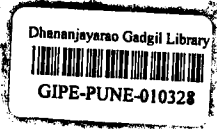




(Photo: Central Press)

CAPTAIN OLLEY.



A MILLION MILES IN THE AIR

A MILLION MILES IN THE AIR

PERSONAL EXPERIENCES,
IMPRESSIONS, AND
STORIES OF TRAVEL
BY AIR

BY
CAPTAIN GORDON P. OLLEY

The famous British air transport pilot who, since he left the ground in an aeroplane, as far back as 1915, has spent more than 10,000 hours in the air, flying a total distance of 1,000,000 miles—the equivalent of about forty flying journeys round the world

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I DEDICATE THIS BOOK TO MY
FELLOW-PILOTS EVERYWHERE,
WISHING THEM "HAPPY
LANDINGS" ALWAYS.

GORDON P. OLLEY.

*Air Port of London,
Croydon,
England.*

September, 1934.

PREFACE

IN writing this book I have drawn not only upon my own personal experiences, but have incorporated other incidents, stories, and impressions which I hope may prove of interest or amusement to the reader.

I should like to make it clear, to all my friends in the flying world, that this book is a volume written from the point of view of making the widest possible appeal—a book, in fact, for the general public. In preparing it I have visualised that great body of readers who, though they have no technical knowledge of flying, are keenly alive to, and interested in, the development of aviation as a new high-speed method of travel. At the same time, I hope those in the air world itself may find something to amuse them in the pages that follow. But one is apt to fall between two stools if one tries to make a book like this a compromise between technical and non-technical. It has to be one thing or the other. For this reason, aiming at gaining the attention of that big public who *must* be interested in air matters if we are to develop this great movement on a world-wide scale, I have written my book not for those who are already converted, but for those who want to be told, without the introduction of technicalities, something

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of this big, fine story of aerial progress by one who can write from personal experience.

I thought it would be helpful, right at the beginning of my book, to introduce a quite brief summary of the early days of flying. It seems to throw into a stronger relief all our more recent progress since the war.

GORDON P. OLLEY.

Air Port of London,
Croydon,
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PART I

SALUTE TO THE PIONEERS

I—THE FIRST BALLOONIST

ROMANCE is not dead. Far from it. Adventure is still with us. The only difference is that adventurers who used to achieve their exploits by land and sea now find scope for their ambitions along the highways of the air.

To-day wings are taking the place of sledges, snow-shoes, and canoes; and those heroes of the early phase of flying have handed on a wonderful tradition to our pilots of to-day.

It is a great pageant which passes before one's eyes as one looks back over the history of the air! Near at hand that pageant moves in clear view, but away back, stretching into the centuries, the figures appear dim, but none the less fascinating. It is the pageant of man's greatest conquest.

A very great story this is, truly! Hitherto, however, it seems to have been the mechanical rather than the human aspect of these triumphs which has been apt to loom most largely in our thoughts. The machines, in their ingenuity, have seemed more wonderful than the men who gave all they had—often even their lives—to the evolution of these machines. But when one goes on living with this subject from day to day, and year to year, there is a growing fascination in the purely human story of all these strivings. Man, in this

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epic of the air, seems to become greater than his machine. The machine is there, with its wings ready to bear it in a first fluttering flight ; but one's thoughts linger more upon the tenacity and courage of those human beings who, braving ridicule and death, have written their names indelibly on the world's history.

It is the world's greatest epic, this, when one views it in all its heroism, pathos, and splendid conquest. Poorly repaid, though, were many of those men who invented, planned, and toiled so that in due course we could annihilate distance—as we are already doing—at speeds impossible in any medium save the air.

“But though it begins by opposing the good we would do it, the world is just in the end.”

So wrote François Pilatre de Rozier, the first man to leave the earth's surface in any kind of aerial craft. A remarkable man, this—intelligent, energetic, daring. From the earliest age he had evinced a keen and inquiring mind. After studying chemistry he became a successful lecturer ; and he was in Paris in 1783 when the King and Queen of France, and a great gathering of famous folk, watched Montgolfier's hot-air balloon soar up from Versailles, carrying in a wicker basket, slung beneath it, the first living creatures which ever left the ground by mechanical means—a sheep, a cock, and a duck.

What a scene, that, as one looks back on it from our viewpoint to-day ! So excited were the ladies of the Court that, though rain began to fall, they

THE FIRST BALLOONIST

risked spoiling their beautiful costumes rather than miss the sight of that balloon, with its cargo of animal passengers, ascending above their heads.

Away through the air sailed that balloon, until presently two gamekeepers who were in a wood at Vaucressen saw it come floating down towards them, the wicker cage making its contact with the ground without injuring the animals it contained. In fact, the sheep, a stolid animal, was found to be eating some of the fodder which had been placed at the bottom of the basket. One of the gamekeepers, when he took the cock out of the basket, noticed that one of the bird's wings appeared to be injured. This, however, was not, as was first thought, caused by any strange effects of having passed high through the air, but was due simply to the fact that the sheep, in its restricted movements within the basket, had kicked the bird accidentally.

