The flight proceeded with perfect regularity and success, for the most part at a height of from 60 to 75ft., until the oncoming darkness, and that alone, made it desirable for Mr. Wright to return to the earth. He had flown for 1hr. 31min. 25 sec., and had covered an official distance of 66 kilometres 600 metres, and an actual distance of considerably more—probably at least as far as from London to Brighton. As he only expended 22 litres of petrol, out of the 50 which he had on board, and two litres of water, out of the ten with which he started, there seems no reason why, with better luck in the afternoon, he should not have flown for three hours and a half.

By this magnificent flight Mr. Wright appears to be the holder—until he is beaten—of the Michelin Cup for the longest flight up to December 31 and of the prize offered by the "aviation" committee of the Aero Club for the best flight up to September 30. As the conditions for these prizes stipulate that competition for them must take place between sunrise and sunset, and be measured between the first and last turning posts passed in full flight, Mr. Wright will only be able to count for them so much of his total distance as he covered before sunset—namely, 38 kilometres."

This is important, as establishing a possibility of 137 miles on a consumption of 50 litres.

In the remaining days of September Mr Wright made some very remarkable flights. In one of these he took with him M. Tissandier, the son of one of the most famous of the aeronauts of the Second Empire, and the days of the subsequent siege, a fact which lent considerable dramatic interest to the flight. The son of the veteran balloonist said to a reporter that he "tried to have some sensations, but could not manage to get up anything. In fact, the only sensation he had was one of complete safety." After that Mr. Wright carried several passengers, one at a time. Of the flight on September 28th, the most remarkable of the whole series, the description of the Times correspondent who saw it, which we quote, is one of the most interesting in the record of aviation. After his usual deliberate examination of his machine, he started at about 1.45, and flew 1hr. 7min. 24 4/5sec. Of this time only 1hr. 7min. and 11 2/5sec. counts for the aero-club competition, but during the latter period he covered 48 kilometres 120 metres, thus raising the previous record achievement by about nine kilometres. "When he alighted about 20 yards from the turning post where I was standing, he explained that owing to the too free working of the lubrication pump he had run out of lubricating oil. Otherwise, he said, I could have gone on for two or three hours."

"Mr. Wright's habit is to speak the truth, and, indeed, so perfect is his control of the machine in a light breeze, such as prevailed this afternoon, and so regular the working of his motor, that there appeared no reason why he should not have continued flying so long as any petrol remained in his tank. He lost no water during the flight, and did not vary his speed more than a second or two per kilometre in ten kilometres." The machine flew, the correspondent added, with the steadiness of an express train about a height of 45 feet. During a flight of 55 kilometres on the 24th the wind got up, and the aeronaut found it hard work to struggle against the gusts, but the aeroplane behaved admirably, and the first 38 kilometres took only 31sec. longer than did the same distance earlier in a comparative calm.

It is interesting to note that during these exhibitions, Mr Farman has been making progress also, and on one occasion flew 34 kilometres in 36 minutes. Of his new machine it is said to have but little lateral roll, and to be under very good control. The weight carried was 650 kilogrammes.

The Wright Brothers.

It has been remarked that the conquest by the Wrights of the air is not more wonderful than their conquest of the public on two continents. Certainly the welcome accorded in the States was immense, and that in France nothing less. In the latter there is more of the dramatic touch. The land of Montgolfier, the inventor of the balloon, of Renard, the builder of the first "dirigible," of Santos Dumont, who first flew an aeroplane, and of Delagrange, who made the longest and the most sensational flight before the appearance of the Wrights, has, after bestowing ridicule on the brothers for their "profusion of advice and their economy of experiment," thrown itself at their feet with sportsmanlike readiness and promptitude.

The French journalists are never tired of contemplating Mr Wilbur Wright. They see in him a real bird; they talk of his "bird-like profile," they discuss his "unblinking eagle eye," they measure his "claw-like fingers," they dwell on his "hopping gait." All of which shows that the Gaul is nothing if he is not thorough.

