

COMET LIKE TRANSIT of the FUTURE in the OCEAN of the SKIES

AS FORESEEN BY EMINENT AERONAUTICAL
AUTHORITIES, SCIENTISTS AND INVENTORS
WHAT WILL BE THE ULTIMATE TYPE OF AIRSHIP?

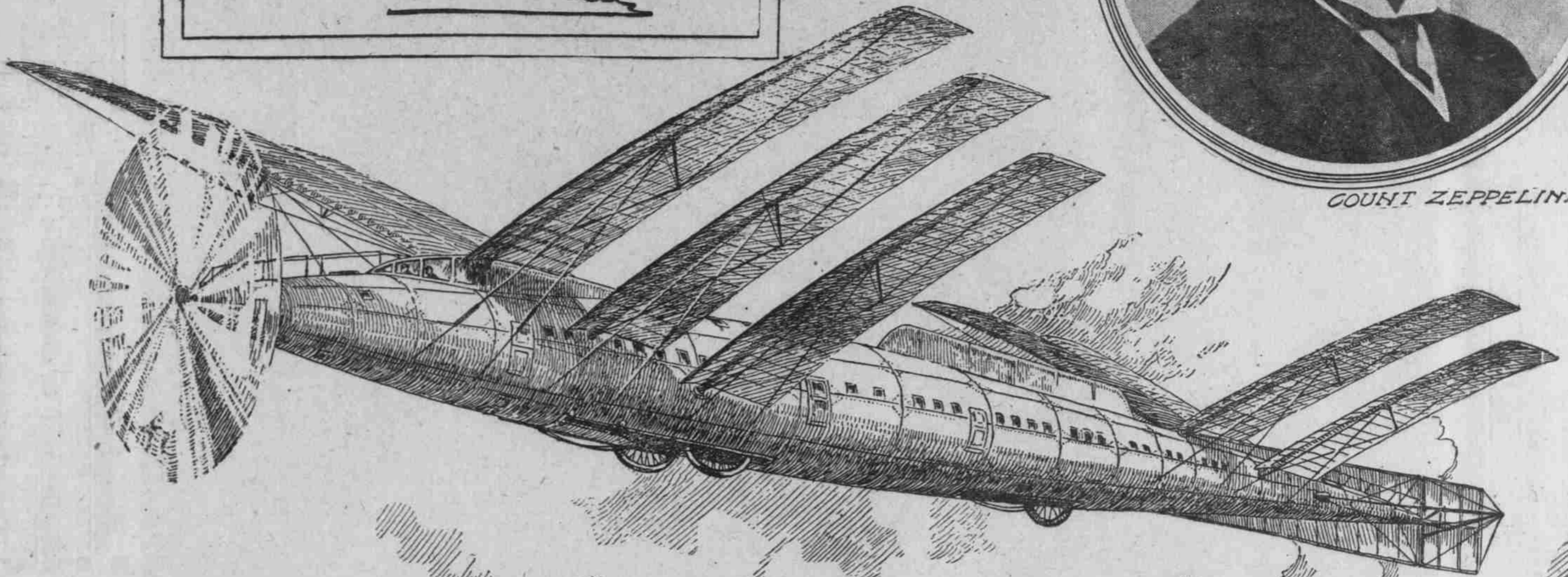


COUNT ZEPPELIN.

DRAWN FROM SKETCHES MADE

BY

Farman



THE air flights of Henry Farman in New York, the trials with dirigibles and aeroplanes at Fort Myer, the remarkable performance and the wrecking of Count Zeppelin's airship in Germany, the surprising demonstrations of the Wright brothers' aeroplane in France and the increased activity of aerial experiments have caused a tremendous general interest in sky flight. Aerial navigation has ceased to be a subject to employ the interest of purely scientific experimenters. It is now a subject of deep National import, and in the remarkable symposium which is here presented will be found much to interest technician and layman alike.

They are expressions of opinion and forecasts from the most eminent aeronautical experts and scientists in the country; here and there, flashing amid matter of fact details of mechanical construction, are previsions of the future which read like the conceptions of Jules Verne or H. G. Wells. They make a dazzling page in the Arabian Nights of Science. Altogether it is a most notable grouping of opinion on a most fascinating subject.

By Henry Farman

The flying machine within ten years will replace the automobile.

