

The Feat of Flying the Atlantic



FEW folk, seemingly a little air-weary, may take little note of Kingsford Smith's crossing the Atlantic. There have been, you know, so many exploits in the air of late; there are Kingsford Smith's previous achievements; this is "only one more." These folk remain unstirred. But most of us are not like that, and this feat means much.

When this achievement is understood, it ranks very high in the triumphs of aviation. It has been rightly hailed as fully worthy of being bracketed with the wonderful flight across the Pacific, which no one else has attempted. To have two such flights to his credit, even when nothing is said of the other successes of his brief career, stamps Kingsford Smith as an airman of unquestionably great skill and courage, and power to inspire associates.

I do not intend to dwell in detail on this particular exploit. About it you have probably read quite as much as I have. But for a few minutes I wish to speak of one or two things that make it remarkable, and so shed light on the trans-Atlantic flight in general, and the westward crossing in particular.

One thing in passing. This success carries Kingsford Smith and the Southern Cross well on the way right round the globe. He set out across the Pacific from Oakland, California. So he came to Australia. After the crossing to and from New Zealand, he went to England. Now, crossing the Atlantic, he has landed on the American Continent. His intention is to cross the United States to California, landing at Oakland, the starting point of the Pacific venture. Thus he will have put a girdle round about the earth in the Southern Cross.

Nor will that fact be all. When he talked of taking the Pacific flight he had great difficulty in "raising the wind," as we say, for the venture. By many, it was deemed too hare-brained an idea to back. Men of means, though deeply interested in aviation, were reluctant to help him. His courage, however, was shown in persevering with his project in spite of every obstacle. Now, all going well, he will land in the Southern Cross at Oakland to a thunderous welcome. His one-time critics will be finally confounded, and the few ready to help will have their full vindication. He himself will have won more than a triumph in aviation; his will be a great moral victory. That is much.

LET us turn to trans-Atlantic flight in general. There have been many crossings through the air. Of these the last lately published has given reminder. It is an interesting record. But the thing especially notable is that the west-to-west crossing has been

Did Kingsford Smith Choose the Best Path?

(By A. B. CHAPPELL, M.A.)

often done, and the east-to-west only once before, when Baron von Hühnefeld and Major Fitzmaurice landed in Labrador and had to be rescued from a dangerous plight. The east-to-west venture is evidently the more hazardous. Why is this westward crossing so difficult, in comparison with flight the other way?

To casual thought, the very opposite should obtain. The spin of the earth is from west to east. This makes our succeeding day-dawns, the sun, in our way of speech, rising every twenty-four hours in the east. All places, that is, travel eastward. There was, consequently, in earlier days—when balloons were invented—a notion that if one wanted to go westward it should be possible to go straight aloft, stay there awaiting the arrival below of the western place sought, and then descend on it. The formula was something like this: "Up you go, wait; down you come; there you are." This inviting idea, like many other inviting ideas, left some things out of account.

Before we consider them, let us take some precise facts. The circumference of the earth is nearly 25,000 miles. The earth's rate of spin, varying from a maximum at the equator to zero at

an hour in one spot of space would be, relatively to the earth's spin, to travel westward more than 1000 miles, and would make travel westward in the air a simple matter, and travel eastward a very vexing stern chase.

Taking London, and New York as illustrative points, nearly five hours is the time difference. New York, to speak precisely, being 74 degrees west of London, takes 4 hours 56 minutes to reach the point formerly occupied by London. To go by air from London to New York would therefore seem to mean taking a journey, as measured by earth-span, twice 4 hours 56 minutes less than the journey from New York to London—9 hours 52 minutes less—nearly ten hours less. No wonder the east-to-west journey through the air, against the spin of the earth, has been casually thought easier, because it is made theoretically shorter by the earth-spin.

NOW for the things left out of account. First is the fact that the earth's atmosphere, denser and denser at the lower levels and always subject to gravitation, clings to the earth, and, in general, goes with the earth's spinning surface. I emphasise those words

resistance, not aid, in the east-to-west crossing.

If the earth rotated in an actually unmoving atmosphere, there would be felt at the equator a steady wind from the east, met (and so in effect moving) at more than 1000 miles an hour—a prodigious rate, calculated to keep the equatorial region wonderfully cool.

THAT this region is anything but wonderfully cool awakens us to look out for other atmospheric facts. What are they? They can best be instanced by what are known as trade winds, prevailing winds that have long been taken into account by shipping in the days of sail. In broad belts north and south of the equator, running to the imaginary lines of the Tropics of Cancer and Capricorn—that is, to about the 20th parallel of latitude north and the 20th parallel south of the equator respectively—these trade winds blow from these lines to the equator. This is explicable, in general, by the rising of heated air from the equatorial region, the colder air from north or south rushing in to take the place of the heated, rising air. But the direction of this rushing air is not either due south to the equator or due north to it, as the case may be.

The winds from both north and south are deflected backward, in effect, by the spin of the solid and globular earth, rotating in this region at its most tremendous speed.

The "cling" of the atmosphere is the more easily overcome by reason of its being heated and rising, as well as by reason of the high rate of the earth-spin. The result is that in the northern equatorial region the trade winds blow from the north-east and in the southern region from the south-west. These trade winds are essentially ocean winds, for land surfaces create local conditions greatly affecting and even negating them.

Our thought about these winds is an essential preparation for what more closely concerns the crossing by air of the Northern Atlantic, away from this equatorial region. What happens beyond that equatorial region, and how is it affected by what happens within it? At about the 20th parallel a contrary and compensating movement of the atmosphere is noted. Outside of this limit, anti-trade winds blow with considerable regularity, the degree of regularity being higher where the ocean spaces are wider. They get their name "anti-trades" from their moving in a direction contrary to that taken by the trade winds. In the North Atlantic and North Pacific they blow from the south-west, while in the southern regions of these oceans they blow (we note this related fact now only to forget it at once) from the north-west.

These anti-trade winds, note carefully, mainly arise from the upper

KINGSFORD SMITH has conquered the oceans of the earth—and he always carried radio. Other aviators as courageous, but less enterprising, have set out for long trans-oceanic flights with only nautical instruments as their navigational guide—and many have not been heard of since. Contrary to popular belief, navigation on flights such as those Kingsford Smith has completed is an all-important consideration. Days, even weeks, have to be spent in deciding upon the most favourable route, and in plotting it accurately. Seasonal winds, prevailing and forecasted weather conditions, and other factors as important, all these have to be considered to ensure an even chance of success. In the accompanying article the writer tells of the difficulties in adverse weather conditions and in navigation that Kingsford Smith and his companions had to contend with, and how they overcame them.

the poles, amounts to more than 1000 miles an hour at the equator. This means that, at the equator, a place 1000 miles to the westward of another will arrive at the spot occupied now by the latter in less than an hour from now.

According to the inviting idea once held, therefore, to go aloft and stay for

"in general," for they are important. There are several qualifications to be considered. The actual happenings are not so simple. But the general fact should be borne in mind as lying behind all seemingly contradictory facts. The earth's atmosphere, then, in general, and as a basic fact, goes with the earth. This suggests atmospheric

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