern high-power stations in Australia and England, especially equipped for what would be the longest direct telegraphic route in the world.

With duplex operation, high-speed transmission and reception, and freedom from interference at all times, the present congestion of cables would be relieved, and social, business and Press messages could be sent and received at lower rates than those ruling at the present time.

If the service were kept free from congestion by the virtue of its speed and the absence of relay stations an ordinary business message should reach any Australian city from London in as many *minutes* as the cable messages now take in *days*. At the same time a direct service with New York, California, Canada and Honolulu could be provided, and later, when other stations about to be erected are completed, the service could be extended to South and Central America, the Far East and to Africa. The advantages and possibilities of such a service to the social and commercial welfare and development of Australia and New Zealand are almost beyond conception.

Efficiency and reliability will of course be demanded, and these can only be ensured if the entire service is conducted along uniform lines by an organisation which has had experience in that particular class of work. It could not be successful if a distinct organisation, with no responsibility beyond its own borders, conducted a separate station in each country. Such a method in long-distance wireless would inevitably lead to serious difficulties and delay.

To ensure successful operation and full benefit to the public the service should be conducted by some organisation which is able to establish uniform methods and exercise uniform authority at every station forming a chain, but which is also subject to the laws of each country in which the stations are located. This demands private ownership and operation of the stations, but always subject to control in each country by some department of the Government. Government ownership and operation in each country would be impracticable because uniformity and common authority would be impossible and the service would become an absolute monopoly with no overriding authority to watch the interests of the users.

WOMAN'S INVASION OF INDUSTRY

THE BETTERMENT OF CONDITIONS

Especially Written for "Sea, Land and Air" by MISS KAE McDOWELL

An effort has been made in recent issues of this journal to give an idea of the great part taken by Allied women in the struggle for victory. Their achievements have amazed the entire world and they, themselves, have discovered a heritage of which they were hitherto ignorant. They have felt their strength and, having drunk the wine of independence, a large number of them will never again be content to sink back to a life of idleness. Thousands of others, whose bread-winners have fallen to the scythe of war, must henceforward provide for themselves and their families.

We are now up against the problem that we knew must arise as soon as woman stepped on to the warpath nearly five years ago. Then we had no time or inclination to bestow upon seeking a solution. Man's attention was riveted upon the trenches, and he hailed woman's advent into the commercial world as an unmixed blessing. It enabled him to augment his resources in a way he had never hoped for. To-day, however, he stands somewhat aghast at the position Peace finds him in.

War being over, and demobilisation following quickly, he naturally seeks reinstatement in the industrial sphere. And in nearly every direction he turns he finds woman has firmly ensconced herself. In the majority of cases, too, she is showing little inclination to retreat. To say that she must be pushed back arbitrarily is hardly just, even in the cause of returned men. For woman has done her share of war work as surely as man has. That she was not found actually fighting in the trenches was not her fault. She was frequently under fire. She did her utmost for her Empire, and no man could do more. Never was so huge a system of co-operation organised as that between men and women during the war. And if in war they co-operate, why should they fail in Peace?

Women have greater responsibilities now than previously. They have crippled brothers, husbands and fathers. They have less opportunity for marriage. As science solves domestic problems fewer and fewer of them are needed to operate the machinery of the home.

These facts show that woman's invasion of industry is no temporary affair. So the question that remains is how best to turn her to account.

Industrial expansion seems to be the most reasonable answer. The development of existing industries and the establishment of new ones will absorb, productively, every ounce of this impending energy. The process of this development, however, opens the door to many important questions.

The biggest obstacles to woman's success in industry have been summed up as Marriage, the Trades Hall, and the question of Equal Pay for work of equal merit. That business men consider the first an evil is proof of woman's ability to shoulder responsibility.

An instance was cited recently of a girl at £5 per week replacing a male clerk at £3 per week. By her efficiency she saved the firm several hundreds of pounds during the first six months. But at the end of that time she got married—Hey Presto! The solution of this question has not been found, though some men consider they have grappled with it by means of time contracts.

The other two matters, the Trades Hall and Equal Pay, seem to be linked together, for by establishing the policy of the latter the inclination of firms who at present employ women because they are cheaper will be overcome. Efficiency will be the standard of employment, and those who are not fitted for industrial work will be forced to seek more suitable occupations. Equal pay certainly would prove a valuable stimulant to the capable, and there are some who think that it would cause a large number of women to either brush up their wits or lose their jobs.

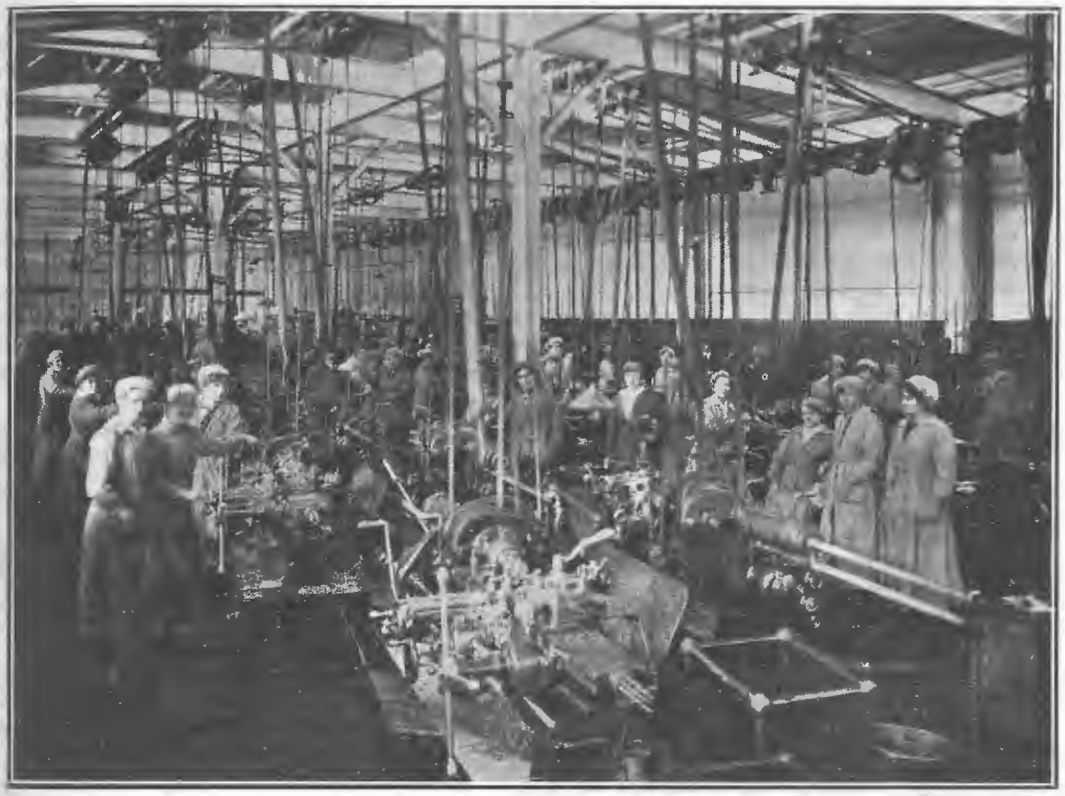
The tacit acceptance of women into industrial work in other parts of the world is causing a general revolution in factory conditions as well as in working systems. The same must shortly be the case in Australia where, according to overseas critics, business methods are considerably out-of-date.

The accommodation provided in the majority of our workshops, for instance, is only sufficient to comply with the letter of the law; the working hours comply with the same rules. It is often contended that such matters form some of the chief ingredients in our labour unrest, and that if employers are to stem an adverse tide they must do something more practical than talk of ingratitude, and answer strikes with lock-outs.

Our more progressive companies have been for some time realising the all-round benefits of improving their working conditions. The effect has, indeed, been in some instances little short of magical. Results have advanced in leaps and bounds while discontent has receded to a minimum.

A Melbourne business man, the other day, outlined his first experiment in increasing factory output. When he took over the position the works were supposed to be going at full pressure in order to turn out goods urgently needed for military purposes. The working hours were from eight till six, with an hour for lunch, yet the output was, as he termed it, "rotten." His first action was to cut down the hours by two a day and to eliminate Saturday labour. The output went up 100 per cent.

According to experts in industrial management, results obtained from repetition work in factories drop from 100 per cent. between eight o'clock and nine, to 90 per cent. from ten to eleven, and to 60 per cent. between eleven and twelve.



Woman's Invasion of Industry.
One of the metal-working shops of the British and Colonial Aeroplane Co., Ltd., manufacturers of the "Bristol" aeroplane. Filton Works, Bristol, England.

During the afternoon the drop is even more pronounced. Efficiency engineers maintain that the highest results are obtained by a five minutes' rest after the first two hours and a full quarter of an hour after the third.

The greater the reasonable comfort afforded the employees, during working hours, the greater their content and efficiency. Bathrooms with hot and cold water and showers, and lunch rooms are considered of importance in American factories, and every year such matters are receiving increased attention in Australia.

At the Newport River Station (Victorian Electrical Railways) even coat-hangers are provided in the dressing-rooms. A man may go to work, if he be so inclined, in his "Sunday best," and leave in his "Sunday best." There is adequate sanitary accommodation, hot and cold baths and towels. Also a fine recreation or lecture room.

At the Broken Hill Associated Smelters, Port Pirie, magnificent accommodation has been installed, and such good results have followed that the directorate is going further. Holiday cottages have been erected at the seaside, where employees may take their families and spend their annual holidays, rent free.

No explanation is needed to show the supreme importance of having healthy working conditions for the woman industrialist. The question is a business proposition, and is already accepted as such by the progressive employers.

In this article it is only possible to draw attention to a few of the numerous classes of work which women are already entering. These, too, it should be mentioned, are classes in which they will be least likely to run counter to masculine aspirations.

Small farming is set down as being inceasingly popular, especially round Sydney, where the geniality of the climate proves an irresistible attraction to open-air life. Women, however, are not fitted for heavy farm work even if they are able to do it. This has been proved by recent experience in Europe and England.

Hand-spinning is growing in favour, and schools are being established to teach the craft, which appears to be a fascinating one.

It is thought that before long, and as the use of automatic machinery becomes more general, fully 40 per cent. of the employees for repetition work in foundries will be women. They have proved most successful so far.

In electrical works they have found a niche. The present writer has seen them at work winding coils in the Sydney workshops of Amalgamated Wireless (Australasia) Ltd. They are also employed for other repetition work by this firm.

An industry in which women have taken an important place, in other parts the world, is in the construction of aircraft. The work is light and the factories uew, airy and free from the irritation of noisy machinery. Women seem to be particularly adapted to it, and in a number of instances they have risen, after only a few months' training, to positions of manager and even partner.

L. K. Yates gives an interesting account of one of the huge English aircraft shops during the war and the ability with which women handle the various delicate portions of the machines.

"One expects," she says, "women's familiarity with the occupation in rooms where the fine Irish linen is cut out and and fashioned into wings. One is not surprised at the facility with which the measuring and cutting out are accomplished, and maybe, an emotion of admiration arises, similar to that by the contemplation of old tapestries, when one watches the hand-sewing of a seam in a wing of some 10 feet in length. Not a stitch of the button-holing of such a seam deviates by a hair's breadth from its fellows. Such work has, however, been women's province through the ages.

"But a new sensation is awakened in the carpenter's shop, where women are working with dexterity at the bench, handling woodwork like the men, now dealing with delicate wooden rilbs, or again, fashioning propellers out of mahogany or walnut with such nicety that there is not the slightest deviation between the dimensions of a pair. In the room where the linen is stretched over the wooden ribs I have seen women working with tiny hammers, giving fairy blows that never miss their mark, on tiny nails."

The manufacture of aircraft will shortly be commenced in Australia. One

large company, at least, intends to commence operations within eighteen months. Already their plans are well advanced. This firm anticipates that at least 60 per cent. of the work will be eminently suitable for women.

It is satisfactory to know that the work in this industry, with the exception of laying on the "dope," is healthy. "Dope" production, by the way, bids fair to becoming another manufacture. It is composed of cellulose and acetone, and, unless proper precautions are taken, the latter chemical has a highly injurious, stupefying effect on the worker. This action is, however, being overcome by the installation of forced ventilation and the frequent changing of the working staff. The temperature of a "dope" room has to be kept even—say at about 70 degrees.

An interesting point in the establishment of new industries is the growing tendency towards co-operative methods. One, known to me, stipulates the holding of scrip or shares by the workers as one of the conditions of employment.

The importance of paying good salaries for efficient service is also gaining support, and a scheme is afoot with one big venture for the provision of a mutual provident society, the board of management to be appointed, with one exception, by the staff. The employers would pay in 15 per cent. on the bonus system to the employees' 5 per cent.

One other branch of work for women should be mentioned in this article. That is in wireless telegraphy. There appears to be no reason why they should not be employed here as land operators as successfully as they are in ordinary telegraphy. On board ship, however, the case is different, for though the experiment has been tried on various occasions, it has not been proved successful. It is interesting to know that wireless schools get a considerable number of inquiries from Australian women desiring to become operators, and it is probable that before long the field will be open to them.

THE WIRELESS INSTITUTE OF VICTORIA

The second general meeting of the above Institute was held on May 13, in the rooms of the Marconi School of Wireless, Melbourne, Mr. V. Nightingall, presiding.

Officers were elected as under:—

Vice-Presidents: Messrs. H. Firth and C. R. Dodson. Council: The *Provisional Committee elected at the previous meeting (May 6) were re-elected for the ensuing twelve months.

The President moved the adoption of the following additions and alterations to the rules, as recommended by the Provisional Committee:—

Full Membership.—Applicants to have had three years' experience in practical or experimental Wireless Telegraphy or other electrical experience, to the Council's satisfaction, or to be in possession of either a First or Second Class Certificate.

Associate Membership.—Applicants must be eighteen years of age and be in possession of either two Second Class or Provisional Certificate, or satisfy the Council as to his knowledge of Wireless Telegraphy.

Student Members.—Applicants must satisfy the Council as to their suitability for admission.

Applications for any of the above-mentioned grades will not be accepted from any person under the age of sixteen years.

Carried unanimously.

* See *Sea, Land and Air*, June issue, page 146.

