

Captain Alan G. Hotham, C.M.G., has been appointed to the command of the *Chatham* as Commodore, second class, in charge of the New Zealand Squadron. Captain Hotham, who at the time of his appointment was Director of the Trade Division at the Admiralty, is a gunnery specialist. He served in the *Queen*, when Mediterranean flagship, as commander, and in the *Dreadnought*, when she was the flagship of Admiral May in the Home Fleet. He became a captain on June 30, 1913, and a year later was appointed to command the *Aurora*, a sister-ship of the *Arctusa*, and the first British oil-fired cruiser. From the *Aurora* he was transferred to the *Comus*, another light cruiser. The *Comus* took part in the sinking of the German raider *Greif* in the North Sea on February 29, 1916. Captain Hotham was present at the Battle of Jutland, and in December, 1916, he joined the Admiralty as Assistant Director of Naval Equipment. In October, 1917, he was appointed head of the Trade Division. His father, Admiral of the Fleet Sir Charles Hotham, who was a Lord of the Admiralty in 1888-1889, is still living.

Shipping for the Dominion.

Colonel G. J. Smith has given notice in the Legislative Council of the following question:—

"In view of the great importance of providing the tonnage necessary for dealing with the produce of the Dominion, will the Government enter into negotiations with one or more of the shipping companies, or combinations of shipping companies, with the object of securing the supply of necessary tonnage on a reasonable freight basis for a term of, say, three years, with provision for extension, if thought desirable? If it is found impossible to come to such a reasonable arrangement, will the Government favourably consider the establishment of a Dominion line, to be owned by the exporters and importers of the Dominion, and to be paid for in a term of years with the proceeds of an export duty and a primage on imports, for which shares shall be issued to those from whom the duties are collected?"

The Auckland-Wellington Flight.

Messrs. Walsh Brothers & Dexter, proprietors of the Auckland Flying School, are attempting a flight from Auckland to Wellington. The plane used is a *D.H.6* (90 h.p. *R.A.F.* engine). Mr. V. C. Walsh is in charge of the machine, and has Cap-

tain R. Russell, D.F.C., with him as pilot. One passenger is also carried.

The flight was commenced some time ago, and is being made in short "hops," with frequent stops. In Wellington nothing was heard of the commencement of this pioneer flight. The plane arrived at Dannevirke on July 27, and stopped there for several days, during which many passenger flights were made. The next stop was Palmerston North, which was reached on July 31. Here more passengers were taken for flights and the plane is expected in Wellington this week.

The main object of the flight is to survey air routes throughout the country. At all the towns at which the plane has called so far there are no aerodromes or facilities for landing, so that the flight may be regarded as a truly pioneer one.

If it is successful it will at least open the way to have landing grounds made at the chief centres and show the Government the great possibility there is in aerial mail services.

Aerial activity is on the increase with the prospect of good weather, and while the Auckland-Wellington flight was being carried out Captain Dickson, of the Canterbury Aviation Company, was making successful trips in the South Island. On July 30, with two passengers he flew from the Sockburn aerodrome to Hawarden and Lake Sumner. The flight was started at 10.15 and the plane—an *Avro*—was back at the aerodrome at 2.55 p.m. The distance to the lake is some 65 miles, but this was increased as the plane went a roundabout way, and made one or two landings.

Captain Dickson shortly intends to make a flight across the Straits from the South Island to the North, probably leaving Nelson and arriving at Wellington.

Sailors and Engineers.

On July 31 I was present at a jolly "welcome home" to members who had served with the forces, given jointly by the Merchant Service Guild and the Marine Engineers' Institute. The Mayor of Wellington, Mr. J. P. Luke, C.M.G., M.P., presided. Mr. Luke himself has had much to do with marine engineering, and has served as an engineer in one of the small coastal vessels.

NEW YORK RADIO CENTRAL STATION

DESCRIPTION OF A SUPER-POWERED RADIO STATION TO BE ERECTED BY THE RADIO CORPORATION OF AMERICA

BY

MAJOR J. ANDREW WHITE

For more than two decades the wonders of wireless have so unceasingly intrigued the public imagination that it would appear little remained to be accomplished in developments of revolutionary character. Yet, once again, it is disclosed that a startling conception in wireless communication has been quietly brought to a point of realisation. On the north shore of Long Island, near New York, the Radio Corporation of America is about to begin construction of a super-powered radio station that will simultaneously send to and receive messages from five great nations of other continents.

The bare announcement presages a new era in commercial radio communication. It is one conceived in the convention-defying spirit which, coupled with engineering skill, has brought about the expansion of wireless to its present status as a world-wide public utility. Instantly obvious is the fact that the plan will result in the contribution of an important means of breaking down America's isolation from the peoples of certain other continents and open up visions of communication possibilities which, through inherent limitations, could never be realised by the under-sea cables.

The new and great medium of far-reaching economic and political influence will bear the name of New York Radio Central Station, the steel towers of which will arise on a 6,400-acre tract, comprising nearly ten square miles of land lying east of Port Jefferson, with a long frontage on Long Island Sound. The preliminary engineering studies have been completed, contracts for all the construction materials are being let, and a force of radio experts, after months of preparation, will immediately take the big job in hand.