I AM sure that within the next 10 years the flying machine will have taken the place of the automobile. It will first come into popular use as a high-speed sport vehicle. Then it will become a dangerous weapon of offensive warfare, compelling universal peace. Only a little later it will be found carrying special delivery and registry mails, thus establishing its commercial value.

Not the scientist, but the daredevil devotee of speed will force upon the public the acceptance of wing flight. Men whose names are now bywords in the world's desire for rapidity of action will be found driving planes through the air at an energy yet undreamed of in the motors of today. The spirit of rivalry aroused by furious locomotion will attract to the aeroplane the very men who lifted the automobile out of a mere pleasure vehicle by making it a racing machine. As the automobile quickly developed into the foremost type of a distance-killing and time-conquering engine, so the flying machine will fill the popular mind as a vehicle possessing elements of commercial utility. With this irresistible stimulus there will grow the desire to make use of its dominant speed and freedom of trackage as the method of communication so long the dream of the thinker.

The lightning warfare of today and of the near future cannot reach its ultimate purpose of universal peace unless it employs the swallowlike swiftness and the hawklike stroke of the aeroplane. As the torpedo-boat and the submarine of military invention are making less and less the effectiveness of the battleship, with its terrific armament, so the flying machine will spy out the enemy, put out of commission the greatest fortifications and with marvelous celerity attack and hurl the bolt that will destroy the proudest aerial cruiser of the future.



CAPTAIN TOM BALDWIN

fulness for dispatching written communication now transmitted by the rail. As steam supplanted the postboy and the hours and days between the lengths and the breadths of continents. The flying machine of the next decade will only slightly resemble its forerunner. It will be a smaller vehicle. Its wings will have been clipped. Its motor will have shrunk in weight and size, but its energy will have increased enormously in proportion to the losses in bulk. It will be able to navigate the treacherous air currents in the canyon street of modern cities. Where it is now relegated to unobstructed surfaces, it will then fly over and between and under roofs, walls and bridges.

NOW the fire chief's automobile dashes through crowded streets, scattering the life of the city and thrilling the startled people. Then the flying fire apparatus will skim overhead, sounding its alarm with the blast of its whirling blades. Leaving its garage at the Bronx, it will have reached the fire at the Battery in seven minutes. I am told that the distance is nine miles, which is well within the capacity of motors designed and soon to be mounted on aeroplanes now in course of construction. As an example of the terrific speed already accomplished by the aeroplane I might mention the Flying Fish, my latest development and the embodiment of all my advanced knowledge, keyed to travel 90 miles an hour. M. Bleriot only the other day on the field of Issy, at Paris, shot 50 feet into the air at a speed of 60 miles an hour upon a monoplane, or two-winged

darting here and there with the rapidity and certainty of a swallow.

Naturally the layman would ask how does M. Bleriot or any other aviator ride on the air. This is easily understood when we begin to ask what is air. No one, even the scientist, has been able to answer this question. The easiest definition is that air is a body with enough stability and with enough resistance to support any amount of weight if these weights are so arranged as to take advantage of this resistance. The birds are provided by nature with an apparatus enabling them to ride upon it. Man has only been able to achieve this end by mechanical appliances. His only model has been the bird. He started wrong by imitating the flapping of the bird's wings. This action was the bird's only motive power. No such thing as a gasoline engine had been designed by the Infinite. Man found that the gasoline motor would take the place of the flapping wings. The most significant thing to him was that the bird was able to remain suspended in the atmosphere on extended and motionless wings and sail upon them. This gave the experimenter his clue. He realized that mechanical flight was a question of merely sailing on the air with rigid wings, driven edgewise through the air by a motor; the velocity of whose propeller would be sufficient to enable the resistance of the air against the planes to support the machine. It will be seen that these principles are very simple ones

TYPES OF AIRSHIP
MR. FARMAN
PREDICTS FOR THE FUTURE

and only follow ideas that the most untrained mind can thoroughly grasp.