A letter from the Honorary Secretary of the New South Wales Section led to the decision that the committee have power to alter the title of the Institute with the object of affiliation with other State Sections in the formation of a Federal Institute.

CORRIGENDA.

In our report last month on the meeting of The Wireless Institute of Victoria the following errors are noted:—

(*a*) Rule 5: "Associate members should have attained their *eighteenth* year" (previously printed as *sixteenth*).

(*b*) Rule 6 (Subscriptions): "Members residing within 15 miles of Melbourne, *£1 1s.*" (previously printed *£1 10s.*).

THE LATE MR. C. A. PHILLIPS

We announce, with deep regret, the death—in his 22nd year—of Mr. Clive A. Phillips, a popular member of the operating staff of Amalgamated Wireless (Australasia) Limited, who succumbed on June 27 to the effects of pneumonic influenza, and was interred two days later at Rookwood Cemetery, N.S.W.

Messrs. Ross, Alexander, Mancer, Quinn, Burbury and Devenport acted as pallbearers to their late colleague, his former employers being represented by Mr. A. H. Beard, and The Radio Telegraphists' Institute by Captain S. Toombs.

THE HISTORY OF THE ABERDEEN LINE UNDER SAIL AND STEAM

Especially Written for "Sea, Land and Air"

by CAPTAIN J. H. WATSON, J.P., F.R.A.H.S.

More than three-quarters of a century (seventy-seven years, to be precise) have elapsed since the White Star house flag first fluttered into an Australasian port at the masthead of a vessel belonging to what is now known as the Aberdeen Line.

The flag—a white star on a blue-and-red ground—was owned by an Aberdonian, George Thompson, junior, already long associated with British shipping interests and one of the original subscribers (in 1834) to Lloyd's Register.

The history of the Aberdeen line, in its relation to Australasia, dates back to 1842, in which year the New Zealand Company, making its early bid for immigrants, took up a barque to convey settlers from Great Britain to the Dominion.

This vessel was the *Prince of Wales,* of 582 tons burthen, built in Aberdeen and owned by George Thompson, junior, of that city.

On her maiden voyage to the Antipodes the *Prince of Wales* reached Port Nicholson (Wellington) in December, 1842, landed her passengers, discharged her merchandise and, seeking a homeward cargo, set sail for the only shipping port in the South Seas. Sydney, the port in question, was made on January 28, 1843, but, failing in her object, the barque left again, three days later, for Valparaiso.

George Thompson's vessels were on the Liverpool register and, hitherto, had traded only to the West Indies and South America; but the commercial possibilities of Australia—brought to his notice, no doubt, by Captain Alexander, of the *Prince of Wales*—encouraged him to send out a second new barque. This was the *Neptune,* of 343 tons, also of Aberdeen build (1844), and after a single voyage to Valparaiso she was laid on the berth for Sydney.

On November 30, 1846, under command of Captain Stuart and carrying a large general cargo, the *Neptune* sailed into Sydney Cove and was taken alongside Campbell's Wharf to discharge. She was the pioneer vessel of that large fleet of sailers and steamers which—from that day to this—have continuously and regularly carried the now familiar flag into Australian ports.

The *Neptune* was followed by the *Prince of Wales,* and the latter by the *Oliver Cromwell,* 527 tons, built in 1847, by Walter Hood, of Footdee, Aberdeen.

Homeward cargoes were not always to be picked up and many vessels left in ballast.

The performances of certain American ships had, about this period, just begun to impress the British merchant. Simultaneously the shipbuilders' ears began to tingle with the insistent cry of "more speed!" the exhortation coming, of course, from the owners. The first definite outcome of these demands—so far as the Australian trade was concerned—was the arrival in Sydney of the *Phœnecian,* another barque of Walter Hood's build. Although only of 487 tons, this smart little vessel brought out her thirty-two saloon passengers in 91 days, the average at that time being 120. In 1853 she made the home-run (Sydney-Plymouth) in 83 days. Captain Sproat, who commanded the *Phœnician* on her first voyage, became extremely popular with his passengers, and to this day there are still many in Sydney who retain very pleasant recollections of this genial skipper. So high was the esteem in which the *Phœnician* was held that *The Shipping Gazette,* in May, 1856, said:—"Our old favourite completed her seventh passage to this port, Captain Jamson making the run in 85 days. The *Phœnician* was the pioneer of the clipper vessels to this port, and her passages are seldom, if ever, eclipsed."

February 17th, 1853, saw the arrival of an addition to Thompson's fleet in what was intended to be an improved *Pœnician;* this was the ship *Woolloomooloo,* of 645 tons, also from Walter Hood's yard. She

had much the appearance of her prototype, but failed to lower the record of her forerunners, her first trip occupying 87 days, and her next 93.

Much of the intensity which came into the business of Messrs. George Thompson, junior, at this time is due to the admission into the firm of Mr. William Henderson, in whose mind there was at that time, no doubt, the great Line as it is to-day, but then only in the embryonic stage.

This young Scotchman received his first financial training in the North of Scotland Bank, at Fraserburgh, in Aberdeenshire, and in 1845, at the age of nineteen years, came to Aberdeen and entered the firm of George Thompson, Jr., then almost at the commencement of its career, certainly, as it was just on the point of testing Australia as a field of operations.

After five years his ability was recognised by his admission into the firm as a partner, and two years later (1852) he did what many successful merchants have done (according to the story books), he married his "master's" daughter. There is no doubt that it was largely due to this gentleman's shrewdness and business acumen that the firm made rapid strides. Later in life, 1886-9, Mr. Henderson was Lord Provost of Aberdeen, for which he was knighted, and became Sir William Henderson.

In 1854 the head office was transferred to London, Mr. Stephen Thompson being placed in charge, and on his death he was succeeded by Mr. Cornelius Thompson. Both were sons of Mr. George Thompson.

From about this time the firm applied itself, with the assistance of Mr. Walter Hood, to producing the best vessels that Aberdeen and its shipwrights could build, and a great attraction—in the days of long ago—to the Circular Quay at Sydney, and the Railway Pier of the old Hobson's Bay line at Sandridge (now Port Melbourne,) were the ships of this line, the fine lines of their green hulls, and their light and lofty spars, giving them a yacht-like appearance that even a landsman could not fail to appreciate.

The next vessel to follow the *Woolloomooloo* was named after the builder, and thus carried the hall-mark of the yard, to show the world the type of vessel that Britishers could produce in response to the American challenge.

The Aberdeen *Herald* of January, 1852, says that "the largest sailing vessel ever built in Aberdeen, or in Scotland, was launched on the 7th," but, judging by present day ships, she was a very small ship, her over-all length being only 204 feet, and her registered tonnage 936 tons. She was named *Walter Hood* "as an indication of the respect entertained for her eminent builder."

She also was built on the model of the *Phœnician,* and her command given to Captain Sproat of that ship, who as commodore was given the command of the new ships as they were launched.

The *Walter Hood* arrived at Sydney on her first voyage on August 3rd, 1853, having made the passage in 80 days, which is seldom done now by a sailing ship.

On putting to sea on the homeward voyage she got ashore on the west side of Bradley's Head but, with the assistance of H.M. steam warships *Acheron* and *Torch,* she was got off undamaged. In 1854 she ran home in 75 days. In December, 1855, while lying-to in the English Channel, waiting for a pilot, she was run into by the ship *Emigrant,* bound from New York to Bremen.

An action at law for damages resulted in favour of the owners of the *Walter Hood.* This beautiful little ship met her fate, however, on the coast of New South Wales a little north of Ulladulla, on May 6th, 1870, not far from Cape St. George.

She was a total loss, the captain (Andrew Latts), the boatswain and eight seamen being drowned, and also Mr. Haynes, a passenger.

The next new vessel of the line to reach Sydney was the *Maid of Indah,* which made this port on March, 14th, 1854, under command of Captain Isaac Merchant, whose first passage was 94 days; but he improved on this later by having 78, 79, and 80 days to her credit. Like others of the line she was as well known in Hobson's Bay as in Sydney, for these vessels ran to both ports as the exigencies of trade required. Her final voyage under the White Star house flag was in 1871, when she was sold to the Sydney firm of T. & M. C. Cowlishaw, and put into the China trade under command of Captain A. W. Webb.

A wooden vessel of 639 tons, the *Centurion,* although built in 1850, did not

make her appearance in Sydney until October 19th, 1855, when she arrived under command of Captain Edwards. She was afterwards sold, and was lost on the South American coast.

Up to this time the largest ship from the celebrated Aberdeen yard, was the *Omar Pasha,* of 1100 tons, launched in 1854, and named after the commander of the Turkish troops in the Crimea.

She made her first voyage to China, and the second to Sydney, arriving on June 16th, 1856, under command of Captain Thompson.

A good story is told of a voyage she made in 1865 from Melbourne to London. Messrs. Money Wigram & Sons had a splendid fleet of vessels in the London and Melbourne trade, and their frigate-built clipper *True Briton* was in Hobson's Bay and ready for sea at the same time as the *Omar Pasha.* These vessels were towed out through Port Phillip Heads on August 27th, and there left to find their way home in the quickest time they could. They arrived in the Thames on November 6th, and were towed up to the docks close together, the time being 71 days.

This vessel was sold to Messrs. Taylor, Bethel & Roberts, who put her in the Queensland trade. She left Brisbane February 1st, 1869, with 64 passengers and a crew of 34, took fire in the North Atlantic and was totally destroyed, but without loss of life.

As the Russian war was responsible for the name of this ship, so the peace provided one for the next, the *Star of Peace,* which made her first voyage in 1856, arriving on April 20th, her time being 79 days. Captain Sproat, who was evidently regarded as the commodore of the line—for he had command at this time of each new ship—brought her out.

Each of these Aberdeen ships as built was an improvement on the previous one, and the *Star of Peace* eclipsed all the preceding ones from Walter Hood's yard. She had much finer lines than any of the former vessels, and was 1113 tons, a large ship for the period. Her next voyage was 78 days, and she had several 77 days to her credit.

Like a great many others of the famous clippers of the past the *Star of Peace* finished her career as a hulk.

The register of Australian and New Zealand Shipping in the section devoted to vessels "subsequently lost or missing, or no longer in active service," says, "*Star of Peace,* barque, 1114 tons, Sydney, built 1855, broken up at Thursday Island, 1895"; this cannot be correct, if she had been broken up at that date she would not be a barque, but a hulk. The writer has a sketch of her taken at Thursday Island in 1903, and drawn by a local man specially for him. In 1899 or 1900 the *Tyburnia* was towed from Cooktown and was given the *Star of Peace's* moorings, that vessel being moored elsewhere.

On her third voyage Captain Jamson, formerly of the *Phœnician,* was in command, arriving February 3rd, 1858. He continued in her until making the homeward voyage in 1860, when he died at sea on July 11th, three days before entering the English Channel.

For some years the *Star of Peace* had Melbourne as her terminal port. In 1872, when Captain Richard Boaden was in command, the present writer made a voyage in her on ship's articles. On board were some stud cattle and, after two of them had died, the skipper gave orders to the "butcher" that if any more were lost he was to open up the next and they would hold an investigation to try and determine the cause of death.

In a few days a further death was reported, and the "butcher" was instructed to have the animal ready for the captain's inspection after breakfast. As soon as that meal was over all hands gathered to see the captain hold his post mortem examination. He walked round the carcass, which was on its back, opened, and its interior anatomy exposed to view, every now and then he stooped and poked his finger into some part and looked very wise. The writer, who was among the spectators, remarked audibly: "It is easily seen what it died of"; the skipper turned smartly and said: "Well, what did it die of?" The writer, looking the "old man" straight in the face, replied, "Ossification of the mucous membrane of the thorax, which has caused peritonitis." The skipper, who saw he was having his leg pulled, said, "Go to ——!"

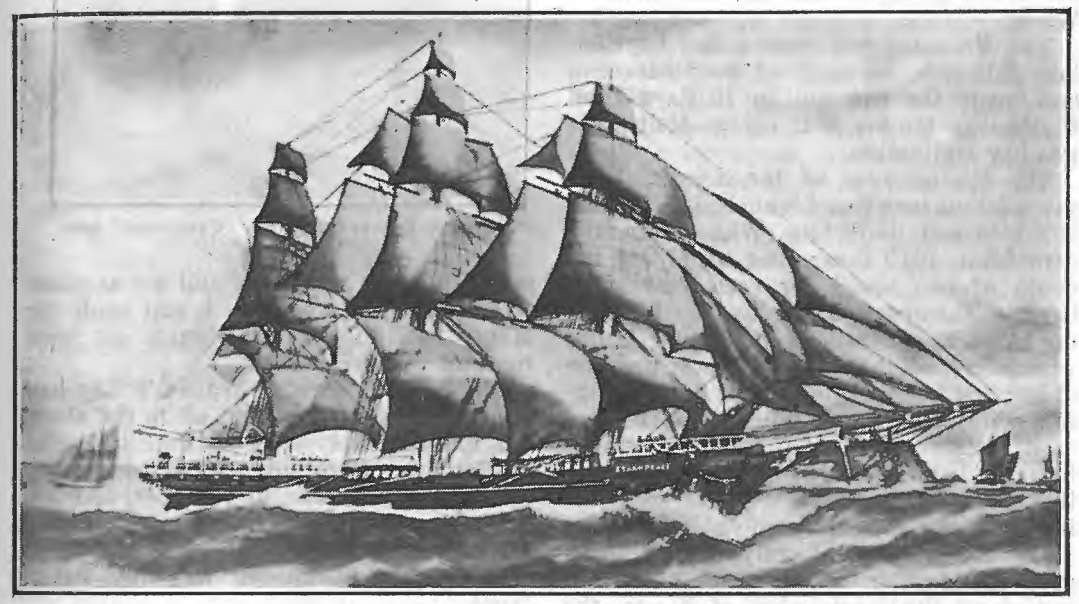
Captain Boaden was a very reserved man, but could let himself go when he considered it necessary. In appearance he was strong and robust, but died of consumption in Brisbane in 1893.

The Wave of Life, built in 1856, was

not a fortunate vessel; of 888 tons, she was a fine model, intended to make a quick run out; and on her first voyage was placed in charge of Captain Stewart, previously in command of the *Neptune* and the *Woolloomooloo*; but it took 104 days to reach Sydney from Plymouth.