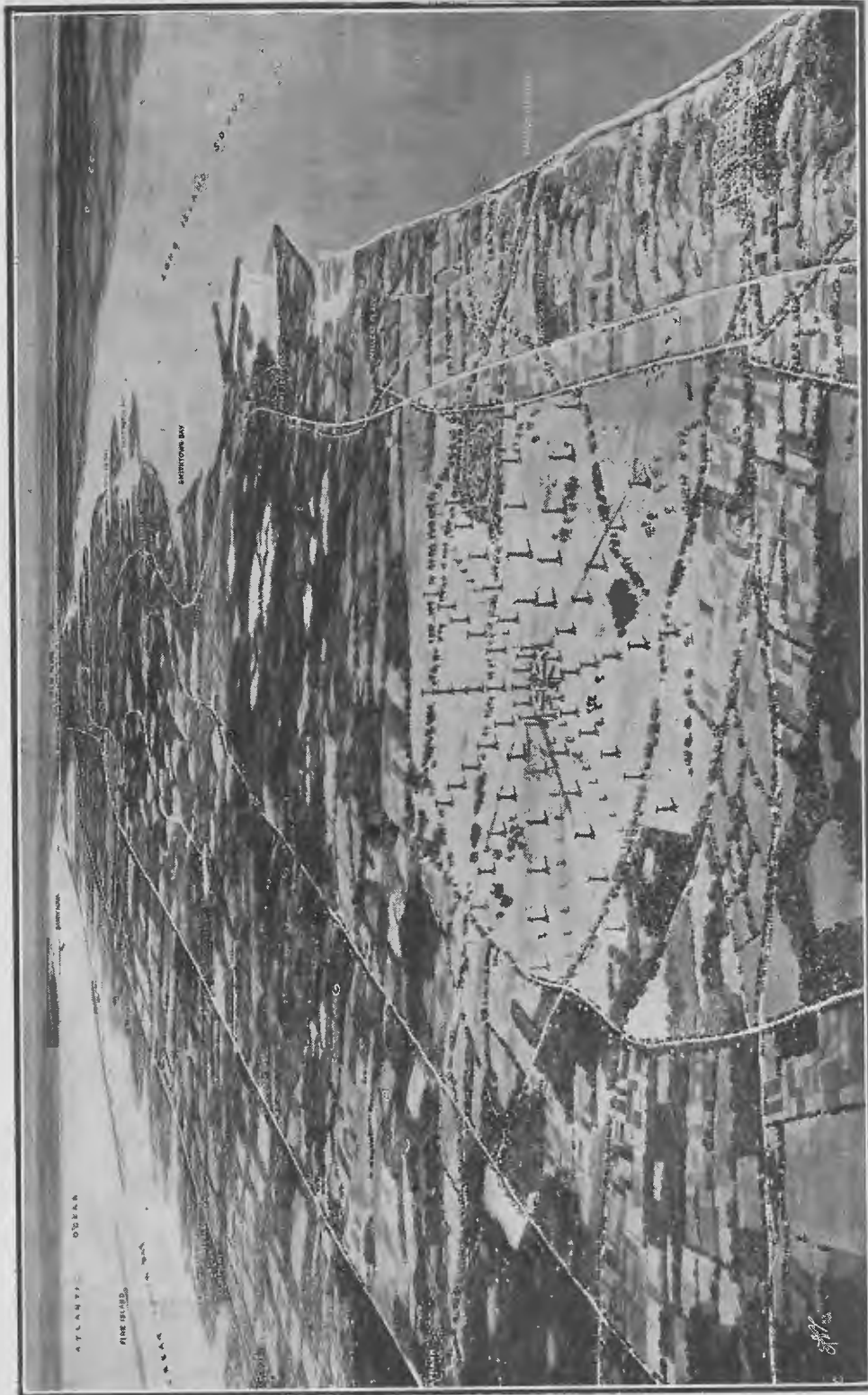
A definite idea of the ultra-modern character of this radio plant may be gained from the observations of Edward J. Nally, president of the Radio Corpora-

tion of America, under whose direction the world-wide wireless system has emerged from an idea into a reality. "Everyone at all familiar with wireless," said Mr. Nally, "knows that at Nauen (Germany) and Bordeaux (France) are two of the largest stations in the world. Up to now they have been viewed with admiration; consider, then, the tremendous advance represented in this latest step; the New York Radio Central Station, in the aggregate, will be five times more powerful than either of these!"

He explained that there will be five complete transmitters, each a duplex unit with a corresponding receiving station located nearby. All five transmitters and the five receivers will operate simultaneously, transmitting and receiving messages over thousands of miles continuously during day and night.

"New York will be the direct focal point of the world's intelligence in an entirely new sense under this communication scheme," he continued. "As soon as the station is completed immediate message service will be established with France and Germany to supplement the existing commercial circuits; ultimately, radio from this station will connect up Buenos Aires and other points in South America, and ether-wave messages will be flashing to and from Poland, Sweden, Denmark and other European countries. Like the ripples that race in circles over a pond when a stone is dropped in the water, the electromagnetic waves from this station will soon encompass practically the whole of the civilised globe. It is a plant that dwarfs all existing wireless stations into insignificance; a single unit will have power and range the equivalent of the largest wireless stations in the world today."

