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THE FUTURE OF THE AIRSHIP.

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The tragedy of the Roma, added to the collapse of the ZR2 in England last summer, has naturally turned public opinion very strongly against the airship as compared with the heavier-than-air craft which obtain their lift from wings rather than from bags filled with gas. The disasters will lend new ardor to the dispute between the advocates of airship and airplane and will furnish new material on which they may base their discussions.

The catastrophe at Hampton Roads, however, even following that at Hull, should not blind us to the real potentialities of the airship and to its real usefulness in commercial transportation. Not only should we guard against underestimating its possibilities in the future, but we should also be watchful lest we forget what it has done in the past. However, while the last years have witnessed these two disasters, the preceding 20 years show hardly a single accident of the same sort.

In twenty years of operation the Zeppelin Company have had no structural collapses of their airships, nor have any of their commercial ships ever lost a passenger. The British record was equally clear up to the time of the loss of the ZR2 and such accidents had been equally rare in Italy, the home of the Roma type. Accidents have occurred from time to time, of course, but they have come when the pilot was attempting to land. Accidents in

* Taken from "The Christian Science Monitor."

flight have been exceedingly rare, almost non-existent.

The Merits of the Airship.

Deeply though we regret the accidents that have now happened, they should not cause us to lose our balance and to condemn the airship completely without examination of its merits, which are very great for some purposes. The airship is particularly useful for long cross-country and trans-oceanic trips, as it can operate economically over enormously longer stretches of territory without replenishment of fuel than can the airplane. The airship also is invaluable for work of a sort which necessitates passing over jungle or desert or other country where landings would be difficult, as engine stoppage has, of course, no terrors for the aircraft which depends on the lift of gas for its sustentation.

Another advantage of the airship is that it can be operated much more economically than the airplane, the power required to transport a given useful load being much less in the first case than in the second, and the necessary charges for commercial transport can, therefore, be made more nearly competitive with those now demanded by ship and railroad.

Still another gain is in the improved roominess of the passenger airship. Even with present sizes of rigid airships it is easy to provide a promenade a couple of hundred feet long and to furnish cabins and general accommodations quite equal in comfort to those ordinarily provided on ships. The airplane, on the other hand, must always be a little cramped.

Value for Long Journeys.

Obviously from this listing of qualifications, the airship is particularly well fitted for trips of great length and of such a nature that few intermediate stops are possible or desirable. It is especially valuable where exceedingly high average speeds are not required, 50 or 60 miles an hour being sufficient. The most notable examples of such routes are those connecting America with Europe and America with Asia, North with South America, and England with South Africa and with Australia.

Even if run at the much reduced speed of 50 miles an hour for economy's sake an airship is capable of cutting two-thirds from the fastest possible time with any of the transportation means now used, over any of the routes mentioned. As an illustration of the possibilities, a ship of the size of the general type of the ZR3, but naturally strengthened structurally where the ZR3 proved too weak, would be able to travel from London to Australia, with stops in Egypt and India, in ten days or a little less.

Millions in Capital Needed.

The most difficult feature of the airship from a commercial standpoint is that it can be operated economically only on a rather large scale. A rigid airship costs from a million dollars up, and it would probably be unprofitable to attempt to run any service with less than three ships. The provision of masts for mooring the ships and other facilities at the terminal of the journeys if such a provision is not to be made by the government, would run

the cost of the operating up to still a larger sum and it is not to be wondered at in the present depressed economic condition that everyone should have hesitated to undertake the expenditure necessary.

The Zeppelin Company seem willing to undertake commercial exploitation but are hindered for fear of the Allies, while no other company has had enough experience to feel justified in assuming the risk. Natural as this condition is, it is much to be deplored, and for the good of aeronautics we may earnestly hope that some means will be found of taking over some of the British rigid airships which have been offered for the purpose and of starting a regular commercial service in the near future.

"Blimps" of Limited Use.

If airships are to come into regular commercial use, as it seems certain that they must sooner or later, the ships used must be of the rigid, or at least of the semi-rigid type. The non-rigid "blimps" with which dwellers in the neighborhood of naval stations have become familiar in the last few years, are too limited in size and are too difficult to handle when on the ground to be of any possible use.

As between the fully rigid type, like the ZR2, and those semi-rigid ships, of which the Roma was one, whose only rigid framework consists of a triangular keel running along the lower side of the bag, the question of superiority is by no means settled and is enshrouded in extreme technicality. The layman, however, naturally

feels most confidence in the ship which is a single rigid frame throughout and which does not depend at all on gas pressure to hold its proper shape.

Among the numerous distinct economic advantages of air transport, whether by airships or airplanes, there is one which is often overlooked but which nevertheless ranks for some purposes among the most important. It has been the experience in the past that nearly every gain in speed has required an increase in the size of the transportation unit giving it. The fastest marine transport is by the largest liners, the fastest land transport by heavily-loaded limited trains. With aircraft, however, the reverse is the case, and the highest speeds are obtained with small units. The result is that it is necessary to run a great number of such units to handle any considerable traffic, and they can therefore be spaced efficiently through the day. To handle the passengers carried by a single limited train such as those running between Boston and New York, for example, about 40 airplanes of ordinary commercial size would be necessary, and those 40 machines could be distributed over $6\frac{1}{2}$ hours at 10-minute intervals. Not only does the airplane cut the time in transit in half, it also insures that the business man will find a conveyance leaving for his destination within a few minutes of any time that he may wish.