On her second voyage with the same captain, she left Gravesend in company with the *Catherine Adamson,* the loss of which vessel at the Heads was recounted in the December issue of this journal. She arrived the day after the wreck of the *Catherine Adamson,* 25th October, 1857, this time in 90 days.

The next vessel off the stocks at Footdee was the *Damascus,* of 964 tons, the command being given to Captain Alexander, who had brought out the *Oliver Cromwell* in 1847.



The "Star of Peace," 1113 tons.

The *Damascus* arrived on September 24th, 1857, being 92 days on the passage. A paper which gives her departure from the Downs as 24th June, and her arrival on 24th September (92 days), adds: "She made an excellent passage of 87 days." The reporter, in recording this item, probably noted it after the captain had taken him below to see the steward, who had the correct dates in the pantry.

Captain R. Murray took over the command in 1860, and the popularity of the ship was maintained by him until 1866, when Captain Boaden, afterwards of the *Star of Peace,* took over the command, being followed by Captain Thomas Taylor in 1868.

A vessel named *Transatlantic* was built by Walter Hood in 1857, and although she was in Sydney in 1860, with Captain Mitchell in command, 1862 with Captain J. Mann, and 1864 with Captain Phillips, she was not a regular trader here. Her name implies that she was one of George Thompson's vessels, and, like the *John Bunyan* (which also had Captain Mann as commander and traded to Quebec) made occasional visits to Australia as the exigencies of the time demanded.

It was this *John Bunyan* which, when on a voyage to Melbourne, where she arrived early in January, 1865, under Captain Allen, brought to Melbourne Mr. Harris and the boat's crew of Messrs. Money Wigram's steamship *London,* which that vessel had lost at sea on the 21st November. The boat had been lowered to pick up one of the crew who had fallen from the jib-boom, but they failed to find him, and the *London* lost the boat and its crew. These were picked up by the American whaler *Henry Tabor,* thirty-two hours later, and transferred next day to the *John Bunyan.* Captain Martin of the *London* was somewhat surprised when Mr. Harris and the five men walked on board.

The *London* herself was lost next voyage, on January 11th, 1866, in the Bay of Biscay, when only eight of the crew and three passengers were saved, among the lost being the captain and officers, as also Dr. Woolley of the Sydney University, and G. V. Brooke, the tragedian.

The arrival of the *Moravian* on January 14th, 1859, brought the number of George Thompson's ships in Port Jackson to six. The others were the *Damascus, John Bunyan, Star of Peace, Wave of Life,* and *Walter Hood,* all being to the agency of Montefiore, Graham & Co. Five of these ships were loading or discharging at the "Circular Wharf," a sight that any firm might well be proud of, especially of ships of the type of these White Stars. The sixth, the *Wave of Life,* was at the Grafton Wharf.

The *Moravian* was commanded by Captain Edwards, formerly of the *Centurion,* and made the run out in 76 days from Plymouth. On her next voyage Melbourne was her destination.

The closing year of the decade, 1860, saw another new vessel launched by Walter Hood to sail under the White Star, the *Strathdon,* 1010 tons; thus supplying the quota of one vessel for each year since George Thompson & Co. had undertaken the Australian trade. Captain Henry, who later had the *Star of Peace,* was one of her first skippers, but it was during Captain Pile's charge that her name became most prominent; not that she did anything to bring notoriety upon herself, for it was through an unfortunate series of accidents in which she was not involved.

On the morning of July 28th, 1867, a gale was blowing, with a heavy sea breaking along the coast, when at 8 a.m. the *Strathdon* arrived off the Heads and signalled for a pilot. Captain Robinson, with four men in his whaleboat, proceeded out to board the ship, and when off the South Reef the boat was struck by a sea and capsized. A butcher's boat, which was making for the *Strathdon,* at once went to the pilot's assistance, and succeeded in getting the five men on board, when she, in turn, was swamped. In the meantime a second pilot boat had put off to the rescue of the first, and coming on the scene was endeavouring to rescue the two crews who were struggling in the water, when she met the fate of the others.

There were now fourteen men in the water, including Captains Robinson, Reader, and Shanks, when Captain Jenkins

Captain Edwards, of the "Centurion" and "Moravian."

came up in his whaleboat and got as many on board as she would hold, and made for Manly to land them, hoping to get back in time to save others.

The lifeboat crew at Watson's Bay had been got together, and put off to the scene, but unfortunately were too late to rescue any others. Eight lives were lost, among them pilots Robinson and Reader, and five of their crews, also Mr. Green, who represented Mr. O'Hara (a shipping butcher), and was well known on the waterfront.

This unfortunate affair was spoken of for years as "the *Strathdon* accident," although she actually had nothing to do with it.

It was during the decade which closed with the year 1860 that the marvellous development of the sailing ship took place, and it speaks well for the owners and managers of the ships now under review that they more than held their own against such powerful owners as Green, Dunbar, Wigram and Somes of London, and the American-built ships of Liverpool, the celebrated Black Ball clippers, the White Star, and the Eagle lines, all of which were vieing with one another for the supremacy of oversea trade.

(To be Continued.)

LETTERS TO THE EDITOR

To the Editor, *Sea, Land and Air.*

Dear Sir,—

We have been greatly interested in *Sea, Land and Air*. Aviation is as yet in its infancy in Australia, but the near future must see great advances in that direction. Australia's isolation will be the driving power of her aerial development.

We cannot help but feel that your excellent little journal, the first in Australia to grasp the future which lies before the aeroplane, will reap considerable benefit from its enterprise in years to come.

We trust that you will not hesitate to enlist our services if they can be made useful to you.

Yours faithfully,
The British & Colonial Aeroplane Co., Ltd.,
H. WHITE SMITH.
Director and Secretary.
Bristol, England, 25th April, 1919.

To the Editor, *Sea, Land and Air*

Dear Sir,—

We consider that your journal fulfils a very valuable function in view of the possibilities of the early development of aircraft for commercial purposes.

Yours faithfully,
F. C. BUCK, Major,
Commercial Manager,
The Nieuport & General Aircraft Co., Ltd.
London, 28th April, 1919.

To the Editor, *Sea, Land and Air.*

Dear Sir,—

In the June issue of *Sea, Land and Air*, page 175, there is a very interesting *advertisement for Malthoid, but we consider that the artist might have shown a deal more accuracy in the construction of the aeroplane. The angle of attach of the planes of the machine is decidedly interesting, as is also the construction of the chassis. With the chassis strut arrangement shown it would be interesting if you could explain to us:—

1st. How the machine managed to get off the ground without collapsing?

2nd. If it is possible to land the machine without wing collapse?

Yours faithfully,
HECTOR SLEEMAN,
Managing Director,
Aerial Transport Ltd.
Melbourne, 25th June, 1919.

(* The advertisement in question appears on page 245 of the present issue.—Ed.)

To the Editor, *Sea, Land and Air.*

Dear Sir,—

I would inform you that my original War diary (from which you are publishing extracts) has been purchased by the Trustees of the Mitchell Library, for preservation among the War Records of the library.

However, the Trustees aforesaid, grant special permission for *Sea, Land and Air* to publish these extracts, upon the conditions that full acknowledgment is made of these facts when publishing.

Yours faithfully,
ROY ALEXANDER.
Sydney, 15th June, 1919.

To the Editor, *Sea, Land and Air.*

Dear Sir,—As sea salt dissolves in any moisture up to 15° Centrigrade, I believe and submit to you and your readers, that aerially distributed over the rain-laden clouds, the "cumulous and nebulous," which move across Australia in summer and drought time, when stock and cereals are perishing from lack of rain, would, on contact, dissolve, and form droplets and drops, in these almost supersaturated clouds and amalgamating aqueously, would produce *forced rain precipitation* over the limited areas passed over.

In 1914, Mr. S. Kidman lost 70,000 cattle by drought. This one fact is sufficient to point out the effects of drought.

If successful, it will give an immense impetus to the air machine manufacture and its branch of engineering, and increase "values" and "output" of pastoral and farming industries, and replenish watercourses, reservoirs and refresh all cereals and natural grasses. At is has been placed before the Commonwealth and State Governments in the proper manner, it remains for the interested public to further the scheme by insisting on a trial test being made over the right clouds in the proper manner. That is all I ask, also. You will see for yourself, it is eminently practical, without referring to scientific men, who have not trial tested, but who have been written to and hold various opinions.

Yours faithfully,
FRANK C. SNODGRASS.
Melbourne, June 16th, 1919.

AERIAL TRANSPORT, LIMITED

The following are extracts from the prospectus of Aerial Transport Limited, Equitable Building, Melbourne.

1. Objects :

The object of the Company is to make arrangements for the establishment within the Commonwealth of Australia, on a commercial scale, of an aerial transport service to include passengers, cargo, and mail carrying. The ultimate working capital required for this purpose will be £500,000, but before this expenditure can be considered it is necessary for the work as outlined to be carried through.

2. Work :

(1) To make surveys and maps of routes over which the machines will fly.

(2) To select and arrange for aerodrome sites.

(3) To obtain and tabulate meteorological information not at present available in the Commonwealth.

(4) Investigate the possibility of local manufacture of aeroplanes and power units in accordance with the designs of an approved English manufacturer.

(5) Arrange for selected representatives of the Company to proceed to London to :—

(*a*) Make investigations of the types of air craft and power units available and most suited for Australian conditions.

(*b*) Make investigations of the principle on which existing aerial services in other countries are being operated.

(*c*) Issue specifications and obtain tenders for the aeroplanes required for the larger Company.

(*d*) Issue specifications and obtain tenders for workshops and factory equipment.

(*e*) Issue specifications and obtain tenders for power units.

(*f*) Carry on negotiations and complete Agency agreement with some approved firm of English aircraft manufacturers for the Company to act as their sole Agents in the Commonwealth.

(*g*) Carry on negotiations and complete Agency agreement with some approved firm of English power unit manufacturers for the Company to act as their sole Agents in the Comonwealth.

(*h*) Obtain and forward to the Company's technical representative in Australia the necessary information to enable him to proceed with the preparation of specifications for hangars, workshops, and factory buildings.

(*i*) Confer with the Imperial and American authorities as to the proposed regulations for the control of aerial navigation.

(*j*) Engage pilots, mechanics or other officials where deemed advisable.

(*k*) To arrange for such additional amount of the larger capital as may be required from Great Britain.

(6) Generally to prepare reports and make available the complete data necessary for an air service on a sound commercial basis.

3. Amalgamation :

At the outset two proposals for the establishment of an aerial transport service were independently submitted to the Commonwealth Government, one by Lieut. H. Sleeman, who was for eighteen months Assistant Instructor in Flying, and O.C. of the Technical Branch at the Central Flying School, Laverton, and the other by Major Lee Murray, R.A.F., who before coming to Australia under appointment to the Commonwealth on August 1st, had had considerable flying and technical experience in France and England, and was, immediately prior to leaving England, Inspector of Acceptance Parks under the Imperial Air Ministry.

The Treasury officials realised that the two proposals competing for the same object would imperil the establishment of a service on sound lines, and negotiations led to the amalgamation of the two schemes.

Mr. H. Sleeman will act as Managing

Director of the Company, Major Murray as Chief Engineer.

Consent has now been granted by the Commonwealth Government to register the Company.

4. Preliminary Capital :

The preliminary capital of the Company as indicated will be £10,000 which will be provided by the issue of 40,000 shares of 5s. each, payable 1s. per share on application and balance to be called up as required in calls not exceeding 1s. per share per month, or alternatively the amount of shares, namely 5s. each, may be paid in full when lodging application.

The whole of the money raised from sale of shares will be placed to credit of Company less brokerage threepence per share and preliminary expenses.

There are no promoters' or free shares in the Company. The capital which will be made available by the present Company will be ample to secure all the preliminary data required, and the capital necessary for the complete establishment of the aerial service will be raised by the issue of preference shares or debentures, as may be decided.

5. Directors :

The Directors of the Company will be:

Mr. W. T. Appleton, Melbourne, Chairman.

Mr. H. Sleeman, Melbourne, Managing Director.

Major Lee Murray, Melbourne, Chief Engineer.

Mr. Wilfred Blacket, K.C., Sydney, Representing N.S.W. Shareholders.

The Board will have power to add one more interstate member, the whole of whom, however, shall be subject to re-election at the Statutory meeting of Shareholders to be held within three months of the registration of the Company.

6. Solicitors :

Blake and Riggall, 120 William Street, Melbourne.

7. Interstate Division of Shares :

It is desired that the Company should be fully representative of the various States. Allotment will be made as far as practicable in:—

N.S.W. and Queensland ..	12,000 shares
Victoria	10,000 ,,
Tasmania	8,000 ,,
South Australia	5,000 ,,
Western Australia	5,000 ,,
	40,000 ,,

The Company will be registered as a Limited Liability Company under Part I. of the Companies Act, 1915.

JAPANESE SHIPBUILDING RECORD

9,000-TON STEAMER COMPLETED IN 29 DAYS

From Mr. P. Moore Farmer, our correspondent in Japan, we have received the series of interesting photographs which appear on pages 228 and 229. They indicate the continuous progress made by the Kawasaki Dockyard Company, of Kobe, in the construction of the steel steamer *Raifuku Maru*, which took the water, fully engined and complete in every detail, twenty-three days after the laying of her keel.

Her dimensions are as follow: Length, 385 ft.; beam, 51 ft.; moulded depth, 28 ft., with a gross tonnage of 5,857 tons, and carrying 9,081 tons deadweight. Her engines are 26 in., 43½ in., and 72 in., by 48 in. stroke.