The form of aerial construction, too, is wholly a new departure. From the central power-house six spans of aerial wire will



Panoramic Plan of Proposed New York Radio Central Station.

radiate, in a star pattern, to a distance of more than one mile from the centre. The wires of this huge antenna will be carried on self-supporting steel towers, each 400 feet in height, with the wires suspended at the top between arms 150 feet across. Each of the six antennæ will have twelve towers, forming, so to speak, the spokes of a giant wheel fashioned out of seventy-two miniature replicas of the famous Eiffel Tower in Paris. Five of these antennæ spokes will be used for regular service, while the sixth is reserved for emergency operation.

Far more impressive than physical appearance, however, will be the things the eye cannot encompass. Appreciate that in the wires forming each spoke of the gigantic wheel there will be generated a power equal to the greatest of present day trans-oceanic wireless stations; then comprehend, if you can, the fact that all five of these powers can, if desired, be combined into one, for signalling. A telegraphic signal created out of such tremendous electromagnetic energy could encircle the entire globe!

But that is not all. The apparatus and system which will be installed for each of the five units will be the same as that at present in our New Brunswick (N.J.) station from which the voice of the Secretary of the Navy was carried to President Wilson when he was at sea aboard the U.S.S. *George Washington*. In a number of experimental tests the voice has been carried by this radio telephone over distances of 2,500 miles with complete success. This leads us to state very definitely that before long a direct-wireless telephone service will be established with foreign countries.

Every exacting requirement of commercial radio message service will be satisfied fully in the apparatus and system of circuits with which the great station will be equipped. The generation of the energy required to span thousands of miles will be effected by Alexanderson alternators, powerful machines constructed by the General Electric Company (U.S.A.), which have made it possible to carry the radio signals through space by continuous wave trains, instead of by the interrupted or discontinuous waves, generated by systems using the old-time "spark discharge" apparatus. Taken by itself, the Alexanderson alternator is an achievement rivaling the design of the new world-wide

NEW YORK RADIO CENTRAL STATION

station. This machine is the concrete expression of an ideal which electrical engineers have held for many years; it represents a perfected generator of high frequency electrical oscillations constructed along the lines of the ordinary power-house dynamo. The problems solved by Mr. Alexanderson, chief engineer of the Radio Corporation, were thought insurmountable. Because the transmission of radio signals requires alternating currents of frequencies a thousand times or more in excess of those used in power engineering, it was considered beyond the range of practicality to obtain such currents from a dynamo. In the Alexanderson alternator equipment, the new station will have a source of energy proved as reliable as the power dynamo, yet creating a steady stream of electromagnetic oscillations, which will permit telegraphic signalling at very high speeds. So efficient and reliable has proved the Alexanderson 200-kilowatt alternator installed at New Brunswick, that leading radio experts of Europe have made special trips of investigation to the United States to view its performance. Now this already famous single machine is to be duplicated and installed in the New York Radio Central Station; but this time there will be two 200-kilowatt machines for each transmitting station—ten in all.

The achievement, from a radio engineering stand-point has nothing approaching a parallel; ten alternators, 2,000 kilowatts, 3,000 horse-power—an astounding force to concentrate in realisation of a dream to transmit messages over the world to all points of the compass from a single source!

Mr. Nally emphasised another forward step in engineering which will be incorporated in the super station. "We will utilise what is termed a multiple tuned antenna, which," he explained, "materially reduces the wasteful electrical resistance of the long, low, flat-top aeriels formerly used. A great saving in power is thus effected; in fact, for the same power input formerly used for a single station, six times the effectiveness at a distance is obtained. In other words, we obtain with this antenna, the same effect at a distance with 200 kilowatts input, as would be obtained from the old type of antenna with 1,200 kilowatts input! This new type of antenna is the equivalent of six independent radiators, all operating in unison at the same wave length, and for

the complete station with its five antennæ units, the power required will be less than 20 per cent. of that formerly necessary. The project, however, contemplates additional possibilities. To illustrate: We may, in many cases, utilise but one half of a single spoke of the antenna system for communication service to a certain point. On this basis, the Long Island station will ultimately permit simultaneous transmissions to a maximum number of ten points in the world, thus doubling the communication facilities originally planned.

"The receiving aeriæls are of a new type, too; they have been designed for operation with the Weagant system of *static* elimination, which, by a combination of opposed electrical circuits, nullifies the long-dreaded effects of atmospheric electricity and makes possible uninterrupted reception from foreign countries under all weather conditions. We break away from precedent once again, in locating our receiving units only eighteen miles from the multiplex transmitting equipment, instead of following the former practice of establishing one transmitter and one receiver in one locality and restricting the service of the circuit to one overseas destination."

The arrangements for distant control of the New York Radio Central Station follow the same policy of concentration. In Broad Street, the heart of New York's financial district, the Company's public telegraph office is being re-equipped to handle the new station's messages along with the Marconigrams which are now received for England, Norway, Hawaii and Japan. Thus messages for any of the five additional countries reached by the new station will be received in the New York City office and despatched direct from a series of operators' keys and relays which

will operate the powerful transmitting circuits located miles away out on Long Island. Messages from over the ocean will ultimately be received in the same manner, receipt and delivery of the actual messages being effected by the customary messenger-boy service direct to the home or office of the user of the trans-oceanic wireless.

