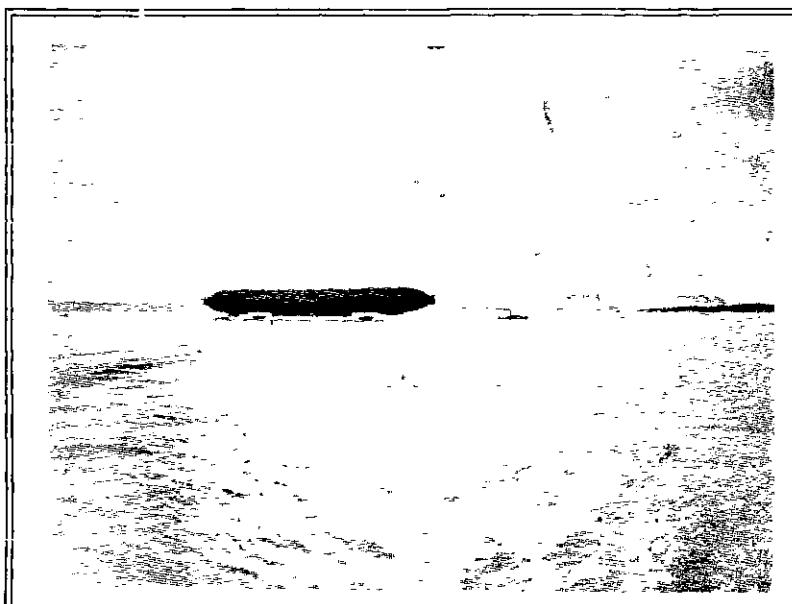
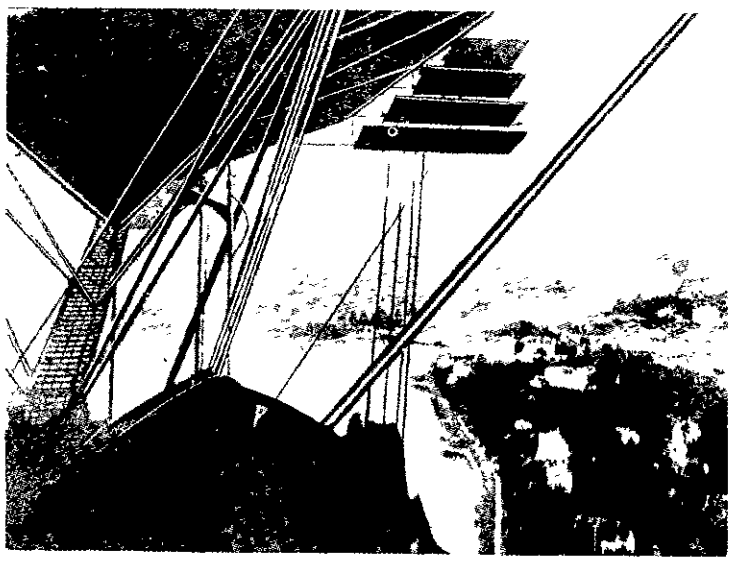
the type has got some command of the air, as the passengers noted when the Count forced his vessel through the defile. Our illustrations show the runs of the ill-fated ship. These are from the volume which has done so much to work up the subscriptions of the Fatherland to the large amount cabled as already collected.

In dramatic suddenness of catastrophe Count Zeppelin was like Orville Wright. In the sequel there is not the least similarity, Wright still lies in hospital, while his passenger is in his grave. The Count, on the other hand, has been extricated by the Fatherland from his misfortune. As soon as the disaster was known a wave of generous patriotic sentiment burst forth all over the land, and the rush of subscription was methodised. A special issue of stamps with the old gentleman's portrait was sold, and went like wildfire, and a little book, profusely illustrated, giving the history of the Count and of his balloon from their earliest days was issued, which sold like hot cakes. Between them these two brought in the tidy sum of five million marks, or £200,000 of our money. The expenses must have been considerable, but whatever they were it is clear that the £100,000 the Fatherlad started out to get for the patriotic nobleman has been just about received by this time. It gives warmth of colour to the recently cabled story of the veteran carrying the German Crown Prince round the Fatherland in a newly-furbished old balloon, meeting the Kaiser on the way, who greeted the pair with the customary infallibility and terseness of expression.



GOING OUT FOR THE LAST FLIGHT.



IN MID AIR. Looking Down the Rhine Valley.

It is well, for some infallibility is wanted more than can be secured for the dirigible type by even national subscriptions, and fervent patriotism. Before the disaster the poor Count had worked himself to the pitch of infallibility, in an article contributed to a periodical on the subject of "The practical use of airships." It was a fascinating article dealing with the development of a fascinating subject. It was wise withal, and prudent. It did not conceal the author's opinion that the use of the dirigible must be confined for ever—on the scale of the Zeppelin construction—to Governments and very wealthy individuals. It was based on a theory worked out by the author that with the average force of winds prevailing throughout Europe, a dirigible may depend almost always on going anywhere it pleases. This is his way of putting it:—

"My airship travels 4000 kilometres, or about 2,500 miles, in four days, going at the rate of twelve metres a second, or 43.4 kilometres an hour Through a careful study of the hourly report of the speed of the winds given out by the meteorological stations, the stormiest day was planned that could be conceived of in the course of a year from the longest period of the most violent winds. By comparing such a day with days of moderate winds the conclusion was reached—for middle Europe at least—that the most difficult conditions for an airship to weather are presented by winds blowing in the same direction at the rate of six metres a second for four days in succession at a medium elevation. Under such highly unfavourable circumstances my airship would cover 1700 kilometres in four days, and would have on hand at the end a sufficient reserve of fuel. Thus, on the most unfavourable days of the year, the ship could travel from Berlin to St. Petersburg, Moscow and Constantinople, though to reach the last two places would require nearly four days. On an average, under favourable circumstances, about thirty hours would be required: under less favourable circumstances about forty It would, therefore, make better time than the speediest train of to-day."