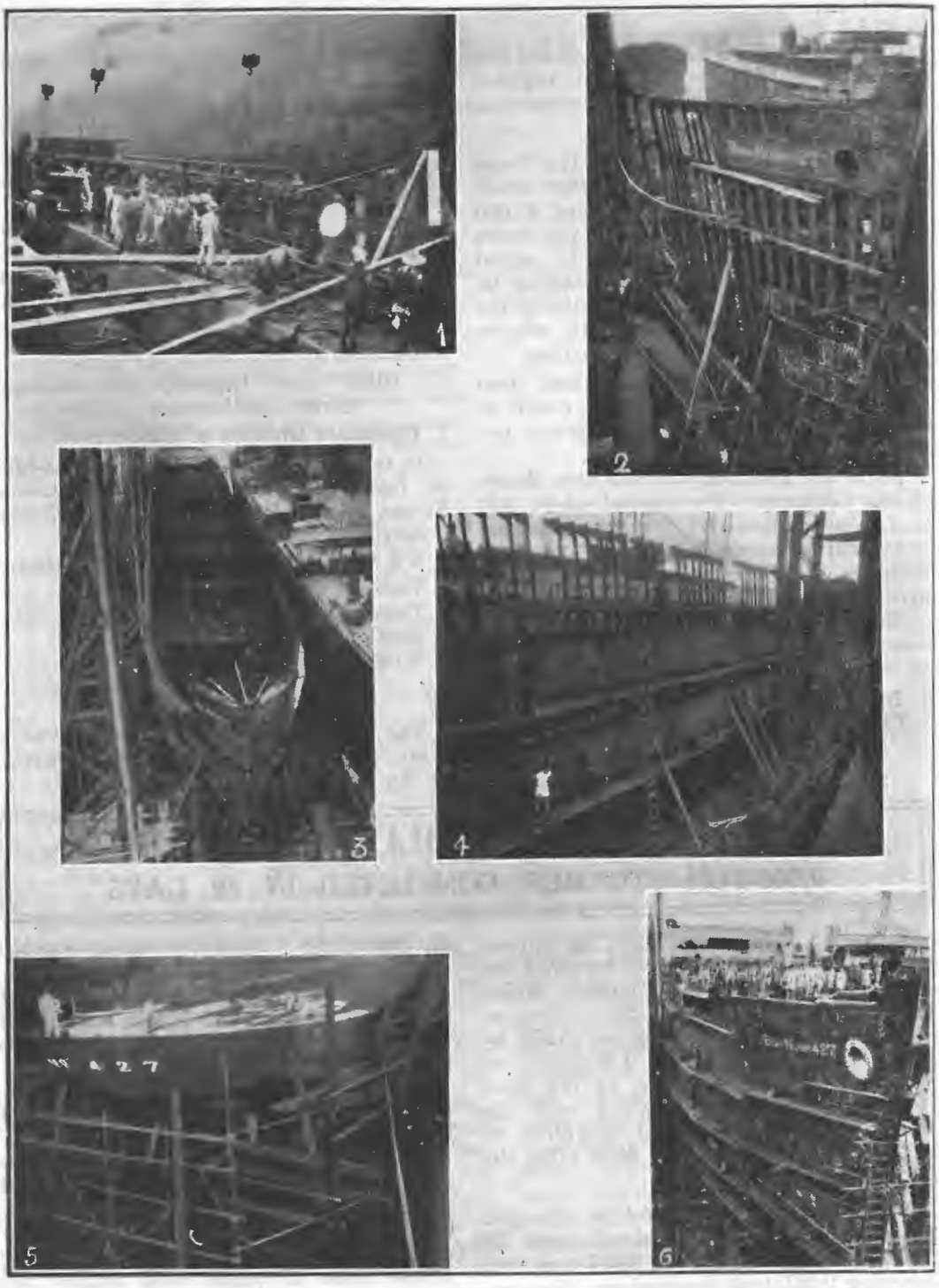
The keel plates of the *Raifuku Maru* were laid at 7 a.m. on October 7 last; she was launched at 6 a.m. on October 30; her official trials were successfully completed on November 5, and the vessel handed over to her owners on that day.

General cargo was loaded at the rate of 1,200 tons per day, and within a month of the keel laying she sailed with a full cargo for South America.

Labour was plentiful and the work continued, day and night, throughout the 24 hours.

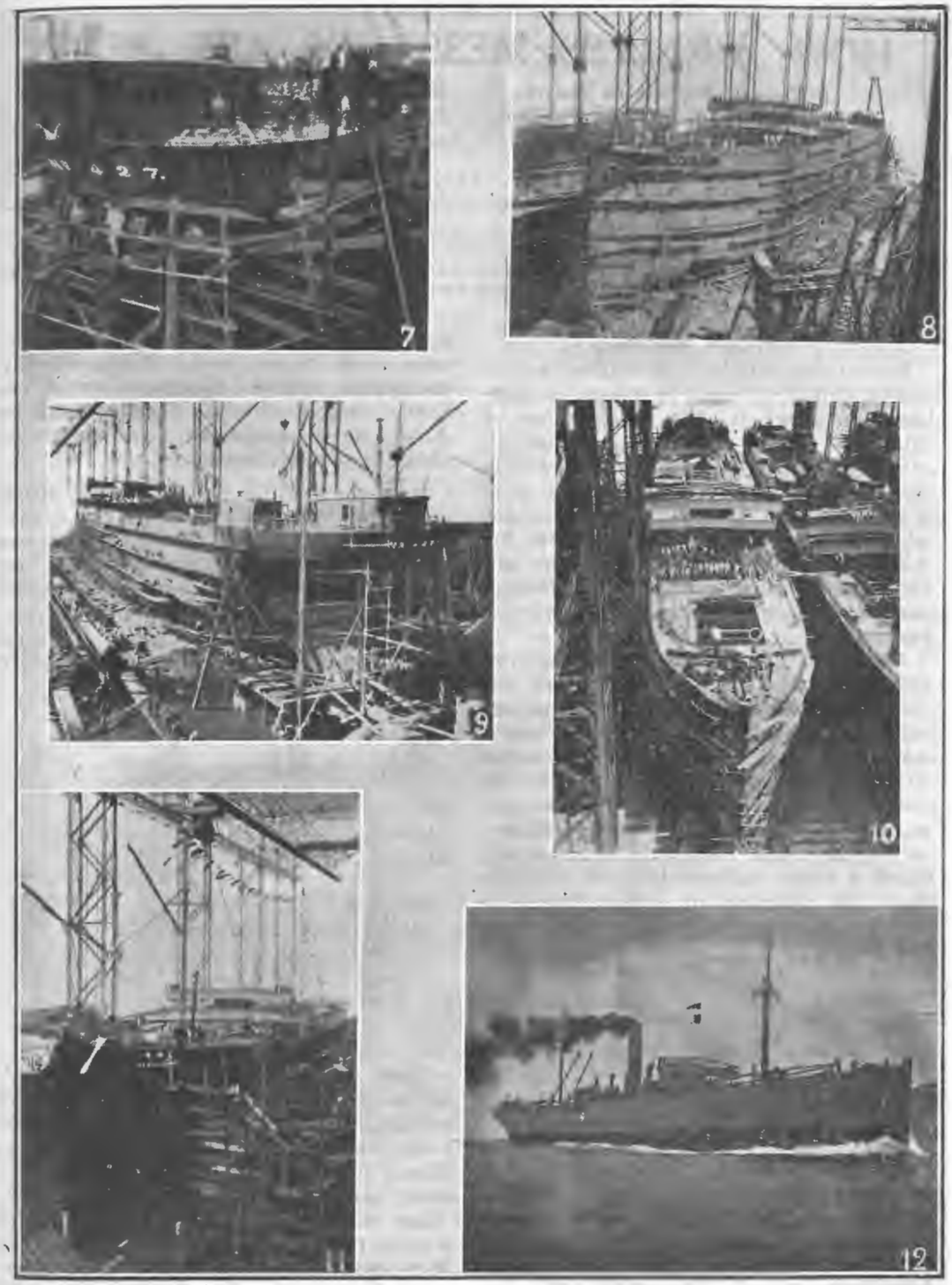
With the exception of the steel plates and boiler plates, the whole of the material for the ship and machinery was manufactured at the Kawaski Company's new mills, these being capable of producing 50,000 tons of plates and angles per annum.

The company employs some 25,000 hands, and, not content with constructing locomotives, battleships, cruisers, destroyers and merchant vessels, it is now turning its attention to the manufacture of motor cars and aeroplanes.



Japanese Shipbuilding Record.

(1) Keel plates laid, October 7, 1918, 7 a.m. (2) Twenty-four hours after keel plates laid; October 8th, 7 a.m. (3) and (4) October 9th, 4.30 p.m. (5) and (6) October 14th, 11.30 a.m.



Japanese Shipbuilding Record.

(7) October 14th, 11.30 a.m. (8), (9) and (10) October 18th, 11.30 a.m. (1) Ship launched October 30th, 6 a.m. (12) Official trial successfully completed on November 5th, 1918.

HOW WIRELESS MESSAGES ARE SENT

Especially Written for "Sea, Land and Air"
By ERNEST T. FISK, Member Institute of Radio-Engineers

V.

[It is claimed that any non-technical reader who carefully follows this series of articles will gain a clear understanding of the main principles which govern the sending of wireless messages. Should the reader find difficulty in grasping any of the points dealt with, we shall be pleased to assist him if he will write, indicating his difficulty.—Ed.]

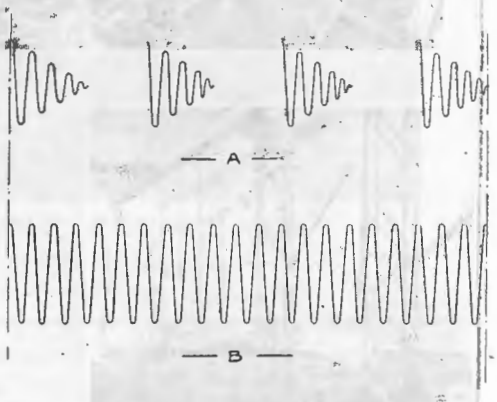
Damped Waves.

Everything we have described so far relates chiefly to what is known in wireless parlance as the production of "damped" waves for wireless communication. Uninitiated readers might well be startled at such a term and decline to be led further into the mysteries of a subject which employs such queer adjectives, but we would advise them to accompany us a little further and learn why the term is used quite simply by we simple wireless people.

Damped ardour in persons is something akin to damped waves in wireless and *vice versa*. Readers of the earlier chapters will remember that the extremely rapid oscillations of electrical charges which set up the ether waves were produced by the discharge of a condenser. This condenser was charged from a source of high electrical voltage, and when the charge produced a strain sufficiently great it broke down the resistance of a short air gap and rushed to and fro, alternately charging and discharging the condenser in opposite directions. Now everyone knows that "perpetual motion" is an impossibility, therefore this busy charge and discharge grows weaker at every change, because of the energy lost by radiation and through resistance, until it becomes so weak that it can no longer cross the air gap.

Most people who travel by sea have heard the peculiar hissing crash which follows the Morse code when the wireless operator is sending messages; that noise is caused by the discharge just described, which has the appearance of a whitish-blue electric spark. Every time the operator sends a dot or a dash these sparks occur in rapid succession, so rapid that, to the unaided eye, they seem to be continuous so long as the Morse key is pressed. They are not continuous, however, and if we could blink quickly enough we should notice an interval, between each discharge, which would be quite long in comparison with the actual duration of each spark.

It is the regular decay of each spark which produces the "damped" or decaying waves. That is, the impulse grows weaker with each swing of the oscillating electrical charge. This can be illustrated by the accompanying simple diagram, marked *A*, which demonstrates a succession of discharges or oscillations or ether waves.



This diagram shows that the oscillation commences with the maximum energy, but that it decays regularly at each change of direction until it ceases; this is followed by a space, and then another oscillation exactly like the first. These are known as wave trains, and in a properly arranged wireless transmitter they follow each other at regular intervals. Thus we see that the term "damped waves," like a great number of our technical terms, or like the unpronounceable names of Welsh towns, clearly and conveniently explains the history of the

thing referred to. In this case the waves are steadily "damped," until they are extinguished.

When these wave trains follow one another at regular intervals from the sending station they produce a corresponding series of impulses at the receiving station, and each wave train eventually causes a "click" in the receiving apparatus. Here we get the explanation of the actual "tone" (not to be confused with the tune) of signals in a wireless receiver. Some signals are low-toned and gruff, others are medium-toned and full, similar to the middle "C" on an organ, while many are high and shrill like a treble pipe or a whistle. These differences are exact reproductions in musical tones of the frequency of the wave groups received on the aerial from the sending station, and the frequency of the wave groups is governed by the frequency of the sparks. There are several methods of producing groups of sparks in regular trains and with various musical frequencies, but these could only be explained in technical terms or in a separate article if required in popular terms; moreover, they do not affect the broad principles with which we are dealing here.

Undamped Waves.

Until recent years all wireless communication was effected by means of damped waves, but at the same time the possible advantages of undamped waves were fully appreciated, and many ingenious minds were concentrated upon the problem, which was one of practical difficulty only.

It is scarcely necessary to remark that undamped waves are waves which retain their initial energy at every swing, and which, therefore, do not decay. They are usually maintained in one unbroken train so long as the operator keeps his Morse key depressed. An undamped wave is shown in diagram immediately beneath the damped waves in *A*; if one could mentally picture the wireless waves which are passing all about us, at all times and in all places, one would immediately distinguish between the damped and undamped waves from the memory of these diagrams. Suppose, for instance, the waves were passing across a room in which you were seated you would see the damped waves extending in a series of decaying groups, each group separated from those before and behind it by regular intervals, but the undamped waves would form an unbroken chain across the room.

Everything that has been written in earlier instalments about tuning and resonance applies equally to undamped waves, but the methods of producing them are quite distinct.

The ordinary commercial alternating current provided by municipal or other electrical supply stations, is similar to the current used for wireless communication with undamped waves, and if that alternating current were suitable in every respect wireless messages could be sent by connecting to an aerial any one of the hundreds of alternating current dynamos which are available in any city. This simple method is not, however, available, because the current in commercial generators changes direction much too slowly—their frequency is far too low. The engineering problems surrounding the design and operation of a very high frequency generator are so great that after several years of work by a number of engineers and scientists, the problems are not yet entirely solved. Other methods of producing undamped or continuous waves (as they are frequently termed) are being successfully adopted today in a large number of stations throughout the world, and the advantages of continuous waves over undamped waves are so great that the use of the former will rapidly extend.

Among those advantages are much sharper tuning, as a result of which a larger number of stations can operate within a given area without interference, and, with greater efficiency, because the absence of damping and closer resonance enable a suitably designed receiver to absorb more energy within a given time.