It is expected, eventually, to instal apparatus for high speed transmission and reception, which will be under the supervision of a trained staff of operators, along with which there will be the usual staff of expert Morse operators, who will work those circuits over which high speed transmission is not taking place.

Countless details of great technical interest and engineering importance are embraced in the specifications for the station, prepared by combining the personnel of the Radio Corporation and the General Electric Company, an arrangement made possible by the recent merger effected by these interests and the absorption of the Marconi Wireless Telegraph Company of America. Even to the uninitiated in technical matters this gives assurance of perfection of detail in design; equally certain results will follow in the manufacture of the apparatus which has been delegated to the General Electrical Company, while the construction of the station will be under direction of the engineering staff of the Radio Corporation. As Mr. Nally expressed it: "The great task is well begun and will progress steadily to a realisation of a new conception of the conquest of the barriers Nature has erected between the brotherhood of races. With the speed, accuracy and lower cost of wireless, the new station will give to the world something novel, useful and epoch-making in the field of international communication."



AMALGAMATED WIRELESS (A'asia), LIMITED

The Thirteenth Ordinary General Meeting of the above Company was held at Wireless House, Sydney, on August 27, when a dividend at the rate of 5 per cent. per annum was approved.

Chairman's Address.

The Chairman, Sir Thomas Hughes, M.L.C., in moving the adoption of the Report and Balance Sheet, invited attention to the fact that the profit for the past twelve months was greater by approximately £620, than for the corresponding period of the previous year, while reserves had increased by £4,500. The item of £500, which the Directors recommended to be written off, had been paid for the goodwill of a small electrical manufacturing business recently purchased in Melbourne.

Commercial Wireless Services.

"In the early part of the present year (the Chairman continued), a very comprehensive scheme was put forward in England by the Marconi Company to establish a chain of commercial and strategic wireless stations, linking the whole of the British Empire. Under this scheme, Australia was to be connected with Great Britain by a chain of relay stations extending in one direction across India and Egypt, and the other way across Canada. When this proposal had been considered by the Commonwealth Government, the Prime Minister informed us that, although the scheme appeared good in itself, Australia could not afford to have her communications dependent upon relay stations in other countries, and could not wait for a scheme which depended upon the common agreement of so many Governments. Since then, another scheme has been put forward by a select committee in England, but as that involved even more relays than the Marconi scheme, and as it definitely involved an annual loss in working, I should say it contained little of interest to Australia, and I do not know what has become of it.

"It is interesting to note that the first commercial wireless chain ever seriously thought of, consisted of a proposal made by the Marconi Company ten years ago, to erect, at their own expense and risk, eighteen high-power stations throughout the British Empire.

"To-day every important nation is equipped with commercial long-distance wireless stations, yet the British Empire wireless service remains untouched.

"It is notorious that the Germans had an efficient chain of stations at the outbreak of war. In France, one of our Associated Companies is engaged in the construction of stations which will provide communication with all French Colonies, and with all other parts of the world where corresponding services may be arranged. Holland is making preparations for a direct service between Amsterdam and the Dutch East Indies.

"In the United States, the Radio Corporation of America, with which we have working arrangements, is conducting commercial services between the U.S.A. and England, France and Norway; also between California, Hawaii and Japan.

"Denmark is considering a proposed service between that country and America. Stations are to be erected throughout South and Central America for direct commercial wireless services with the United States, and a huge new station is being erected outside New York which, when completed, will be able to communicate simultaneously with five different countries.

"In England, the Marconi Company is now carrying on direct commercial services with Canada, United States, South America, Italy, Spain and Portugal, while, through those services, and the telegraph lines and cables beyond the terminal points, the Company deals with messages to and from no less than sixty different countries and islands.

"This is just to give you an outline of what is happening in the world of wireless to-day, and to show that there is nothing experimental or spectacular in all we have claimed. Keen business men in these important countries are spending millions on practical schemes.

"To come now to Australia, your Directors, after careful consideration, have submitted to the Government a comprehensive scheme for a direct wireless service between Australia and England. This scheme, which was prepared by our Managing Director, Mr. Fisk, consists broadly of a high-power, high-speed, duplex operated

station, near one of the capital cities, to communicate direct with a corresponding station in England, together with medium-power feeder stations near each of the other capital cities, to pass the traffic to and from the main trunk station. This system was planned on the lines of the most scientific advances in wireless engineering, and it would be radically different from anything existing in Australia to-day. Both the main trunk and the feeder stations were to be operated by distant control from the heart of the cities, although in many cases the large stations themselves would be situated some miles distant, and all stations could communicate simultaneously with the main trunk system without interference, while the main trunk would at the same time be sending to and receiving from England. By this means we are able to offer an efficient, speedy and reliable service between all parts of Australia and England. It is not many years since anyone offering such a beneficial innovation would have been hailed as a benefactor, and granted a substantial subsidy and a monopoly. We, on the contrary, have offered to handle all classes of messages at one-third less than existing rates, and to give the Commonwealth Government 25 per cent. of our nett profits. We have also undertaken—

To have the stations working in two years,

To hand them over in any time of national danger,

To hand them over to the Government free of all payment at the end of a term of years, and

To give the Government right of resumption at all times.

