

# Is Radio Indispensable in Aviation?



**M**OST people interested in flying—and who is not?—have at some time or another argued the pro's and con's of taking wireless equipment on long-distance flights. Many fail to understand why it is not always carried, for nobody to-day doubts the value of wireless to travellers by air.

It will be surprising, then, to learn that if Lindbergh had taken a wireless set, he might not have reached Paris. The lightest set of real use to him would have weighed about 68lb., and batteries to give him an hour's transmission, if forced down, would have been a further 36lb.—a total of some 104lb.

He set off with 425 gallons of petrol, weighing 2600lb. His petrol consumption was remarkably low (for most machines this works out at about 3-pint per h.p.-hour), and by throttling back gradually as he used up this terrific load of fuel, he was able to extend his radius of action, reckoned as in still air to about 4040 miles.

Nevertheless, even on a perfect course—and he had to do his own navigating—the distance to be covered was 3639 miles, so that his safety margin was only 400 miles.

If he had carried 104lb. of wireless equipment, he would have left this weight of petrol behind, which would have robbed him of 160 miles, a considerable fraction of his safety margin. The process of throttling back would have been impeded by so much more weight which was not disposed of as the journey proceeded, so that the loss of this petrol appears to approach the danger line.

If he was a skilled operator, he might have achieved a range, while in the air, of anything up to 500 miles, using telegraphy; even 800 miles has been known. Once he was forced down, however, this would drop to less than 200 miles. Use of telephony would reduce this figure by about one-third.

There is no difficulty about storing a set on board in these days of remote control. It is desirable, of course, to have it as near at hand as possible in

## Had Lindberg carried Wireless he might Never have Reached Paris

case some unlooked-for defect develops, but this is a risk that has to be taken as part of the adventure.

Two kinds of aerial may be used. There is the single trailing wire, weighted to keep it nearly vertical; or one may be fixed from wing to wing or wing to rudder.

The advantage of the latter type is that they are ready for use should the machine be forced down on to the water, but the weighted type gives the best results, as, for instance, on Captain Courtney's Napier-Dornier-Wal. He was forced down shortly after leaving the Azores. His SOS was going out continually until he hit the water, when he had first of all to erect a telescopic aerial mast on his wing, and sling a wire from it to the rudder, and then switch over from a wind-driven generator, no longer of any use, to his batteries.

These gave him 60 separate minutes of transmitting, or slightly under the full hour if used continuously. As everyone knows, his calls were answered by a ship 104 miles away.

His set, which weighed 90lb., had an advertised range of 100 miles, but this could be "pushed up" to 150, given good conditions.

Opinion is divided as to what range is absolutely necessary to reach shipping. If a pilot going from America keeps to the regular trade route of his season of the year, there are days when he might not be more than 200 miles from a vessel, provided the weather was kind to him.

On the other hand, when his luck is out, he could easily be 800 miles off, and even fifty miles is a long way for a ship to travel when a plane is being tossed by the Atlantic rollers.

### The Bremen.

**T**HE problem is more acute for a flight from Europe, because a pilot must count on meeting head winds of not less than 30 m.p.h. That is to say,

in a 30-hour flight, he will cover nearly a thousand miles less than in still air.

The only heavier-than-air machine to get over, the Bremen, carried enough fuel for 45 hours under favourable conditions, but the headwinds were so strong that the throttle had to be kept full open for the greater part of the journey. The speed worked out at only just over 60 m.p.h., against Lindbergh's 108 m.p.h., yet, given, equal conditions, the Junkers monoplane was the faster of the two. When a landing was effected in Labrador the fuel was to all intents and purposes exhausted. Epoch-making as the flight was, it does not help in a discussion of our problem.

The lighting system failed, and to increase the trouble the Bremen ran into very thick fog in the Newfoundland area. Her crew were in total darkness for hours, and it is not easy to see how navigation would have been facilitated had they been given their position and direction by a coastal station.

Remembering all the circumstances one seems justified in saying that it was just as well they did not cut down their "useful load."

Nevertheless, Commander Fitzmaurice has given his opinion that wireless is absolutely essential for all future undertakings of this nature.

There is a general opinion in flying circles that a pilot attempting the east to west crossing would "average," if one may use such an expression, 250-300 miles from the nearest wireless-equipped vessel. The path of the prevailing wind is of varying width, but always sufficient to drive a machine away from the main shipping route.

### Increased Consumption.

Whereas a gale of 60 m.p.h. would scarcely cause a captain to leave his usual course, a wind of 40 m.p.h. would mean such an increased petrol consumption that the pilot of an aero-

plane would be compelled to seek the fringe of the air current, where the head wind encountered would be less strong.

### Other Examples.

**T**HE late Commander MacDonald, who left Newfoundland last year in an attempt to cross in a Moth, could not possibly have carried wireless, since the "lift" and carrying power of his machine were so small that he wanted every ounce for fuel. If he had got here, experts are agreed that it would have been "just" on this account.

As it was, his was a splendid failure. Another instance where the radio equipment was discarded to lighten the plane was the recent attempt of Captain Chichester, of Wellington, to fly from England to Australia. It appeared that the extra weight of the equipment was not warranted.

The tragic yet heroic attempt of Hood and Moncrief to cross the Tasman without adequate equipment has left the world in a doubt which will probably never be solved. Had an apparatus been provided whereby one of the men could communicate with New Zealand and Australia, the frail craft and its occupants might never have met the fate it did.

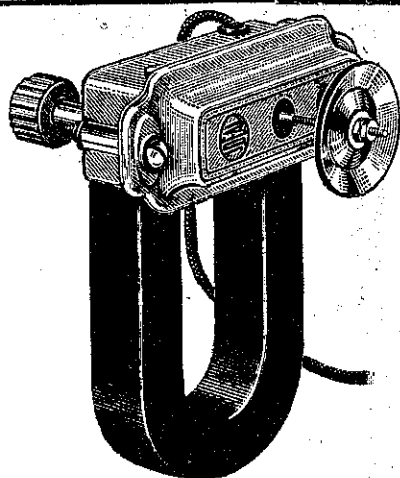
### Kingsford Smith and Radio

**E**XPERTS are still far from agreement on the point, but judging from results, it seems that a big triple-engined bus can best carry wireless. The Southern Cross was such a machine, and she, on her voyage across the Pacific, carried four men, one of whom was solely a wireless operator.

For the longest hop of this trip she took 1290 gallons of petrol; hence she would certainly not have gained much by leaving her wireless equipment behind.

On the other hand, Kingsford Smith and his companions weathered a heavy storm, and arrived safely at Fiji, owing entirely to the wireless instructions they received.

In her flight to New Zealand, wireless, although providing a useful role in



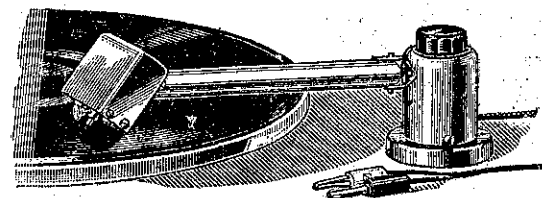
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