Undamped waves lend themselves more readily to the amplifying effects of magnifying valve receivers, the extended use of which has been one of the greatest factors in demonstrating the advantages and efficiency of the undamped wave system.

Unfortunately space will not permit a discussion of the various methods of producing undamped waves, but it is hoped to conclude this series by describing in the next article the Marconi method as used at Carnarvon, Belmar and elsewhere, the Poulsen method, the Goldschmidt, and the valve system.

THE LEAGUE OF NATIONS

Especially Written for "Sea, Land and Air" by HAROLD H. JOHNSON

The Press has published the salient features of the Covenant of the League of Nations, and the objects of the League are set forth in the following terms:—

> In order to promote international co-operation and to achieve international peace and security by the acceptance of obligations not to resort to war; by the prescription of open, just and honourable relations between nations; by the firm establishment of the understandings of international law as to the actual rule of conduct among Governments, and by the maintenance of justice and a scrupulous respect for the treaty obligations in the dealings of organised peoples with one another, the high contracting parties agree to this Covenant of the League of Nations.

The signatories as original members of the League will be as follow:—

> America (United States), Belgium, Bolivia, Brazil, British Empire, Canada, Australia, South Africa, New Zealand, India, China, Cuba, Czecho-Slovakia, Ecuador, France, Greece, Guatemala, Haiti, Hedjaz, Honduras, Italy, Japan, Liberia, Nicaragua, Panama, Peru, Portugal, Roumania, Serbia, Siam, and Uruguay.

And the States to be invited to accede to the Covenant:

> Argentine Republic, Chile, Columbia, Denmark, Netherlands, Norway, Paraguay, Persia, Salvador, Spain, Sweden, Switzerland, and Venezuela.

A philosopher once said that his heart was in the Past, his body in the Present, and his soul in the Future. He was not a humorist, nor was he indulging in a high-sounding phrase which should impress the ignorant. He was merely condensing into one sentence man's debt to the Past, his identity with the Present, and his responsibilities to the Future. The story of how *we* make the Future is Prophecy; the story of how the Past *makes* us is History. When we realise that we ourselves are the result of all that has gone before, History ceases to be a cold, informal narrative and becomes a vivid, intimate reality.

The modern historian who writes on the early history of human progress has been compelled to gather his information from a variety of sources. Herodotus, called the father of History, wrote an account of the struggles between the Greeks and Barbarians; one of the oldest historical works extant.

When the modern historian came to study the earliest civilisations of Egypt, Assyria, Babylonia and Persia, he found that most of his information had to be literally unearthed, for it lay under the sandy deserts of Egypt, or the desolate plains of Assyria.

In 1799 some of Napoleon's men in Egypt discovered what is known as the "Rosetta Stone," containing a key to the hieroglyphic or sacred writings of the priests of Egypt, probably the oldest civilisation in the world.

The first thing to be realised in the reading of history is the conviction that at every stage it was a living Present, with men and women striving for what seemed to them to be the most necessary and real ends of life. The past is the mirror of the present. If anyone has doubts as to the reality of life in bygone days, let him read the pathetic inscriptions left in the Roman catacombs by the early Christians in memory of their martyred comrades. Through the mists of nineteen hundred years, one fact stands clear; the essential oneness of the human race.

To each age everything seemed to have reached its climax in its own day, and the future was ignored, considered superfluous or unimportant, and the inevitable result of that thought was "The War."

To bring the range of history within our imaginations, let us take a chain of comparisons. Our grandfathers heard of

the Restoration and the Fire of London from their grandfathers. The Fire of London is half way back to Prince Hal. Prince Hal is half way back to Prince Alfred. Alfred is half way to the boyhood of Julius Caesar. Julius Caesar is half way to Abraham. Mankind is only a thing of comparatively recent times, and all history is a mere film on the depth of the world's age. We must realise that the lives of men in different ages have a real and intimate meaning for us; their hope and despair were to them very much what they are to us. This is the supreme fascination of our subject.

Older historians were too much impressed by the importance of warfare, and so greatly overrated its influence that they remained blind to other forces and movements more silent in operation, but infinitely more far-reaching in their effects. The fall of Constantinople in 1453 to the Turks must have seemed an irreparable disaster at the beginning of a new era, but looking back from the standpoint of our own time, was not the appearance of the first printed book the greater achievement? Events in Palestine at the commencement of the Christian Era were regarded in the Roman world as a local riot. The Roman Empire has become merely a memory, but that riot has changed the face of the world, and the founder of Christianity is reverenced today by one quarter of the entire population to the globe.

The first moral to be drawn from the reading of history is to cultivate a sense of proportion and single out what has been of real service to the progress of mankind.

What is meant by the progress of mankind? Is the human race converging towards some definite goal? When we think of the great empires of the past, Egypt, Assyria, Babylon, Rome, rise, subdue their enemies, enjoy their period of domination, then decay before the rise of some new powers, what reason has the world to expect more from the hands of Fate?

To Greece must be awarded the palm for the highest achievement of human intellect, and to Rome the greatest political sense. Can Science, which has increased our creature comforts, save us from the doom of those nations? With the aid of Science man can weigh the distant planets as in a balance, may transmit his spoken words from one continent to another, may speed over sea or land, and drive his way through the air, yet he has his own passions to subdue, and the task and achievement is the same for himself as for his remote forefathers.

The League of Nations is not the first conception of a "Federation of the World." Anticipated under the Holy Roman Empire was the governance of the Christian world by God through His temporal lieutenant, the Emperor, and His spiritual lieutenant, the Pope. It is a matter of history that this conception broke down under the growing national aspirations of England, France and Germany. The English knight and French *seigneur* who fought side by side in the Crusades were the same who fought face to face in Normandy. The German and Italian who were "Christian Brothers" abroad were the bitterest enemies at home. The idea of nationality gives us the key to modern international politics.

William I. of England enforced the law of Frank-Pledge which, even at that time, was an old English custom, and by which every man was bound to be in an association with nine others to keep the peace. If one of the ten committed a crime, the others were bound to bring him to justice. This law undoubtedly contained the germ of a League of Nations.

During recent years German national aspirations overcame the jealousies of the States, and made the German Empire an accomplished fact. Why Germany followed this by forming a Triple Alliance with Austria and Italy, instead of with Austria and Russia, is a question worthy of serious reflection. The unification of Italy was reserved for almost our own times. The motives that have moved men to suffer for the sense of nationality have been the most powerful and persistent for many centuries. Not even religious fervour has had more driving force. In the wars of religion troops on both sides, it can safely be said, were mercenaries who cared little or nothing about religion, but much about pillage. The Thirty Years War in Germany commenced as a genuine attempt of the Protestant States to vindicate their claim to freedom of worship, but it ended in a political struggle between Catholic France

and Protestant Sweden against the united forces of Austria and Spain.

The spirit of nationality received its most triumphant vindication before the present war at the battle of Leipzig, which was in every sense of the word a "Battle of the Nations." Napoleon was the prime cause of the great outburst of national feeling in Europe. When he carved out territories and built up States with a contemptuous indifference to national aspirations of the men who composed them, his doom was sealed.

National aspirations are a reflex of individual aspirations, and the statement of the rights of the English people known as the Magna Charta may therefore, I think, be quoted and compared with the intentions of the Nations as outlined in the Press.

The clauses of the Magna Charta were as follows:—

1. **Ecclesiastical.** The Church was promised freedom, especially with regard to the election of bishops.

II. **Feudal.**

1. Reform of abuses in reliefs, wardships, marriages and collection of debts.

2. No aids of *scutages* (*i.e.*, shield money—Henry II. allowed his Feudal barons to commute their military service for money payment) to be collected unless by consent of the Common Council of the realm; with some exemptions which were specially mentioned.

3. Under tenants to receive like advantages from their lords.

III. **Constitutional.**

The Common Council summoned for the assessment of any aid or *scutage* must consist of: (1) the archbishops, bishops, abbots and greater barons summoned separately; (2) the lesser barons summoned through the sheriffs.

IV. **Judicial.**

1. The Court of Common Pleas was fixed at Westminster.

2. Justices were to make their circuits four times a year for each shire.

3. Justice was not to be refused or sold.

4. No freeman was to be punished without trial by jury or by the law of the land.

V. **Commercial.**

1. Merchants were to be allowed to come and go freely.

2. Weights and measures were to be uniform.

3. All rivers were to be open for navigation.

VI. **Urban.** London and all other towns were to have their ancient liberties and customs.

VII. **Rural.** This related to the Forest laws.

VIII. **Royal.**

1. No sheriff or bailiff was to impress conveyances or take wood for the King's use without the owner's consent.

2. Goods taken for the King's use were to be paid for at once.

IX. **Temporary.**

1. The King was to dismiss his foreign mercenaries.

2. A body of 25 men (24 barons and the Mayor of London) were to see that the Charta was observed by the King.

It is many years since King John was forced to sign the Magna Charta at Runnymede in 1215, but it formed a standard to which Englishmen could appeal in their struggles for liberty with their kings, and also forms the keystone to our own constitutional history. Since then our liberties have developed on the lines laid down. In a larger sense the League of Nations will give a Magna Charta to the world. Instead of King John and his successors obeying the principles laid down in the Magna Charta the Nations of the world will have to obey the rules of the League of Nations.

The Italians' insistence on the retention of Fiume, and China's demands for the return of the concessions granted to Germany and Japan are indications of outbursts of national aspirations resulting from the war. No doubt solutions will be found, but the Italian delegates' action in leaving the Peace Conference, and Japan's insistence upon a recognition of equality, the Polish claims, and others of importance all point to the desire of nations to work out their own destiny, and under the League they are to be allowed to do this without outside aggression which necessary security is to be guaranteed to all League members.

To what extent the framers of the Covenant have followed the lessons of history remains to be seen, but the old saying that history repeats itself contains a substantial element of truth.

The economic lesson is to bear fruit in case any member of the League resorts to war in disregard of its covenants, in which case all the other members will subject the offender to the severance of all trade and financial relations, and the prohibition of all intercourse between their nationals and the nations of the covenant-breaking member of the League. The great lesson of the war, *viz.*, the effectiveness of economic pressure, has been realised, and will be applied. In the face of this national leaders will do some very hard thinking before declaring war in future.

There must be peace at home, however, before you can have peace with your neighbours, and the concurrence of members in the following clauses relating to International Labour is worth quoting:—

> Will endeavour to secure and maintain fair and humane conditions of labour for men, women and children, both in their own countries and in all countries to which their commercial and industrial relations extend; and for that purpose will establish and maintain the necessary international organisations.

It is doubtless the wish of both employers and employees that workers should enjoy such conditions. If, however, workers will not be satisfied with fair and humane conditions the civilised world will go through a bad time, indications of which are unfortunately with us already. In England, however, industrial unrest was bound to result from the attitude of two classes of capitalists, *i.e.*, the landowner and the manufacturer, who until recent times contented themselves with recriminations, the former maintaining that the conditions of factory life were appalling, and the latter contenting themselves with the taunt that the life of the farm labourers was as bad as slavery. It is therefore a good augury that the united nations should agree to endeavour to secure improved conditions. The world has advanced a long way since a fourteenth century poet satirised the conditions of that time in the following words:—

When Adam delved and Eve span,
Who was then the gentleman?

The establishment of international organisations to maintain fair and humane treatment for the workers is the most significant fact in the world to-day, and opens an absolutely new era in the world's history. The opportunity which exists to-day for the solution of this, the greatest of all problems, is the turning point in the world's history, and if the problem is satisfactorily solved the League of Nations will be an assured success—not otherwise.

Readers will remember in the well-known opera, "H.M.S. *Pinafore,*" the incident where one of the actors exclaims "Love is as true in the f'castle as it is on the quarter-deck." If I have not quoted the phrase exactly the sentiment is clearly expressed. In Australia it will be admitted that the workers do receive fair and humane treatment. So the problem is one for the older nations to face more than for us in Australia. It will, of course, be faced and solved as all other humane problems have been, and then the "League of Nations" will be granted credit for closing the "Temple of Janus" in token of profound peace in the world.

MASTER THOMAS MAXWELL FISK

Future anniversaries of the King's Birthday will be celebrated with particular enthusiasm at "Lucania," Wahroonga, N.S.W., the household of which was gladdened on June 9 last by the advent of Master Thomas Maxwell Fisk, second son of Mr. and Mrs. Ernest T. Fisk.

Master Thomas enjoys the advantage of whiling away the leisure hours of his early infancy within earshot of the apparatus with which his father astonished the scientific world in September, 1918, by receiving the first direct wireless messages from England to Australia.

CITY OF SYDNEY, A.D. 1971

Especially Written for "Sea, Land and Air" by W. F. BAYAL

PART IV.

Concluded from June Issue

I walked along the Corso, meditating deeply on the old electoral officer. Evidently a new rule of life had risen while I had slept. The jumble of might and right, Christianity and paganism, profiteering and charity, which had made up the boasted civilisations of an earlier day, had somehow been sifted out into this new, strange, clear faith, and my stroll having now brought me to the beach, I seated myself on a bench in the shade of the gigantic pine-trees, and gave up the unprofitable musing.

As Stacey had said, the place was almost unchanged. The beach was the same soothing, yellow slope, the nor'-easter blew as gently and kindly as ever, the purple sea met the blue sky as far away as possible, and a crowd of people were frolicking in the green and white breakers. Yet something was lacking in the costumes—I walked down towards the water to be certain, and realised on closer inspection that the bathing suits were now of the very scantiest. The girls nearly all protected their hair with waterproof caps, and for some inscrutable reason everyone wore sandals—but little else!

Nor could I fail to notice how the physique of our race had improved in a couple of generations. Among this collection of a couple of hundred persons not a misshapen or anæmic figure was to be detected. The strictest navy doctor could have passed them all.

I took a chair, and mused again on the flight of time. Seventy years ago, I remembered, the Manly aldermen had prosecuted a man for bathing, fully dressed, after 6 o'clock in the morning, and now—the aldermen were all dead, and the people had their own way. But who would have ventured to predict our customs a century ahead? Not I, for I perceived that while this new world was full of things nobody ever anticipated in my time, a multitude of other things supposed to be indispensable and eternal, had quietly disappeared. Yet those unanticipated things were all germinating without noise, only no one noticed them; it was mostly the dying or decaying things which insisted on making themselves heard. I recalled how most people fought strenuously, even viciously, for such poor, thin stuff as gold money, preposterous creeds, self-advertisement, love, or rather the ghost of love—Ah! what is that?