“Our feeder stations could, at the same time, cater effectively for the ordinary commercial ship-to-shore traffic, thus giv-

ing an improved service for shipping and passengers, and saving the Government at least £20,000 per annum.

“Subject to the foregoing we ask that a licence be granted to us, but there is nothing in our offer nor in the conditions of wireless working, to prevent other companies having similar privileges (if, indeed, there is anything here which could be called privilege).

Other Activities.

“I am sorry that time does not permit me to refer, except very briefly, to the other numerous activities of your Company, but I can assure you that, much as we should like to see our oversea service going forward at once, we do not look upon that as our only future prospect. Our present-day activities are progressing and expanding very satisfactorily, and we look for steady development in all directions.

“Our Marine Wireless business is growing continually.

“The Australelectric Company, through which our well-equipped factory and technical organisation are used for general electrical trading, has shown remarkable progress in the past few months, and is increasing its turnover monthly. Our staff is now studying the latest developments in X-Ray work; a branch which we hope to expand considerably.

“During the year your Company has acquired under its permanent licences various new and important wireless patents, and the value of our patent rights is being well maintained.

“Apart from long distance wireless telegraphy, important developments are taking place in wireless telephony and directional wireless, and we hope to give some demonstrations of long distance wireless telephony in Australia during the present financial year.”



CUBA

BY

HAROLD H. JOHNSON

[This article is the eleventh of a series relating to the countries signatory to the Covenant of the League of Nations. Those already dealt with under this heading are:—(1) America, (2) British Empire, (3) Belgium, (4) Bolivia, (4a) Brazil, (5) Canada, (6) Australia, (7) New Zealand, (8) South Africa, (9) India, (10) China. The present article will be followed by one giving a historical sketch of Czecho-Slovakia.—Ed.]

“The older conception of history as a chain of facts dies hard in schools and school-books in spite of its staggering inadequacy.”

I came across the above assertion in a book I picked up quite casually on a recent evening, and being committed to write a historical sketch of Cuba I felt, when reading it, that although there was little else I could write about Cuba except a chain of facts, I quite agree that if the bare facts are to be remembered either about Cuba or any other country the time spent will certainly result in a staggeringly inadequate conception of the teaching of history, but on the other hand if we reflect upon the causes leading up to the effects we certainly shall derive the greatest satisfaction from our reading. We all remember Napoleon's advice to his son the King of Rome, which was simply this: “Study history.”

Cuba is the native name of an island in the West Indies, and is a member of the League of Nations. Before glancing at its history let us in Australia recall as charitably as we can that, although Cuba is governed independently of the United States, it only exists as an independent nation so long as its policy does not conflict with the policy of the United States of America and the Monroe Doctrine in particular, and Cuba has the right to send a representative to all meetings of the Council of the League of Nations, yet the United States would not concede the right of the British self-governing dominions also having a vote at Council meetings, apparently quite oblivious to the assistance every part of the British Empire rendered to the Allies during the war, and that the services of each self-governing portion of our Empire far exceeded the service Cuba was able to render.

Cuba is the largest and most western island of the Antilles and the most fertile of them all, geographically situated in a

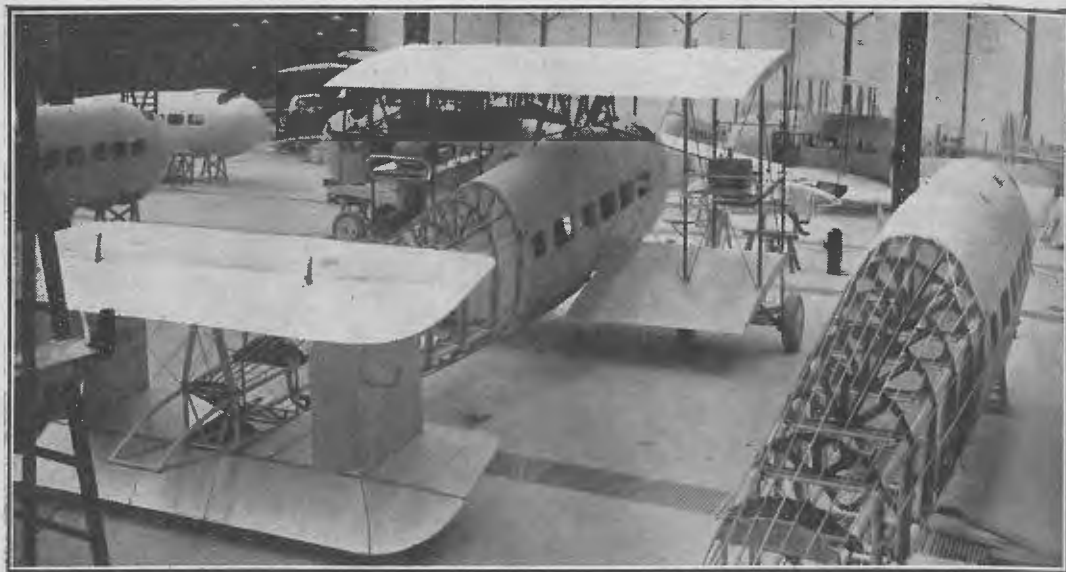
highly strategical position at the entrance to the Gulf of Mexico, with Florida on the north and Yucatan on the south.

