

position is much less satisfactory as regards commercial aircraft. Of new commercial types but two were produced during the past year, of which one was a flying-boat and the other a landplane. The Short all-metal "Calcutta," fitted with three Bristol "Jupiter" engines, was produced in three specimens, and the type has proved a very good machine, and will be put on the Mediterranean route during the present year. The only new type of landplane produced during 1928 was the Vickers "Vellore" freight carrier, with Bristol "Jupiter" engine. This machine has probably the greatest pay load for its power of any aircraft ever produced, but practical experience with it cannot yet be quoted, although doubtless during the coming spring and summer the machine will be thoroughly tried out under actual operating conditions.

The de Havilland "Hawk Moth" monoplane has been finished, and is thus, strictly speaking, a 1928 production, but it will not be type-tested and finally approved until the early part of this year, so that at the present moment this machine does not represent a definite item to be put down to the credit of the past year.

Aero engine development has been gratifyingly good during the past twelve months. In the higher powers the new types are for the most part developments of previous models, and have given Britain a very excellent range of engines indeed, water-cooled and air-cooled, direct drive and geared, supercharged and naturally aspirated. Two definitely new high-power types have, however, been produced, or at least finished off, in 1928: The Beardmore "Tornado" heavy-oil engine to be used in the airship R.101, and the Armstrong-Siddeley "Leopard" radial air-cooled engine of 700 h.p.

In the lower powers several new types of engine have appeared. The de Havilland company have produced and put into service the "Gipsy" engine of some 100 h.p., and have been developing the "Ghost" to the point where it is about to pass its type tests. A new "Cirrus" engine, the series III, has passed its type tests and become standardised and extensively used, while one or two still newer types are rumoured to be under way. These, however, must be regarded as 1929 productions.

Of slightly lower power are two other new types developed and type-tested during 1928: The Pobjoy radial air-cooled geared engine is described and illustrated in the present issue of FLIGHT, and the A.B.C. "Hornet" was described some time ago. The latter is also an air-cooled light 'plane engine, but is unusual in being a double "flat-twin," *i.e.*, with its two cylinders on each side in line with each other. Both engines promise well, and will probably come into general use during the coming summer.

To our way of thinking, the outstanding technical feature of 1928 was the development of all-metal construction. For the last two or three years firms have been hard at work evolving new forms, and it can now be said that every British aircraft construction firm has "selected" types of construction, which are all good practical propositions. A healthy sign is that the variety of these types of construction is very great, scarcely any two different firms using the same forms, so that experience is being accumulated along a number of lines. This cannot but be of great benefit, and the work done has placed Great Britain in the very forefront in the matter of using the various structural materials to the best advantage. Forms of metal construction have been

proved practical engineering propositions which but a few years ago had the deceptive appearance of being suitable for nothing more than laboratory work on a somewhat large scale, and British metal structures show a refinement not to be found elsewhere. Altogether the technical aspect of 1928 can be written down as eminently satisfactory.

China as a Market

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So far British firms have not had a great deal of experience in marketing their machines in China, and what little experience has accumulated has not unfortunately, always been very promising. The signing of the new treaty recently, however, should considerably change the conditions of carrying out trade and business in China, and as foreign countries, notably France and Germany, have already done a good deal of spade work in trying to establish sound connections, no time is to be lost if Great Britain is to hold her own.

We have recently received from a Hong Kong correspondent some interesting communications, which all point towards not only the possibility but the feasibility of introducing British aircraft in China. The distances to be covered are great. The existing means of travel are relatively slow, and business people in China are quite prepared to support any form of transport which will save time.

As an instance of what an air line might accomplish, our correspondent quotes the case of a traveller wishing to go from Hong Kong to Hankow, for instance, by surface transport. Leaving Hong Kong on the fourteenth of the month, the traveller would arrive at Shanghai on the 19th. The departure from Shanghai would have to be made at midnight, on the day of arrival, and Hankow would be reached on the 24th. Even admitting the possibility of a faster boat being available, the trip would still have taken 8 or 9 days. If it is supposed, our correspondent says, that an air line is operating, and that the traveller leaves his home in Hong Kong at 7 a.m. to go out to the aerodrome at Kai Tak, he would arrive there in good time to catch the machine leaving at 8 a.m. About noon, the traveller would be about half-way to his destination, and after a halt of one hour for lunch and replenishment he would be on his way again, reaching Hankow aerodrome between 4 and 5 p.m., and the city an hour or so later. The air traveller would thus have made the trip in almost exactly the same number of hours as the surface traveller would take days!

Our correspondent states that business houses in China are willing to put up capital for services. Those with some slight aviation experience in China prefer British aeroplanes and seaplanes, even if they are somewhat more expensive than certain foreign products. What is wanted is concerted action on the part of British firms, before other nations become firmly established.

Machines with a fairly high cruising speed are required to fight the monsoon winds, and a duration of seven hours should be aimed at. Seaplanes and flying-boats should prove particularly suitable owing to the numerous waterways. The climate, particularly in the south, is very damp, and this should be kept in mind in the form of construction used. Our correspondent is familiar with Chinese conditions, and is an old pilot with a thorough knowledge of aviation, so that his advice should be worth following. But instant action appears to be required if a potentially promising market is not to be lost.