ALTHOUGH these principles are simple, they do not yet admit of flying. say, from the roof garden of the Hotel Astor to Brighton Beach, as one of my visitors recently suggested, and yet the recent development of the flying machine has carried the airship a little further than was the automobile after a corresponding period of experiment. The way to fly is no longer a secret. We know how to sustain ourselves on the air and how to overcome its disturbances, which was the most difficult problem of man flight. The perfection of the motor is the thing upon which all experimentation is centered. It is only the unreliability of the motor and the inability to carry sufficient fuel which prevents almost unlimited flight. The progress made in the motor is told by the figures of the two last years. From 20 yards we have advanced in that time to 12 miles, done in 20 minutes and 20 seconds. Within another year I expect to have a motor which will enable me



PROF. GRAHAM BELL.

to go as high as the amount of fuel will carry.

At a mile altitude it is not necessary to have any fuel in order to return to earth. The motor could be shut off at that height and the machine be permitted to glide down on the air under the direction of the operator and as gently as I landed during my flights at Brighton Beach. In ascending to the height of one mile an aeroplane will not traverse the same distance needed to make the descent. It will rise against the wind and circle to that altitude like a hawk, covering not more than possibly two miles of lateral distance. A good many people have wondered why I stopped my motor before descending to the ground. If I came down to the ground with the motor running at full speed it would break the machine by reason of the tremendous impact with the earth. A bird falls down from a tree or fence and lands lightly. The same principle is followed with the aeroplanes. The ability thus to imitate the landing of the bird emphasizes the stability of the air. My machine, weighing over half a ton, is

sustained by the wing surfaces after the stopping of the motor.

One of the most popular uses to which the aeroplanes will be placed will be flying as a pastime. The simplest device for flying the air is the glider, a machine having rigid wings on either side and handles to which the operator clings. The take-off is usually from the top of a small hill, and when one runs forward and leaps in the air, the planes catch a grip on the atmosphere and carry the rider gently down the slope. Aeroplane racing will become as popular as automobile road racing has hitherto been, and I confidently predict international contests will be held similar in every respect to the motor races within a very few years.

THE cost of making an aeroplane will undoubtedly prevent its popular use for some years, but unquestionably companies will be formed soon which will produce the at present complicated vehicles at a purely nominal sum. Aeroplane clubs will spring into being and aeroplane clubhouses of imposing and unique design will be erected in the suburbs of all the large cities.

In order to fly an aeroplane must have great speed. It is unlike the dirigible balloon or the water craft, which can float in its element at will. Stability can be obtained only by gaining air resistance, and air resistance can be gained only by hitting the air hard, which is only one way of defining speed. I doubt very much if it will ever be used to carry great loads. Its capacity is limited and the time seems far distant when it will be able to carry more than two or three or four persons, and it is looking far into the future to picture it as having a capacity to carry a dozen men with the facility exhibited by the dirigible balloon.

There is no reason why the future aeroplane cannot be used by the business man with just as much ease as the automobile runabout. The great speed will make it popular with the dweller in the suburbs who desires a

quick run to and from his office. The flights will probably be made higher in the air, so that if anything breaks down the operator will have plenty of space and time in which to select his landing. With a little experience one can learn to land an aeroplane within a foot of the place from which he started. It will be necessary to fit up these landing places on all office buildings and on the roofs of many public buildings, such as hotels, railroad stations, etc.

But it is in warfare that the aeroplane is destined to work the greatest revolution of any invention known to man. Within a short time it will have been recognized as a war engine by every advanced nation in the world. Let us consider briefly how this aerial torpedo-boat can be employed. Battleships will be used as a means of defense but of offensive warfare. The aeroplanes can be stored in sections and assembled at an hour's notice. It will have a speed of sixty miles an hour or more, equal to that of the fastest express train. For scouting purposes at sea it will have no equal, and its radius of action will very soon be increased to several hundred miles. It will be able to carry sufficient high explosive to sink any battleship that floats. Great accuracy can be obtained by dropping explosives from dirigibles or aeroplanes, which has been demonstrated by successful experiments.

When the fact is taken into consideration that an aeroplane can be operated at night some adequate idea can be gained of its effectiveness as an implement of war. It is doubtful whether the big dirigibles, like Zeppelin's, will ever prove at all effective in naval warfare. An aeroplane is far more manageable and speedy in action than a dirigible. The aeroplane of the future will be able to swoop down on the dirigible and destroy it almost before the latter can get into action.

It is by its naval power that the strength of a nation is judged. When the time comes when an aeroplane can leave the deck of a cruiser and fly