On this basis the Count built up a conclusion that the airship, once its capacity is known, could, by confining its voyages to half that capacity, be very usefully employed in new lands, or for strengthening a country's hold upon colonies into which no railroads as yet conduct, travelling by short stages of 300 kilometres each, as such short stages (there and back) require but little fuel. Under such circumstances the number of passengers could be comparatively large, as also the weight of cargo carried for making good stations at intervals in the new country.

Knowledge of the winds, he proceeded to explain, is far more necessary for flights over the ocean than for flight over the land. At present he regarded a flight of 1000 kilometres as the limit of travel over the ocean, but it is a matter of the prevailing winds entirely. As to war, he thought his airship would certainly be very useful for various purposes, such as scouting and striking the enemy's shipping. In commerce he ventured to say that most varied enterprises may be undertaken, and he even went into figures to prove that a capital of £40,000 could establish a balloon service between Berlin and Copenhagen with both certainty and a profit of 10 per cent., making a hundred trips a year both ways. But he planned another excursion, which, running between Stuttgart and Lucerne, might be made to pay 100 per cent. on the outlay, by its appeal to the Germans to visit the most famous places in the history of the Fatherland. He concluded with a short dissertation on the need for international agreements as to the use of the atmosphere by the airships of different nations.

"But why do I proclaim," he asked in conclusion, "aloud my aeronautic profession of faith. Why do I call attention to the extraordinary capacity for development of the rigid system by calling attention to past performances and pointing to scientific truth? Because the time is not so near as it appears to be when deeds will prove the futility of every doubt. Who will guarantee that such accidents as have occurred will not occur again?" But come what may, he was prepared to consecrate the rest of his life to perfecting the work to which he has put his hand.

Now a careful perusal of the account of the journalist who made the above trip in Zeppelin No. 4 will convince the most sceptic that the airship in question had got far beyond the point to which Wellman had advanced when he came to such terrible and decisive grief in his attempt to reach the North Pole. That can be seen in the episode of the struggle of No. 4 through the defile between the two hills so well described. The episode certainly showed a capacity for struggling with a certain amount of success against a moderately high wind. But the pace of the airship as stated by the Count in his article, 43 kilometres an hour, causes a limit to loom up which is fatal to the allegation of certainty of the voyages. Moreover, the Count, in the article, allowed for every possible contingency except two. One was the liability of the dirigible to be blown to leeward, and the other, the very contingency which wrecked the balloon with such swiftness of destruction. There was no shelter, by the way, when he was forced to camp for lack of fuel. And why was the fuel lacking? Enough had been put on board for the distance contemplated, and to spare. The shortage was, according to the accounts which have reached us, due to leakage. But why was there leakage? Probably because the gas bag had been unduly strained by the fight to force the ship ahead against the wind through the pass. Forced to descend for lack of gas, the ship was caught in a storm and wrecked without any resistance or delay whatever.

All these considerations, however, have no effect on the opinion of the German people or of the German Government. The Count's dirigible is in favour, he has obtained ample funds to build another and stronger ship, and he will experiment further with the ships he has already built. Once more he is careering through space, once more has he the most distinguished people of the land for his passengers, once more will he make a bold bid for the mastery of the air.

Zeppelin's faith is not dead, and he does not stand alone as a believer, for the Governments of all countries are building dirigibles as fast as they can. In spite of accidents in great variety they continue the race for the possession of the largest air fleet.

The veteran has a great nation behind him. But he wants more, he wants the verdict of science on accomplished facts. But science is standing back from him.

Here is what a veteran has to say on the subject:—

Hiram Maxim has always contended that the only machine which can ever achieve success is the heavier-than-air type. The British, French and American Governments accept this partially, for they are spending money on aeroplanes. Germany on the other hand, goes strong for the "dirigible," notwithstanding the Zeppelin disaster. Sir Hiram Maxim's words are worth quoting:—"It has always appeared to the writer, that it would be absolutely impossible to make a dirigible balloon that would be of any use, even in a comparatively light wind. In order to give a balloon sufficient lifting power to carry two men and a powerful engine, it is necessary that it should be of enormous bulk. Therefore, not only is a very large surface exposed to the wind, but the whole thing is so extremely light and fragile as to be completely at the mercy of the wind and weather. Take that triumph of engineering skill, the "Nulli Secundus," for example. The gas-bag, which was sausage-shaped and 30ft in diameter, was a beautiful piece of workmanship, the whole thing being built up of gold-beater's skin. The cost of this wonderful gas-bag must have been enormous. The whole construction, including the car, the system of suspension, the engine and propellors, had been well thought out and the work beautifully executed; still, under these most favourable conditions, only a slight shower of rain was sufficient to neutralise its lifting effect completely—that is, the gas-bag absorbed about 400lb of water, and this was found to be more than sufficient to neutralise completely the lifting effect. A slight squall which followed entirely wrecked the whole thing, and it was ignominiously carted back to the point of departure."