The length of Cuba from Cape Maisé (or Maysi) to Cape Antonio is 730 miles. In width the island varies from 90 miles in the eastern portion to less than 20 miles in the longitude of Havana, the capital, and it is divided into six provinces: Pinar Del Rio, Habana, Matanzas, Santa Clara, Puerto Principe and Santiago de Cuba, which cut the island in bars from north to south. It has been claimed that Cuba possesses more land-locked harbours for its size than any other island in the world. The area including the adjacent keys or islands is 45,896 square miles, of which about 10 per cent. only is cultivated. The whole area is slightly less than the size of the State of New York.

The middle portion of the island consists of gently sloping plains which form continuous fields of sugar cane.

The principal industries are sugar and tobacco growing. Tobacco was indigenous but the sugar cane was planted by the Spaniards who took it across from the Canaries. There are no manufactories in the island, which is largely unexploited, but coffee, cereals, potatoes, bananas, maize and oranges are grown in abundance. Iron ore is also exported in large quantities and as much as 50,000 tons has been sent to the United States in one month. Although the Cubans suffered severely under the Spaniards—as we shall see—the United States support to the insurrection which finally freed Cuba of Spanish rule may have been tainted with covetousness; the Monroe Doctrine certainly does not harmonise with the Tenth Commandment.

The population of the island is computed to be 2,082,282, and is divided by writers into five classes:—White Cubans, who are largely the landowners; black and coloured Cubans, who are the labouring class; Spaniards, the governing class



Vickers-"Vimy Commercials" for the Chinese Government.

Two photographs showing various stages of construction at Vickers' Aircraft Works, Weybridge, England. The lower illustration shows the cabins in course of erection.

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DEPARTURE AND ARRIVAL OF AIRCRAFT TO AND FROM THE CONTINENT.

	Aug. 26-31†		Sept.		Oct.		Nov.		Dec.		Jan.		Feb.		March.		Total.		
	Dep.	Arr.	Dep.	Arr.	Dep.	Arr.	Dep.	Arr.	Dep.	Arr.	Dep.	Arr.	Dep.	Arr.	Dep.	Arr.	Dep.	Arr.	
British ..	9	8	68	64	84	80	54	39	33	28	44	33	44	38	65	63	401	353	
French ..	—	—	6	7	15	15	8	10	2	1	4	4	7	6	24	24	66	67	
Belgian..	—	—	—	—	—	—	—	—	—	—	—	—	2	3	1	1	3	4	
Swiss ..	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	1		
Other States.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Total...	9	8	74	71	99	95	62	49	35	29	48	37	53	47	91	89	471	425	
Total for August and September..		83		79		Total for 3 months October-December, 1919..		196		173		Total for 3 months January - March, 1920..		192		173			

† August 26, was the date upon which international civil flying first began.

ACCIDENTS.

	May to Sept., 1919. 5 months	Oct. to Dec., 1919. 3 months.	Jan. to Mar., 1920. 3 months.	Oct., 1919 to Mar., 1920. 6 months.	May, 1919 to Mar., 1920. 11 months.
Number of accidents resulting in death to one or more occupants of machine ..	2	2	—	2	4
Number of non-fatal accidents resulting in injury to occupants of machine ..	8	—	3	3	11
Number of accidents resulting in death of third party (occupants of machine uninjured) ..	1	—	—	—	1
Number of accidents in which no one was killed or injured ..	2	3	3	6	8
Total Accidents reported ..	13	5	6	11	24
Approximate number of machine miles flown per accident ..	35,406	27,593	15,601	21,052	28,827
Approximate number of machine flights per accident ..	2,404	834	400	597	1,576
Approximate number of machine hours flown per accident ..	505	370	201	278	401
Pilots killed ..	2	2	—	2	4
Pilots injured ..	6	—	3	3	9
Passengers killed ..	—	1	—	1	1
Passengers injured ..	10	—	2	2	12
Third party killed ..	1	—	—	—	1
Pilots killed per 1,000 flights made by pilots ..	.06	.48	—	.30	.106
Pilots injured per 1,000 flights made by pilots ..	.19	—	1.23	.45	.238
Pilots killed per 1,000 hours flown by pilots ..	.31	1.08	—	.65	.416
Pilots injured per 1,000 hours flown by pilots ..	.92	—	2.48	.98	.934
Passengers killed per 1,000 passengers carried ..	—	.16	—	.10	.015
Passengers injured per 1,000 passengers carried ..	.17	—	.57	.20	.176
Passengers killed per 1,000 hours flown by passengers ..	—	.37	—	.23	.055
Passengers injured per 1,000 hours flown by passengers ..	.72	—	1.25	.46	.663

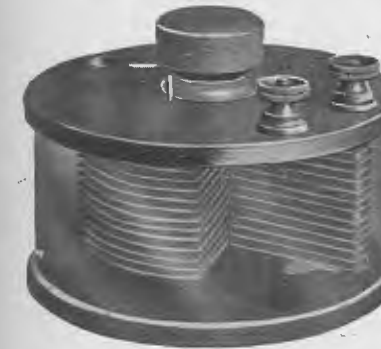
The above figures do not include competitive flights from England to Australia, or Cairo to the Cape.