A tall girl with flowing, red-gold hair, and clinging bathing costume of green came slowly up out of the tide, and advanced towards me. Her gaze seemed set on something behind me—surely not *on* me? But that graceful walk that smote me as a reflection of my lost Louise. O, Louise, was it my haste, or your timidity or your interfering mother, or all combined, which drew you away from me, leaving that secret sore ready to tingle again, after all these long years, at the merest fancy?

Pshaw! At forty, or rather at ninety-one, a man should surely be proof against his first love! And Louise, the slender Louise, died sixty years ago.

The girl had come, with halting steps, to within a few yards of my chair when I first caught the gleam in her bright eye; it spoke love and, instantaneously, all was over. I knew my bachelor nights and days had ended, at forty, just as I was expecting them to continue for ever. Regarding me attentively she stopped.

"Your name?" I gasped, "it is Louise?"

"No, it is Sylvia!"

The incomparable mouth moved into a smile, and the glad eye daneed. "Why *Louise*? I came all the way up here to speak to you."

"Pardon me, madame, you appeared so suddenly. May I offer you a chair?"

She sat down on the canvas chair, leaned back, and crossed one leg easily

over the other. I drew my own chair nearer. She smiled. A long pause fell.

"I like you," she said quietly, at last.

"I *love* you!" I shouted, and then remembering the unusual side of the situation, the ancient perplexity overcame me. A snare?—"but why did you come to me?"

"How could I help myself?" she asked. "Have you not studied your 'Book of Mating' yet?—Our height the same, your chestnut hair, my lighter gold; your eyes brown, and mine grey-green; your chest much broader than your hips, and mine the same shade of difference the other way; our hands from the same mould, but yours thicker than mine. Oh! I am satisfied we are truly matched and rhymed."

"But, my dear, suppose I had been married already?"

"I was full of fear till I saw you wore no ring—there are some women who will steal away another's man, but I do not think I could ever bring myself to do that."

I guessed she was not more than twenty years of age, and might have much to learn. So had I, for evidently love had come of age while I had been sleeping. Secrecy was officially dead indeed. And there came the thought that there was something I must disclose at once.

"Listen, my love, I have a strange story I must tell you. Do you read the newspapers? Did you notice my name, Chatterton—Alfred Chatterton, in yesterday's paper?"

"It was not among the Births, Marriages or Deaths," she replied, "I did not look very closely at the remainder of the sheet, I am afraid."

Briefly I told my story, of my long sleep, of my disjointed view of life, and the faint dread which had only just suggested itself to me, that I might at any time fall out of the bright world of life again into that long, weary nightmare of unconsciousness. She listened attentively to the end.

"But that is all nothing!" she exclaimed, "nothing at all. Trust me, I will not let you fall asleep again. Do you think it could ever have happened to you, if you had a loving woman at your side? This makes you more interesting than you were before you told me—Alfred. It is the name I would have chosen for you, dear."

"But what are we to do now?" I asked in sudden perplexity, realising that my acquaintance with this modern life and its customs was of the slenderest.

"Do?" she laughed. "See, the sun is getting low, I will dress now, and then you can take me to tea somewhere. And there is a really good cinema on the Back Beach. And then we will go home and tell papa."

Papa? Were there papas in this extraordinary world? And mamas? She divined the trend of my thought, at once.

"My father is Doctor Larkins, Professor of History at Key's College. And I am a nurse at the Wahroonga Hospital, and my only sister Patricia is just leaving the High School. She is seventeen and much cleverer than I; she will be a professor, of course, some day. And mother has left off living with papa, and she is in the Eugenics Department now, and I go home almost every night to cheer papa, till he marries again, if he ever does. But now, of course, I am all yours."

As she rose to her feet I resisted a strong impulse to take her into my arms. She turned and flitted away, to return in a moment, correctly attired in the white tunic and knickerbockers, and with her hair marvellously gathered under a wide-brimmed hat.

We had tea at a restaurant—where all the people were, or seemed to us, to be smiling with affection and joy—and afterwards we sat, hand in hand, in a vast, dim, cool cinema, where gigantic actors played a rose-coloured nineteenth-century drama, amongst Victorian furniture.

And then the flight by aerial to somewhere near Tempe, and a walk, arm-in-arm, through leafy streets, dimly mysterious in the summer dark, and Sylvia, turning to kiss me as she put the latchkey in the door.

* * * *

As we entered the house from the verandah a switch clicked and a golden shower of light fell from above. We were in a large reception room which at once convinced me that my advanced ideas on architecture had been long superseded. Here, indeed, were science with art combined. The room was about forty feet by twenty, and every portion of it as light as day. The source of the light seemed to be concealed by a moulding which encircled the walls at a height of fifteen feet. Above this moulding, a large, pure white cornice, of

parabolic section, reflected the hidden rays, evenly and without shadow, all over the room.

"What colour shall we have to-night, darling?" asked Sylvia, twirling the switch, and bathing the room in yellow, green, blue, violet, red, and again golden floods of light.

"The gold, of course; it makes your hair a living halo of glory," I replied. "What a beautiful home you have here!"

"Yes, papa will have the best. It is rather expensive, the rent is eighty pounds a year."

I should not have been surprised if she had said eight hundred. The floor was of coloured concretes, into which thousands of minute pebbles had been embedded in intricate arabesques; the surface of a glassy smoothness, yet soft and not slippery to the tread. The walls were clear white, unspoilt by any "ornament," every angle rounded to a large sweep, and the ceiling rose dome-shaped to a central orifice, in which a fan was noiselessly spinning. The door by which we had entered was in the longer wall, there were also doors at each end of the apartment. The lower portion of the wall, opposite the entrance door, was of stained glass, some seven feet high and, through the doors in its centre, I glimpsed the long vista of a Pompeiian court with a tall, slender fountain playing through its silver light and ebon shade. The vista was closed with heavy foliage of trees, and low over them hung, in the southern sky, one bright star.

"Please sit down," said Sylvia's voice, and I saw several deep chairs were dotted about the room. A couple of light, graceful tables, on rubber-tyred wheels; a Persian rug, a few books and a handsome cabinet on three legs, which might have been some kind of musical instrument, completed the list of movable objects. So perfect were its proportions and design that the room appeared to be fully furnished.

"I will bring papa, he is sure to be in his study," said Sylvia, and lightly flitted away through the stained glass doors.

A deep, sonorous bell in the court chimed five times—it was an hour to midnight. The atmosphere was eloquent of a deep, cool peace. I sat and admired afresh all the beautiful surroundings, and reflected once again. that the professor must spend a considerable income to support a palace like this, even if the rent was so low as eighty pounds a year.

He entered—followed by Sylvia—and, with some internal trepidation, I rose to meet him. I could detect no resemblance between him and his daughter, but he beamed genially upon me through his gold-rimmed spectacles. He was absurdly young, I thought, to be Sylvia's father, hardly older than myself perhaps.

"I am delighted, Mr. Chatterton, delighted to have such an early opportunity to meet you. Sylvia has told me you are the hero of Doctor Stacey's monograph, circulated this afternoon. As you may be aware, I am engaged on the last chapters of my "Australia Before the Dawn," and I find you have been actually living in those very years. An eye-witness of Federation!—no doubt you saw the American Fleet enter Port Jackson? You were present at the birth of our Navy—the great plague, and the great fire of Sydney—no, of course you were asleep then—but you were a contemporary of William Hughes the Great, and of the illustrious Hargraves, the father of aviation, before the Australian Aero Club and *Sea, Land and Air* educated this country into accepting the aeroplane as an everyday mode of travel—how I envy you your certain knowledge and vision!"

"Pardon me Doctor Larkins, I fear I know much less than you would credit me with. Certainly I remember the arrival of the American Fleet, and Hughes was a well-known politician whom, however, I never saw in my life. But I am ignorant of all the other and later developments you mention."

"Indeed!" He seemed hurt and surprised. "I was aware, of course, that historical views can never be identical with contemporary ones but, for the first time in my life of research, you have brought it home to me, and in a most forcible manner." He paused, and sighed deeply. "Art is long but life is fleeting." He sighed again, and I felt sorry for him; no doubt he was thinking of his long years of grinding work, spent in producing a result of perhaps very doubtful value. I knew the feeling myself once, when a caricature of an admiral presumed to alter one of my breakwaters, and ruined six hundred acres of harbour.

Professor Larkins handed me a photograph—old and faded. It bore the inscription—"Sydney, 1918". "This interesting relic," he explained, "belonged to my father. I remember hearing him say that it was typical of our glorious city in the days of his early youth."

[*See "The City of Sydney, A.D. 1971," page 244.*]

"Doctor Larkins," I said gently, "if I may make a suggestion? I find myself here in a transformed and enlightened world, and I am utterly unable to comprehend how such results have been attained. If a man of my time had been told what I have seen in the last two days, he would have called it a wonderful fairy-tale. Perhaps you can help me to understand the forces which have been at work? And in return I might possibly be of some assistance to you by reading the draft of your history, if you will permit me?"

"Excellent! the very thing for both of us, Mr. Chatterton. Come into my study, and we will begin at once." His cheerful manner returned.

"Papa," said Sylvia, "Alfred is engaged to me; I forgot to mention it when I came in."

"Indeed! Better than ever! My congratulations to both of you." We bowed. "I suppose we must put off our intellectual feast for this evening?" he asked, half anxiously, half lovingly.

"I will give you till six o'clock to talk over your dead old times," said Sylvia sweetly.

* * * *

The professor ushered me through the glass doors, turned to the left along an arched verandah, and opened the door of a room, almost entirely lined with bookshelves and books. All the doors of the house seemed to be of the noiseless, sliding variety, retreating, at a touch, into slots recessed in the walls. There was a large table, covered with the usual literary impedimenta, and a smaller one flanked by two of the deep chairs. We installed ourselves therein and I observed the room. Although smaller, it was designed as carefully, and in the same style, as the reception hall. The windows aloft were open to the slight land breeze, the cornice reflected a green light, and the fan overhead was revolving quite noiselessly; this room was a perfect environment for deep study.

The professor touched a spring in the top of our small table and a tray bearing bottles, glasses and cigars, slid out between us.

"You have a beautiful and convenient home, Doctor, it must take a large and expensive staff of servants to keep it in order?" I inquired.

"Servants?"—the professor was puzzled, but only for a second; "well, no—there are no servants now, in the sense in which you are probably using the word. The Health Department sends a girl two mornings a week to work the vacuum plant and so on—that costs a pound a week—and the Art Department details a gardener here about half a day per week; that is another ten shillings—say three pounds a week, all told. An extravagance, no doubt, you will say, out of an income of twelve pounds a week, but it is my one foible. Of course, the place is much too large for me, deprived of my family, now that my wife and daughter live elsewhere; still I am loth to move yet."

"To me, Doctor, the price seems excessively low."

"Oh! it is all calculated to a nicety by the Assets Department. Houses are supposed to last two hundred years, so the universal rent is fixed at one-half per cent. of the first cost. Repairs cost another half per cent——total, say one per cent. The Department is limited, by law, to one-and-a-half per cent., and it is generally a trifle below that maximum. When I retire, in about five years' time, I shall probably take a little four-roomed flat in the city area, for six or seven shillings a week; perhaps I shall travel—I hardly know yet. I would like to see Siberia, Tartary, Sarawak, Dahomey, possibly some of the islands, and then I may write my 'Book of Life'"—he was talking dreamily now.

One-and-a-half per cent. rent? I was horrified. My flats, at that rate, would not support Sylvia—what had that bank manager said yesterday afternoon? I felt I must find out how I stood, without delay. Since secrecy was dead, Larkins could tell me as well as a bank manager.

"When I went to sleep, Doctor," I began, "I had an income of about nine hundred a year from flat property; how much should I get now?"

"Oh, indeed you are one of those anachronisms who own houses? There are not many of you left. Nine hundred, you say; h'm!—possibly you may be getting a tenth of that now," he replied.

This was startling. That manager must have been the usual smooth business rascal, with his stereotyped patter.

"What about the accumulated back rents, doctor?" I asked with anxiety.

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"I hardly know how that would go. The Macintyre Laws are strict. You see, the State has very little time for people who propose to live without contributing to the commonweal," he replied.

"But I must live!" I exclaimed, aghast at the thought that Sylvia might withdraw if she could not depend on me for money.

"Live? Oh, of course, that will not be a trouble to you! Let me see—at your age—experienced engineer—yes, your salary would be between seven and eight hundred per annum."

"But how can I get an appointment?" I questioned, recalling that, in the past, all such things were controlled by "business" people.

"You merely apply to the State, it is bound to employ you, in fact the supply of trained men never overtakes the demand," he replied, "especially in professions like yours, which require so many years' experience."

"You have lifted a great dread off my mind, indeed. Would you mind—pardon me—may I touch on a delicate topic?—the position of women—it has completely changed, I find—you alluded to your family, I hardly know how to put it"—

I felt I was floundering badly, and fancied I saw a flicker of a smile on my host's face as I proceeded. Finally he laughed aloud.

"I beg your pardon," said he, "but knowing your times as I do, I can guess your thoughts. Secrecy and privacy—what obscene words they sound to us now!—they no longer exist as in your day. Read Stacey's monograph on your sleep, and you will not be ashamed of your own publicity; in fact your personality is as well known to all now as it would have been to your family in your days. So it is with all of us. You refer to my wife, of course?"

Horrors! he was not going to mention Sylvia after all.

"It was a twinge, I admit," he continued, "for we loved each other dearly for twenty years, but she insisted on leaving me. Of course I could obliterate everything by taking another wife, but I find myself sometimes thinking I prefer the dear old memory to a fresh experience. But enough—we were going to talk of Australia before the Dawn? I think the best way to answer all your questions is to read you some selected extracts from the book." He took a thick wad of manuscript from a drawer, and rapidly skimmed over the leaves.

"When did this 'Dawn' begin?" I asked, abandoning all hope of getting the conversation round to the subject dearest to my heart, for another hour or so.

"At no very definite date, but I find my first details collect about the year 1919."

"And the rise of the City of Sydney?" I asked.