The man, moreover, was peculiar, keeping by himself, living for his machine, protecting the same against all prying inquisitiveness. He camped in the machine's shed, slept in a cot alongside of the aeroplane, went to no hotel even for meals, but cooked for himself on a gasoline stove in the "Amurrean" manner; never spread his legs towards a cheerful club fire among his friends. Even the show of the aeroplane had no charms for him; for he would go out only when it suited him. Once there came ten thousand people to see him fly. He looked at them, went back into his shed, and calmly said that he wanted a little more practice in a breeze before he could think of showing in public. Delagrange, who went in to persuade him to make some sort of a flight, just to oblige all those people, was aghast at the failure of his well-meant attempt. "If it had been my case," said he, "I would have started out, even if it meant the smash up of my machine." But Wilbur Wright would not be drawn.

Another day a reporter tried to put him through his facings in a way the reporters have. Would Mr. Wright not fly across the Channel? No, Mr. Wright did not think that he would just yet. Why not? Only that it was a little too risky, and, besides, it would not prove anything more than a journey over land.

We remember when we were investigating the matter of flight, we were much struck by the fact that these brothers very persistently did everything for themselves, and we said so, especially noting how they had started out to invent an engine for themselves, rather than use the engines already in use by other people. They went all over the world in search of ideas before they were satisfied, and then they did everything for themselves. The same quality has struck the reporters and others. But these declare that the engine they made in their little bicycle shop at Dayton, Ohio, is heavier than the machines of Delagrange, Farman, and the others, and in comparison very clumsy.

An American writer in the *Independent Magazine* makes some very illuminating remarks about the brothers and their machine, thus:—The chief peculiarity of the construction of the Wright machines is the curvature that may be given at will to the aeroplanes by means of wires connecting the outer corners. The front edges are rigid, but the rear edges can be bent by moving a lever at the right hand of the operator. In making, for example, a turn to the left, the right wing is first tipped up at an angle, and therefore rises. But since it now offers a greater resistance to the air in this position, the machine would tend to turn towards the right, with this wing as a pivot. This is opposed by the use of the vertical rudder behind, which is manipulated by a second lever at the right hand. As soon as the machine begins to come round, both levers are reversed, and the left wing, offering now greater resistance, becomes the pivot around which the turn is made. A third lever at the left hand controls the horizontal rudder in front, steering the aeroplane up or down. This construction gives great stability, even in a wind, and however high it may be in the air when the power is shut off, it glides to earth at a gentle angle like a dirigible parachute. The Wrights have solved their problem in their own way, with no masters but the birds. Without money or influence, with no aid from the Government or the scientific research funds, they have worked out their invention in the good old American way, and have earned their success."

The Lift of Aeroplanes.

Draw a right-angled triangle, denoting the base by $A\ C$ and the verticle height by $B\ C$. The angle $B\ A\ C$ is then the inclination of the plane to the line of flight in still air, and the height $B\ C$ corresponds to the pitch of a screw. Suppose we assume $B\ C$ to be one-fourth of $A\ C$, say 1 foot and 4 feet respectively; the plane will then move the air downwards 1 foot for every 4 feet of travel. Assume the speed to be 44 feet per second; in one second therefore the air will be moved $44/4 = 11$ feet. V, the acceleration, therefore equals 11 feet per second. The total quantity of air moved per second is found by taking the sum of the lengths of all the leading edges of the planes. This sum multiplied by the distance moved in one second and by 0.08 and by V will give us the weight of air moved, and this weight multiplied by V and divided by 32 (g) will give the thrust, or lift, in pounds. If S = speed per second in feet on the line of flight, P the pitch = $A\ C/B\ C$ and V the acceleration = S/P, and L = length of the leading edges, we may write the formula as $0.08\ L\ S\ V^2/32$ = the lift in pounds. In Farman's case the speed S was 45 feet per second, L equaled about 96 feet—we do not know what V was, but assume it to be 10 feet—we get lift or thrust, $T = 96 \times 45 \times 10^2 \times 0.08/32 = 1{,}080$ pounds. It was actually 1,100 or thereabout.—Prof. Rankin Kennedy, in Engineering.

Aldus Manutius, a famous fifteenth century Venetian printer, had in his office a black boy, purchased from a corsair. The art of book production was at first so little understood as to be ascribed to Satan. The suspicion that the Evil One had something to do with the new art was intensified in Venice by the presence in the office of Manutius of his black servant. So strong was the feeling that there was grave danger of his place being wrecked by the rabble. Thereupon Aldus declared that any person not satisfied that the boy was flesh and blood could come and pinch him to make sure. The mistaken impression was thus removed; but before this time the name "Printer's Devil" had been attached to the boy, and has lived ever since as the nickname of the lad in a printing office.