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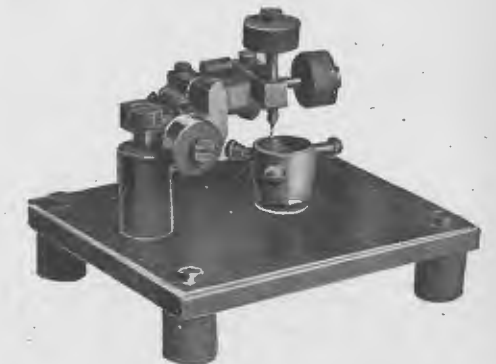
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VALUE OF GOODS IMPORTED AND EXPORTED INTO AND FROM THE UNITED KINGDOM.

Period	Imports (Free) from—			Imports (Dutiable) from—			Re-exports to				British Exports to—		
	Nether-lands.	Bel-gium.	France.	Nether-lands.	Bel-gium.	France.	Italy.	France.	Nether-lands.	Belgium.	France.	Italy.	
	£	£	£	£	£	£	£	£	£	£	£	£	
Aug., 1919	—	—	—	—	—	1	—	—	—	—	12	—	
Sept., 1919	—	—	4,425	—	—	75	—	844	—	—	2,146	—	
Oct., 1919	—	22	23,389	—	—	509	6	1,201	—	—	7,270	1	
Nov., 1919	—	9	18,009	1	—	2,132	—	584	—	7,376	6,555	—	
Dec., 1919	—	145	10,398	—	2	716	—	615	—	2,206	2,287	—	
Jan., 1920	—	—	8,188	—	—	1,697	—	1,309	—	—	1,327	—	
Feb., 1920	—	—	17,721	—	5	1,101	—	8,651	—	1	5,126	—	
Mar., 1920	470	208	45,488	—	—	1,409	—	12,528	3,497	—	6,706*	—	
	470	384	127,618	1	7	7,630	6	25,732	3,497	9,583	31,429	1	
	128,472			7,644				70,242					

* In addition, diamonds to the value of £3,000 were exported to France in March.

LICENCES.—As was pointed out in the last Report, licences are required by all pilots of aircraft, while every civil machine has to be registered and numbered, and, if carrying passengers for hire or reward, must be certified as "airworthy."

During the last six months the following licences and certificates have been granted:—

	Total issued since May 1, 1919.
Licences for pilots	163 .. 484
Licences for pilots—renewals	129 .. 129
Licences for ground engineers	113 .. 345
Licences for engineers	1 .. 1
Licences for navigators	3 .. 4
Licences for aerodromes	36 .. 119
Licences for aerodromes—renewals	12 .. 12
Certificates of registration	127 .. 474
Certificates of airworthiness	107 .. 325

The effect of the winter months is noticeable in these figures, though they show a definite, if small, development

INSURANCE.—Lloyd's have decided to undertake the systematic collection of information for purposes of aviation insurance, and the information collected will be circulated to their members in a confidential record. The Department of Civil Aviation has promised to give them any assistance in their power, and has accordingly agreed to allow them to inspect and copy the register of aircraft certificates and to give them such other information as they can, including particulars as to licences issued to pilots, standards applied in the official examination, aerodromes in the United Kingdom, etc. For information as to other matters Lloyd's propose to place themselves in touch with the owners and constructors of aircraft (particularly with a view to obtaining particulars as to aircraft after certification), and with the licensees of aerodromes. It is hoped that the interest which Lloyd's are showing in this matter will result in the establishment of a sound system of aviation insurance, based on the common requirements of all concerned,

which will be of great assistance in the development of civil aviation to meet public needs.

COLLECTION, COLLATION AND ISSUE OF INFORMATION.—Information concerning the development of civil aviation and commercial opportunities for its exploitation abroad is obtained through the Air, Naval and Military Attachés in foreign countries. In addition, the diplomatic, consular and commercial machinery of the Department of Overseas Trade (Foreign Office) has assisted in the collection of information on these subjects.

Information obtained from these sources covering the following points—the establishment of new aerodromes and new aerial routes, the adoption of new conventions and regulations, the provision of W/T meteorological facilities, etc.—is issued direct to the industry or through the medium of the Society of British Aircraft Constructors, either in periodic *résumés*, or, if of an urgent nature, so soon as received.

Record has been kept of aviation activities at home, *communiqués* to the Press have been issued as required, and numerous inquiries on different aspects of civil aviation have been dealt with.

A series of "Notices to Airmen" has been instituted by which the attention of pilots and all concerned is drawn to important official instructions and information affecting civil aviation.

Since the date of the last report the following have been issued:—100 Special Notices to the Society of British Aircraft Constructors; 6 Monthly Commercial *Résumés*; 14 Technical Memoranda; 3 Confidential Technical Memoranda; 3 Technical Abstracts; 185 *Communiqués*, and 35 Notices to Airmen.