"That dates back to somewhere about the same period—starting with the 'new education'—as it was called at that time. In your day Greek and German 'culture' was the fashion, partly no doubt, because it was easy stuff for the schoolmasters, who we are told, could seldom speak any other language than their own. Science, as you must be aware, is much harder for an imposter to teach. Well, the German sham vanished in the war—your big war you know. It is one of the queerest traditions we meet in history, that our immediate ancestors should have set any value on the literary remains of these unimportant savages, when so much more useful matter lay to hand. So ingrained was this frenzy, that even scientists coined new words out of the fishmongers' dialects. How different the American method, when they minted such expressions as 'high-brow'! At the present time Greek and German are much less studied than Japanese."

"May I ask what are your usual studies?" I motioned to the hundreds of books lining the walls of the room.

"Myself, I am engaged chiefly with modern history, which is considered to begin about 1800 A.D. But people now take an interest in the ancient history of China, India, Chaldea, Egypt, Arabia and Peru. They have more time for reading than in your day."

"I gather, then, that you attribute the enormous progress I see in Sydney to enlightened engineering, encouraged by serviceable education, and made possible by some deep change in public opinion?"

"Undoubtedly," agreed the professor, "of course there could have been no such advance had the people gone on blindly venerating the past. Our system of land tenure, our building laws, the laws of aerial navigation—would all, in your time, have been fought tooth and nail by the lawyers—for fees, of course. Now that all doctors and lawyers are civil servants, we move by agreement, instead of through

protracted contradictions. And the woman's suffrage cleared away another enormous monument of superstition in an unexpected way; many of the old fallacious doctrines, of which the names of about three hundred are still known, faded imperceptibly away. The queer rites and ceremonies attracted no one any longer, it became impossible to get persons to conduct them."

"But, the City of Sydney, please, I want to know"—I began again.

"I am coming to that now," he replied, "it will be a long story." He handed me a photograph, old and faded. It bore the inscription—"Sydney, 1918." "This interesting relic," he explained, "belonged to my father. I remember hearing him say that it was typical of our glorious city in the days of his early youth.

The first important incident, after 1919. was the receipt of the German indemnity. The share allotted to Sydney was a hundred million pounds. The City Council at once claimed—"

The deep, sonorous bell out in the garden chimed six times, breaking, without warning, through the professor's discourse.

He looked bewildered.

"How time flies when we are interested in anything!" he exclaimed. "I am not half-way through yet. But, of course, you will stay here to-night, and we will continue this most delightful conversation in the morning. To-morrow will be the third Friday—the twentieth, I forsee many such pleasant days ahead, but Sylvia claims you now. Although parents are not consulted on these things, I may say I am quite pleased with her choice, and of course women's instincts are nearly infallible in such matters. And now, goodnight—till to-morrow!"

* * * *

I regained the Pompeiian court, and observed that the arched verandah ran all around it, a little low parapet dividing it from the grassy lawn. The slender jet was flinging higher, now lower, in the air, and there was a hot tenseness in the atmosphere, which I had not noticed in the cool library, indicating an approaching cyclone. The solitary star to the southward had disappeared, and a distant, silent sheet of lightning rose and fell in unexpected cadences on the dark horizon. One or two heavy drops of rain spattered on the roof and ceased again. I took the dimly-lit verandah on the left, and passed along by several double doors.

At the end of the court the verandah became a passage, and at the furthermost end an open doorway threw out a path of light. I entered a small room—a boudoir without haberdashery, I perceived at a glance—yet indefinably, a woman's room. Sylvia, now clad in another kind of white suit, was seated on a broad divan, and motioned me to her side.

A deluge of rain had suddenly beaten down into the court with tropic violence, and lashed at the window of the room where we sat. Sylvia's arms had tightened round me.

A most tremendous roll and crash of thunder sounded directly over our heads; so low, it seemed that the roof and walls rocked. We sprang to our feet in terror. Sylvia's face was alive with anxiety, and then all the lights went out, leaving us holding each other in a pitchy darkness, so thick that it could almost be felt. A curious thin scent pervaded the air, and I felt my brain reeling into delirium once more. Something soft was beating on my chest, and I found myself falling backward on the inert divan.

The thunder continued its roll, and then tapered away into a long continuous shriek, on my left a bright and luminous haze seemed to thrust itself into my despairing eyes.

I turned anxiously towards it, and found myself sleepily staring through the lower slats of the venetians, at the usual familiar glimpse of the harbour and the South Head Lighthouse.

The shriek of a siren was booming up from some ship in the harbour. I was in my own bed in the flat in Macleay Street, and, alas! it was the dead old year of nineteen hundred and eighteen, to be resumed once more.

Is life worth living now? Now that I have seen with my own eyes what it might be? And Sylvia only a tantalising memory, a reflection of the dim, slender Louise.

[THE END.]

A FORECAST OF THE FUTURE.

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TALKING BY SEARCHLIGHT AND SUNLIGHT

Especially Written for "Sea, Land and Air" by LUCANIA

There are more things in heaven and earth,
Horatio,
Than are dream't of in our Philosophy.

These lines of Shakespeare, the great dramatist, poet, philosopher and prophet, are called to mind almost daily now that much-despised lady DORA (Defence of the Realm Act) in England is releasing small items of information about the achievements of our scientists, engineers and fighting men during the four years of war.

We were growing quite accustomed to read of unimaginable attainments in aviation and wireless communication, when our minds were startled by the announcement that Dr. Rankine had perfected a method of telephony with light rays. This was surely a thing most marvellous, and one of our great daily papers spoke of the possibility of sitting on a rock at the Heads and conversing with friends out at sea with the aid of a small mirror.

Interest will be mixed with astonishment by many to learn that this invention dates back to the year 1878, when Graham Bell (inventor of the telephone) and others conducted the first experiments in telephony by sunlight. This was followed by several other experimenters and eventually resulted in practical demonstrations over several miles with the aid of a searchlight.

The vital feature of this mode of communication is a substance known by the name of "selenium." Selenium is an elementary substance which, in some respects, is like a metal, but is not metallic, and is often termed a "metalloid." It exists in several qualities which, when heated or melted, adopts a crystalline form having the unique property of altering its resistance to the passage of an electric current according to the quantity of light falling on it. In darkness it offers a very high resistance to electrical currents and may be termed more of an insulator than a conductor, but when illuminated it becomes more conductive in direct proportion to the degree of illumination.

This property of selenium is used in phototelegraphy, which is employed in the United Kingdom and in Europe for sending pictures of important happenings by telegraph. It was also intended to be used in the invention for seeing a person with whom one converses by telephone but which has not yet been made practicable.

With this wonderful gift of nature man has applied himself to the problem of adapting it to his need and comfort, and the talking light ray is one of his discoveries. For this purpose it became necessary to devise a method of varying a beam of light in sympathy with the variations of the human voice and in that direction great perseverance and ingenuity have been applied.

Two methods were followed; the first to vary a beam of light at some convenient point in its path, and the second to vary the intensity of light at its source.

In the first method the sun's rays were concentrated from a reflector through a lens on to a small mirror from which the ray was directed to the receiving apparatus. The small mirror was attached to the lower end of a speaking tube in such a manner that it would move slightly with the varying air pressure set up by a person speaking into the tube. These movements synchronised with the spoken sounds and consequently varied the amount of light reflected on to the receiver.

For the second method the earlier experiments were made with a gas flame, the intensity of which was varied by speaking into a tube connected with the gas container so that the pressure of gas followed the alterations of air pressure in the speaking tube. But the most successful results were obtained with what is generally known as the talking arc.

Until quite recently most of our electric street illumination was provided by arc

lamps, those peculiar lights which give a bluish-white glare and which extinguish and relight themselves frequently. Everyone who has observed arc lamps in operation will be familiar with the peculiar humming noise which they produced at times. This noise was caused by vibration of the heated gas between the carbon terminals of the lamp; one Simon, in 1897, observed that an arc lamp gave a continuous rattling noise if its conductors ran close and parallel to other conductors carrying a varying electrical current.

From these observations it has been shown that a varying current can induce corresponding variations in the gases generated by an arc lamp, and since the inflections of the human voice can be made to reproduce faithful variations of a current through the well-known microphone it was possible to make the arc lamp talk. Simon gave a remarkable demonstration of this at Frankfort-on-Main in the form of an arc lamp concert.

The searchlight, which has become so familiar during the war, consists of an electric arc lamp set in a reflector which concentrates the light into a parallel beam, and this makes an admirable transmitter for light ray telephony. The telephone transmitter is arranged to influence the light waves so that the intensity of the projected light varies with the sounds spoken into the telephone.

With all these methods the receiving apparatus is a selenium cell connected with a battery and a telephone receiver. The varying light rays alter the resistance of the selenium and cause the battery current to increase and decrease in exact correspondence with the spoken words. This current operates the telephone receiver, which reproduces the sounds to the ear of the listener.

Exactly what Dr. Rankine's discovery embraces we have not yet been told, but it probably consists of some improved method of transmitting the light variations with a possible increased sensitiveness in the receiver, although the latter will undoubtedly depend on the use of selenium. The new invention might make the apparatus more simple and portable and particularly adaptable to the heliograph. The practical utility of this remarkable application of science is limited by the distance across which light can be projected, and this is governed by two conditions which are respectively fixed and variable. The fixed condition is the curvature of the earth and the variable is the transparency of the atmosphere. The maximum distance achieved in heliograph signalling is supposed to be 80 or 100 miles in a clear tropical atmosphere, but in denser atmospheres this would be greatly reduced and in fog communication is impossible.

Communication with aircraft is a possible field of application, but this demands a clear sky, absence of haze and careful focussing for successful operation.

Probably in naval and military operations light ray telephony would be valuable so long as atmospheric conditions permit.

One advantage claimed is that of secrecy, because it would only be possible to tap the messages if the eavesdropper used a receiving apparatus situated within the radius of the light ray.

It is also possible to use selenium cells which are sensitive only to certain coloured lights. If a number of transmitters were used, each giving a different colour, their beams could be blended for transmission so that only a white beam would be visible to the eye, but the receiver would contain a distinct selenium cell for each colour, and the several messages could be received simultaneously and without mutual interference; this would follow the same principle as that employed in the new method of multiplex telephony and telephony on land wires.

Light ray telephony has natural limitations of range and reliability which make it permanently inferior to the rapidly advancing art of wireless or radio-telephony.

WITH THE AUSTRALIAN FLYING CORPS

Especially Written for "Sea, Land and Air" by "WINGS," A.F.C.

(Continued From May Issue)

CRASHES.

The best of pilots crash. A few confine themselves to one or two of these unpleasant performances. Others are less easily satisfied, and take more than their share. If oft repeated and not in a good cause there is a very unemotional and generally horribly efficient squadron commander to be interviewed, and he knows too much for those plausible explanations.

But most crashes are pardonable provided they do not arise from funk. If that be the cause, then, for the man's own sake, he must leave flying to those of stouter nerves. Crashes from bad landings are not popular with the reigning powers, although as a rule they are not very serious, and nothing worse usually befalls the pupil than another dozen landings with a highly critical instructor.

Major Anderson, D.F.C.
The popular O.C. of No. 3 Squadron of the Australian Flying Corps.

A pupil's proudest boast is that he got through the whole of his training without breaking a wire, but the average man experiences his first crash not long after he goes solo. The word crash has many shades of meaning—more of atmosphere than of definition. I think in actuality a crash means something which falls short of a fatality. It is generally pre-fixed—"a fool crash," or "the funniest crash in the world." A fatality is not a crash, it is—well, just "rotten bad luck." There is only the subtlest distinction, but when someone mentions the word crash in a Mess his listeners at once conjure up a mental picture of a bus standing on its nose in the middle of the drome, and an utterly discomforted pupil falling out on his face as soon as he releases the belt.

In a training squadron there is another little distinction which I must mention. Instructors never crash! They may have very bad luck in trying a new stunt, or their rudder-bar may have jammed when they came in to land but—they never crash.

It is extraordinary what a lot of damage a man can do to a machine without hurting himself. I remember sitting in a dazed condition at the foot of a pile of wreckage which, a moment before, had been a perfectly good *Avro*, with a large limb of a tree dangling beside me and offering evidence to all the world as to why both of us were in such an abnormal position. The tail and the nose of the machine had closed in like a telescope, and every spar and rib and strut was broken. But when, encouraged by the sight of the motor ambulance racing across to me, I gingerly felt all the tender parts, I found no bones broken.

It is the experience of most pupils. It is not so much the crash as the biting sarcasm of the instructor that worries the pupil who has been unlucky enough to make a foolish slip. In one of our flights where there was a very capable and popular, but particularly hot-stuff, instructor, the cadets decided on an ingenious little scheme to take the sting out of his bite when this kind of crash was produced by one of his pupils. As soon as a bus belonging to this flight crashed on the drome one of the pupils would dash into the Flight Commander's office and breath-

age to come and hang on also. Baker, almost exhausted, decided to make one more dash for the cockpit, but again he missed it and was knocked down a second time. The pluck of his solitary assistant evaporated. He let go and the machine piled itself up in a wreckage on one of those low stone-walls so characteristic of the West of England. A little later this laconic wire reached the squadron—"Crashed, lorry required." It was only afterwards when we discovered that Baker had exhausted his "emergency vocabulary" on the Frome farm-hands, that we understood why so few remained for the wire.

Forced landings are a fruitful source of crashes, especially in England, where the fields are so small. On a certain Saturday one of our pilots was forced to land at a lonely little spot in Wales, and sustained slight advantages. It was a great treat for the neighbouring villagers, and on the following day when machines arrived to effect repairs they all turned up. The local chapel was deserted all day and, in desperation, the minister came over to plead for every effort to be made to get the work completed and the machines away before six o'clock, otherwise he would have no congregation for the evening service!

Contact Patrol.

The average flying man was very keen to get to his Service Squadron, for constant training made the pilot itch for the day when he would be doing the real work. The spirit in the Australian Flying Corps was splendid. Occasionally a few men pulled out with the consent of their Squadron Commanders, but they did so bluntly and honestly. "The game's too much for me" was all they had to say about it.

