

AVIATION AND INSURANCE.

We publish the following most interesting contribution on a new subject, from a lecture delivered by Captain Gwilym Hugh Lewis, D.F.C., late R. A. F. of the Thames and Mersey Marine Insurance Company, Ltd., London, England. Every risk, he thought, must be considered on its own merits. Not the least important part was the personal hazard, as related to the pilot. In fact, all depended on this individual, who, if a thoroughly trained and reliable man, correspondingly depreciated the risk. Flying will become of great commercial importance in Canada as elsewhere, in the future, and aviation insurance will be dealt with as a distinct branch, issuing various types of policies.

In considering aviation from the insurance point of view, we must first of all look at the "personal element" risk in connection with the pilot (I am not considering airships for the moment). Everything in flying depends on the pilot; he is more important than the most intricate piece of mechanism. His job is often a difficult one, and is always a responsible one.

Under normal conditions, the danger of accidents while flying is about the same at all times, the pilot being largely responsible. In the first place there are accidents while landing. These may be caused by the surface or surroundings of an aerodrome being defective, or the aerodrome too small. Aerodromes of this kind will be known, and rates adjusted accordingly. The chances of a first-class pilot damaging his machine while landing under normal conditions are fairly remote, so long as he has sufficient inducement to take reasonable care. If an employee in a civilian firm, he would, of course, be more careful. Crashing might be attributed to over-work, or to carelessness while landing. A first-class pilot will often misjudge his landing, but his experience will usually enable him to make a recovery sufficient to land safely.

Very large machines are less affected by wind when landing than smaller machines, and are usually provided with such a well-sprung under-carriage that given plenty of room they are safer. A smaller machine, a two-seater, say, in the hands of a careless pilot, may be landed slightly "out of the wind," in which case it might heel over on to a wing and tip, damaging the plane, and perhaps breaking a "spar." This would necessitate replacing the plane. On the other hand, the under-carriage might be broken, which could easily be replaced; or the under-carriage might hold, but the centre section bracing wires might be badly stretched or broken which, though requiring only a small actual repair, would involve a large amount of labour, perhaps necessitating the removal of the engine, dismantling of the planes, and re-rigging of the centre section again. Then, again, the under-carriage might be broken, at the same time cracking the "engine bearers" and "longerons." This, again, would not be likely to be an

expensive repair from the point of view of particular damage, but the time and labour expended would be greater than in the previous case. Thus it can be seen that much depends on the pilot, and though the damage caused through carelessness may be small, he would have to answer for it to his employers; and in that lies the safety of the insuring company.

In all these cases where the under-carriage is broken, and in many cases where there is no other damage than that the machine has tilted gently on to its nose, the propeller gets damaged. On the whole the propeller is a bad part of a risk, as it is liable to damage from other reasons, such as getting chipped through picking up stones when rotating. It is also liable to be affected by heat and moisture while on the ground. If the propeller gets badly smashed the damage will obviously spread to the engine, perhaps straining the propeller shaft, and possibly requiring it to be replaced. These are accidents which will seldom happen among first-class pilots of the right type.

The greatest danger whilst flying under normal conditions in the single-engine machine is engine failure. In the case of twin-engine machines, it is usually possible to fly on one engine. It is naturally important in the case of any twin engine machine to know whether this is so or not. On a Handley-Page, for example, it is possible within limits; on a Gotha it is not. A Gotha, with one engine out of action, goes round in a circle.

The risk is therefore greater, speaking generally, in the single engine machine, and as engines vary so tremendously in reliability a machine's value from the pilot's point of view to a large extent lies in its engine. If the engine "cuts out" there is only one thing to do, and that is, to glide down and try to pick out a suitable landing place. This is a very difficult task, as from above it is impossible to see undulations of the ground, and one has to make up one's mind rapidly. A sound nerve, excellent judgment, and plenty of luck are essential in cases of "forced landings," as a foot or two out may make all the difference. Machines vary as to the ease with which they can be landed in an emergency. The great example of a perfect machine for this kind of work is the Avro, which in the hands of a good pilot can be safely landed nearly anywhere, owing to its very slow landing speed and easy manoeuvre-ability. In fact, in the R. A. F. it was a common form of amusement to cut off the engine and drop into odd fields. This machine at present stands out rather by itself in this matter of easy landing.

Engines are, therefore, the making or breaking of the risk in considering the single-engined machine. Taking everything into consideration the "stationary" engine has been found the most reliable, the best example of which is the Rolls-Royce, which is perhaps the finest aero engine in the world. Certainly there is no other English engine equal to it, but it is very expensive. Of the