DISPOSAL OF AIRCRAFT.—With the exception of a number of machines which have been presented under Treasury sanction to the Dominions and Colonies, the entire stock of surplus aircraft and aeronautical material has been sold by the Disposals Board to the Imperial and Foreign Corporation, who have formed a company under the name of the Aircraft Disposal Company to resell it.

AIR MINISTRY COMPETITIONS.—A Committee, representative both of the Air Ministry and the aircraft industry and assisted by ex-

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perts, drew up rules for competitions with the object of furthering safety and comfort in air travel. The Society of British Aircraft Constructors put forward certain modifications in order to accentuate the factors making for commercial utility, as distinct from considerations of safety, and these have been adopted. The competitions have been fixed to take place at Martlesham Heath and Felixstowe, as follows: For large and small type aeroplanes on August 3, and for amphibians on September 1.

EXPENDITURE, 1919-1920.—The sum expended by the Department of Civil Aviation during the past financial year was £119,081. It should, however, be appreciated that in addition numerous liabilities have been incurred and work carried out, payment for which is provided for in the Estimates for the current financial year. The main items of expenditure may be classified as follows:—

Headquarters Staff* (including pay and allowances of officers on loan from the R.A.F.), £24,366; staff at civil aerodromes, £9,130; works and alterations at civil aerodromes, £8,118; stores obtained on repayment from R.A.F., £3,595; stores purchased from outside sources, £2,459; sundry expenses incurred in running civil aerodromes, £4,608; flights to the Continent, £9,762; preparation of the Cairo to Cape Town route (including personnel, petrol, oil, etc.), £57,043.

In addition to these expenditures there are certain liabilities in connection with the Cairo to Cape Town route and the survey of the India-Australia route, the accounts for which have not yet been rendered, but which are estimated at about £5,200, bringing the total expenditure for the year up to £124,281. To this may be added the free issues made to the Department from R.A.F. stocks to the value of £38,877.

RESEARCH.—The Research Department and the Department of Civil Aviation have co-operated in producing, in conjunction with the manufacturers, new types of recording and measuring instruments for the Air Ministry Competitions, which according to the rules must be of British manufacture.

Progress has been made with the development of the various types of turp indicators, which are now being used to enable aircraft to fly safely in and above clouds.

The development of the R.A.F. sextant, the aperiodic compass, bearing plates and navigational flares for use at sea, facilitate the methods of checking dead reckoning for air navigation.

Attention is being paid to the design of all-metal machines.

THE DOMINIONS, INDIA, AND THE COLONIES.—In order that civil aviation may develop as an Imperial asset, arrangements are being made to secure, by an interchange of laws and regulations, the greatest possible

* The expenditure on the Headquarters Staff does not include that for the Directorate of Meteorology, which was transferred to the Air Ministry in November, 1919, but which, according to the directions of the Home Affairs Committee of the Cabinet, was the subject of a separate vote until the financial year 1920-21.

measure of uniformity consistent with local requirements throughout the Empire, and the Air Navigation Bill provides for the adaptation by Order in Council to British Possessions, exclusive of the self-governing Dominions and India, of the legislation in force in this country. Canada and India have instituted Air Boards and published air regulations based on those in force in Great Britain, which are themselves in conformity with the International Air Convention; and the other Dominions are considering the best methods of administering civil aviation. The Colonial Office, the India Office, and, in the case of Egypt, the Foreign Office, are co-operating with the Air Ministry in effecting an interchange of views between the Dominions and Colonies and the Mother Country, towards which a step has been taken by the Dominions in appointing liaison officers to the Air Ministry.

The Governments of Australia, Newfoundland and New Zealand have approved the ratification of the International Air Convention as soon as such a course is considered advisable.

Australia.—The body which at present deals with aviation is a Committee of the Prime Minister's Office, called the "Air Services Committee." *No air regulations have as yet been drawn up by the Commonwealth Government, but it is understood that the whole question of the administration of civil aviation is now under consideration.*

A number of demonstration flights are being conducted by ex-members of the Royal Air Force, and a gift of one hundred aeroplanes has been accepted from the British Government.

Canada.—The Air Board Act was passed in January, 1919, instituting an Air Board consisting of not less than five and not more than seven members, to be appointed by the Governor-General then in Council. The functions of the Board, which has been reconstituted under the Chairmanship of the Minister of Militia and on which the Naval Service is represented, are similar to those of the Air Council in Great Britain. The Board includes a Superintendent of Certificates, who controls the licensing of personnel, aircraft and air harbours, and is responsible for civil aviation conducted by private enterprise.

The Associate Air Research Committee, which held its first meeting on February 7, has been formed under the Honorary Advisory Council for Scientific and Industrial Research, and will work in close co-operation with the Air Board. The co-operation of the Meteorological Office and the General Superintendent, Government Radio-Telegraphic Service, has also been secured.

Dangerous flying was prohibited by Order in Council on July 7, and regulations governing civil aviation, and based on the International Air Convention, were published on January 17, 1920.

The Air Board is giving consideration to the special uses to which aircraft can be put in Canada, such as forest patrol and survey work; and authority has been obtained to carry out

* The High Commissioner for Canada signed the International Air Convention on April 13, 1920.

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