But of those men who stayed strained every nerve to get to France. I remember one incident which rather aptly illustrates this spirit. Half a dozen of us were finishing our course at Winchester when a wire arrived from R.A.F., H.Q., asking for two Australian pilots. A little later another wire came from Australian H.Q., asking for one man. We all tossed, and two of us presented ourselves to the Adjutant for our railway warrants.

"Probably one of you fellows will come back," commented the Adjutant. "There appears to have been a mix-up somewhere."

We both grinned, certain that neither would return, because we knew a spare pilot had been re-posted to the Training Squadron awaiting a call overseas, and that it was only a question of reporting at London the following morning ahead of him. We beat him by about five minutes, and when he discovered what had happened he was the most surprised and disappointed person imaginable.

I remember very distinctly our arrival at the Squadron in France. It was just at the close of a summer day, and the machines were returning from the line like a flock of birds coming home to rest. A little crowd was intently examining one machine which had just taxied in. The wings and tail plane were perforated by bullets, and through the mica wind-

A view of the Australian Training Squadron at Minchinhampton, England.

screen, which protects the pilot's head, was a clean-cut hole. The pilot—an old friend of training days,—turned to us with a greeting and pointed it out. "Rather a close shave," he said, with a laugh, "They were pretty hot this afternoon." It was a little incident which became very familiar as it did to every flying man in France. I know of nothing which gave such a feeling of satisfaction as, with the day's work over, we clambered out of the machine and roamed around it with the rigger searching for damaged places that they might be repaired in readiness for the next day's work, and when the Engine Sergeant asked his never-failing question: "Engine all right, sir?" and we could answer "Yes, in great form, thanks."

lessly relate the occurrence with such unlimited exaggerations that the instructor was certain his pupil must have been killed, and when he discovered that the crash was quite a minor one, and that the machine could be easily repaired he was generally too relieved to get into his usual fluent style.

I have always thought that there was quite a lot of merit in a really good crash. I know that after my first big effort I had more confidence in my bus than ever before, and I found that this view was shared by many fellow pupils. The reasoning was perfectly logical. If one could do so much damage and remain unhurt then it was pretty safe, because one was not likely to repeat the performance daily.

The "landing" which causeth wrath.—An A.F.C. pupil's effort with an Avro.

But a crash does not always offer this compensaton, and unless a pupil is too shaken up, a thoughtful instructor, after handing out a good slanging, finishes up with a grin and says, "Come on—jump in with me and I'll show you that flying is about three times as safe as crossing Pitt Street or the St. Kilda Road."

In my own case I was given a week's rest until a few stiff limbs had become manageable once more, and the incident left me with an irrepressible hatred of flying low over trees. It obtruded itself in a very marked manner, some six months later when I was doing a counter-attack patrol over St. Quentin Wood. It was difficult to get good observation which made it necessary to fly very low, and although I knew my height made it ridiculous I had fearful wind-up the whole time about hitting those trees. It was really a very unpleasant feeling.

Crash tales abound in the Flying Corps, and as soon as they begin someone usually passes the salt. But the peculiarities of crashes can outstrip the imagination, and those that sound the most improbable are very often the most accurate. One of the funniest crashes that came under my own observation was that which happened to one of our star *Camel* pilots—Lieut. Baker, of Adelaide, who, after a brilliant record at No. 4 Squadron in France, where he was the soul of his squadron, was reported missing only a few days before the armistice. Baker was a flying adventurer and very much of a lone hand with a *penchant* for flying on his own to all sorts of out-of-the-way places. On one of these trips he landed in a field just outside the small country town of Frome, in Somerset, to inquire as to his whereabouts. Within a few minutes the usual little crowd had collected, and as soon as Baker had obtained the desired information he asked one of them to swing the propeller to enable him to re-start his engine and take off again. But immediately the suggestion was made the crowd began unostentatiously to edge away, and not a volunteer was forthcoming. Baker, who never understood the meaning of nerves and who, I am sure, would have flown to Hades had there been an aerial track, was dumbfounded. He stood in front of the machine and demonstrated how to swing a prop, pointing out the perfect safety and the blank foolishness of being frightened of the thing. It was useless. By the time he had finished demonstrating the crowd had backed even further away. Poor old Baker stormed and pleaded in vain, and then hit on the scheme of opening his throttle and swinging the prop. himself. He persuaded a couple of men to hang on to the wings, and started her up, but immediately the engine began to roar the hangers-on got the wind up and let go. The little *Camel* bounced forward and Baker just jumped clear of the prop., made a dash for the cockpit of the machine, missed it and was knocked over. He clung on to the tail and dragged behind in the hope of holding her back. The very helpful crowd made a dash for the hedge and left him to it. Twice round he went, just managing to keep her nose out of the hedge, and then one man plucked up sufficient cour-

It was very essential to carry out these examinations, because a machine, on Contact Patrol work especially, rarely returned from the line without some spar or strut, which might be of vital importance, being hit. Its necessity was soon impressed upon me by a personal experience.

One day as we were completing our evening "crawl," we were engaged by a Fokker. For a few minutes our guns blazed at one another, and when it was over my Observer scribbled on my pad: "Be careful. He has hit us somewhere rather badly." On the way home I stood up in the cockpit to feel the centre section, and then turned round and shook my head in negation. Both of us were in a hurry for our dinner, and rather scamped our examination on landing. The next day a fellow-pilot was about to take off in my machine when it was discovered that the junction of the strut and the centre section, to which are attached the two top wings, was smashed.

As soon as a two-seater Pilot had been posted to a Flight he was required by his Flight Commander to make a number of "sandbag" landings before being trusted with an Observer, although he had generally done several hours of passenger flying before proceeding overseas.

It was rather an ordeal, because from the moment he was posted every Observer in that Flight took a personal interest in his flying, gleaning every particle of his flying history that was available, knowing that they might find he was to be their Pilot, and that for several hours a day their safety would depend upon him. They all gathered on the Tarmac to watch these landings, and the poor Pilot, conscious of these critical eyes, rarely exhibited his best. But this interest was mutual, and the Pilot was very soon questioning a friend about the various Observers knowing how dependent he was on the accuracy of their shooting and the keenness of their observation.

The whole Squadron was flying the well-known, and, not too popular, *R.E.* 8 machine which, by this time, had become a veteran in France and which, it was wrongly anticipated, would be very shortly replaced by the most up-to-date and easily the best, two-seater used by us during the war, the *Bristol Fighter.* I found myself posted to a Contact Patrol Flight among what the Canadians would describe as a "bunch of good fellows," not the least of whom was the Flight Commander, Captain Brearley, of West Australia.

I can imagine no fighting man with a more interesting job than the Contact man, and the work was doubly interesting at this time because the Infantry, with whom we were co-operating—our own Infantry—were literally dashing forward. Every day we were searching for troops who had bitten a little further into Hunland, and it was a daily task to paste up revised maps on our board to keep pace with them.

In theory Contact Patrol and Counter-Attack Patrol are most perfect methods of co-operation. At Winchester we were taught a hundred different methods of assisting our own and hampering the enemy's Infantry, and rather looked upon ourselves as the Infantryman's guiding star. Among the things we expected to do were to rush back with messages from the Infantry, Tanks, or Cavalry; to drop smoke-bombs in front of devastating Hun machine-guns, and thus provide a screen for our advancing troops; to note the concentration of enemy forces, and send cryptic code messages to the Artillery which would bring forth a shower of shells at the required spot, and—well, I forget how many other things.

Undoubtedly, the theory course for Contact Patrol is a perfect affair, but I suspect it was drawn up a little too far behind the lines. Nevertheless it is good to teach an enthusiastic young Pilot to hitch his bus to a star, and even when, "in the fell clutch of circumstance," we often fell disappointingly short of our ideal, we realised that in war no man can judge the value of his individual efforts.

But whatever happened the Contact man never lacked excitement. In a *pukka* Contact, which always coincided with a hop-over by the Infantry, we flew "under the barrage"; this consisted in keeping one's machine above the 18-pounders, and under the Howitzer shells—in itself quite an effective stimulant.

Occasionally, on the early morning Contact, one found a quiet front when, with only intermittent machine-gun fire and

a little "Archie," it was not a very difficult job to map-in the positions of the Infantry. But I never knew a Pilot to be particularly happy on these occasions. His job was to dodge ground fire and watch for Hun aircraft. Early morning was always the best time for Hun machines because they could creep up "in the sun" with a good chance of being unobserved until they had put in a few carefully-aimed rounds.

Waiting for trouble is never pleasant, and to catch occasional glimpses of Hun scouts manoeuvring up above, knowing that they were just waiting for a favourable opportunity to close in and present one with a surprise "burst," robbed these quiet morning stunts of their pleasure. On our Sector a constant friend was a clumsy Hun two-seater, known as "Tinsides," which seemed to be a Jack-of-all-trades—and certainly master of none. He could nearly always be found wallowing about at a height of about 3,000 feet and about a mile over the Hun side of the line. Pretty nearly every Pilot in the Squadron had chased him at different times, but he was armour-plated and impervious to our bullets. Mostly he disdained even to reply to our fire, and made off as soon as he was tackled. He must have been of exceptionally little value, and, I should think, something of a joke in the Hun Flying Corps.

During an early morning Contact one of our Pilots—I think it was Lieut. Roy MacDonald, of Brisbane—found things unusually slow. Well away over Hunland our old friend was floating about. No one had ever discovered what he did in particular, but on this occasion a plentiful supply of flares in the Hun trenches seemed to indicate that he was attempting a Contact from a record distance away. The humour of the thing appealed to MacDonald who worked down the Hun trenches while his Observer marked-in the flares which betrayed the exact position of the enemy Infantry and stayed there until they had died down with poor old "Tinsides" looking on like a dog robbed of his bone.

CIVIL AVIATION IN ENGLAND

ACTIVITIES OF THE FIRST OF MAY

BY OUR LONDON CORRESPONDENT

The Air Lines arranged by the British Government, and the public aerodromes provided for civilian use, were thrown open on May 1st, for the first time since the commencement of hostilities.

The "glorious first of May" marked an epoch in the history of British aviation, of which few—other than the really close students of aeronautics—realised the full significance. In the few years anterior to the outbreak of war, the development of the aeroplane had shown remarkable advance under the ægis of private initiative. The outbreak of hostilities, however, gave to aeronautics a new importance in the policy of nations. No longer could its developments be left to depend upon the enthusiasm of the few, for the safety and the very life of nations depended upon the conquest of the air. The development of aeronautical science became an urgent national concern and the best brains of the scientific world, coupled with unlimited capital and material, were instantly made available for research and development. The necessities of the situation in the course of the last few years have detailed a stupendous advance and on the first day of May all that war and national necessity had accomplished in this particular direction was released for the public welfare and the public good.

It was a first of May to be remembered. The finest products of aerial design and construction were available to demonstrate to the world what had been accomplished in the conquest of the air. Though the elements by common consent combined to oppose the best efforts of poor humanity, the best products of aerial design and construction proved their worth.

The British & Colonial Aeroplane Co., Ltd., pioneers in the aeronautical construction world, and manufacturers of the famous "Bristol" aeroplanes, decided to celebrate the important occasion by a flight from Filton, Bristol—the headquarters of the company's activities—to Hounslow, both of which have been appointed as official Government Aerodromes for the new national air routes. The Directors of the Company had awaited the opening of this route with some impatience, for the train service from Bristol to London is none too good, and the considerable amount of business

which has to be transacted on the Company's behalf in London has involved a deal of inconvenience and waste of time.

On this particular day Mr. H. J. Thomas, Director and Works Manager for the Company, had an important appointment in London with Major General Seely, and decided to take immediate advantage of the removal of restrictions on civilian flying. From the various types of "Bristol" machines suitable for commercial flying, Mr. Thomas chose a "Bristol" *Coupé* as being the most convenient for his purpose. This is an extremely fast machine, designed to carry a single passenger in a warm closed-in *Coupé* fitted with a writing desk and other conveniences and in telephonic communication with the pilot. The engine was of the Rolls-Royce Falcon type.

In spite of the facts that the wind was blowing almost a gale, that rain was fallnig in heavy showers, and that mist and low-lying clouds made the conditions most unfavourable, Mr. Thomas started on his journey, piloted by Lieut. Uwins. With the strong wind behind them remarkable speed was made. Swindon was reached in 12½ minutes—a run at the rate of over 160 m.p.h.—and Didcot was sighted in record time. About this stage the aeroplane encountered a particularly heavy storm of rain and wind, and acting on the axiom that the comfort of the passenger is the first thing to be considered in commercial aviation, a deflection was made to avoid the storm centre. This necessitated a wide *détour viâ* Aylesbury, so that Hounslow was eventually approached from the north. An excellent landing was

made in the Aerodrome 58 minutes and 5 seconds from the time of taking off at Filton, so that the time occupied to traverse the 95 miles was still satisfactory.

The landing was made shortly before 11.30. Mr. Thomas thus winning for himself the distinction of being the first civilian passenger to land at an officially appointed Aerodrome under the British Air Ministry, either in London or, so far as can be ascertained, at any point within the British Isles.

The flight was valuable, from an aeronautical point of view, as demonstrating to the public the advanced stage of development which the modern aeroplane has attained. Occasions will be few on which the weather conditions will be more inimical towards flying than were the conditions encountered on the first of May, and the fact that this flight was accomplished with comparative ease and in good time, should convince the lay mind of the important position which aircraft of sound construction and design must assume in the national life in the very near future.

The only important descents made on the national Aerodromes on the appointed day for civilian flying were confined to London and Manchester. It is interesting to record that just as the "Bristol" machine was the first model to land within the Metropolis, so in Manchester the first aeroplane to land was a "Bristol" fighter, piloted by Captain West, which conveyed cinematograph films from Reading.

The Directors of the British and Colonial Aeroplane Co., Ltd., were warmly congratulated on the new honour thus added to the Company's record, for since aviation became a practical science in England the "Bristol" aeroplanes have been in the forefront on many occasions.

ADVICE TO WIRELESS EXPERIMENTERS

The methods and apparatus for radio-communication have altered considerably during the four years of war.

When experimental licences are again issued the conditions will probably be more stringent. Do not spend your money on buying the old types of apparatus, such as spark coils, condensers, crystals and the like, but be content with the old gear which has been returned from the post-office, until you know more definitely what you will be able to do with the new things, and make good use of the intervening time by studying technical matters and practising Morse.