After this the suggestion was made that a far larger balloon should be built and that a man should make the experiment of being the first human being to leave the ground on a voyage into the air. The King, when he was asked to give his opinion, said he thought that, in view of the risks that might be involved, it would be best to take a couple of criminals who had just been condemned to death, and to make the experiment with them. If they were killed—well, they would only be meeting their fate in a different way; whereas, if they came down alive, they could be rewarded by giving them their freedom. This

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seemed a capital idea to many people. But it did not appeal to Pilatre de Rozier, who submitted an eloquent appeal for the consideration of the King. He had, he said, already made many studies of the navigation of the air. Already, too, he had been in personal touch with those two pioneers, Stephen and Etienne Montgolfier, and he expressed the opinion that it would be a thousand pities to accord to a couple of criminals the honour of being the first men in the world to leave earth for air.

The King saw the point of this argument, and agreed to alter his previous decision, saying that de Rozier had the royal permission to make the experiment, granted that he felt ready to take the tremendous risks which appeared involved.

Even after this, it seems, de Rozier had to make several appeals to the Montgolfiers before they agreed to construct a balloon large enough to raise a man. But eventually this big balloon was completed and, after it had been inflated with heated air, it lifted de Rozier to a height of 80 feet. That, however, was a captive ascent, and de Rozier said that he would not be satisfied until he had made a free voyage through the air from point to point. This wish he gratified soon afterwards, passing over Paris to the wonder of its inhabitants, and having a passenger with him in the balloon in the person of the Marquis d'Arlande, who was a cousin of the King.

The courage of de Rozier was equalled on that occasion by the bravery of the Marquis. The latter, happening to cast a glance at the neck of

THE FIRST BALLOONIST

the balloon while they were above the outskirts of the city, saw that it was on fire in several places. Quickly he seized a wet sponge, which had been provided for such an emergency, and extinguished the flames before they could spread. When they landed the crowd seized de Rozier's coat and tore it up into small pieces in order that they might have personal souvenirs of so great an event.

De Rozier was a hero. But he was also modest. Many people asked him how it was that he had the nerve to ascend into the air. He answered, simply, that he felt no fear.

"We have lived long enough," was one of his observations, "when we have added something to humanity."

That remark had a somewhat sombre ring. It seemed, in a way, to foreshadow a catastrophe which impended: because de Rozier was a figure of tragedy as well as of triumph. He was not only the first man who ever left the ground in a balloon. He was also the first aeronaut in the world to lay down his life in a balloon disaster.

It was two years after his first ascent. He was now eager to make a balloon voyage across the Channel from France to England. Here, however, he was forestalled by another early maker of aerial history, Blanchard, who managed to gain the honour of a first balloon flight above the Channel by crossing with a favourable wind from Dover to Calais. De Rozier had spent days waiting for a suitable wind on the French coast—as, many years later, did those heavier-than-air pioneers who

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sought to be first across the Channel by aeroplane. For nights he had gone sleepless, and then one afternoon his chance came. He ascended with a friend named Romain in a balloon of his own design. Up they went, being at first carried seaward by the wind ; but then the balloon appeared to enter a perfectly calm region of the air. It hovered motionless for a time. Then those watching from the ground saw what appeared to be a small black cloud form just above it. And then as they gazed the balloon lost its shape suddenly and fell to earth, crashing near a road and causing the instant death of its two occupants. It had apparently either burst or caught fire in mid-air.

Though de Rozier's death came as a heavy blow to his fellow-countrymen, the torch he had lit was not extinguished. Others seized it quickly. The quest gathered impetus and went on. He was the first, but unfortunately not the last, to lay down his life while forging one of the links of that aerial chain which, stretching onward from past to present, now places at our service all the wonders of modern aviation. It is we—and never should we forget it—who are beginning to reap the reward of the labours of a great and devoted band of pioneers.

II—MAKERS OF AERIAL HISTORY

ONE of the most remarkable stories from the early, far-off days concerns the small pioneer balloon which was constructed by Professor Charles, a French scientist who was making aerial experiments at the same time as were the brothers Montgolfier. The balloon of Professor Charles was filled not with hot air but with hydrogen. The Professor had designed a plant for the production of hydrogen which was a wonderful piece of work in its day; and after much toil a small balloon was partly filled with this gas. Stephen Montgolfier was there to see it ascend, and Professor Charles—by way of graceful compliment—handed him a little pilot balloon which was sent up to test the direction of the wind. Stephen released this, and it sailed aloft; and then the bigger balloon took the air, coming down presently in a tiny village to the terror of the inhabitants. One of them, creeping near, fired a shot-gun at the balloon, which was heaving up and down as it lay on the ground. This caused some of the gas to escape, and the smell of it drove the villagers away in a panic, making them believe they were dealing with some terrible and noxious monster.

Presently, however, the balloon collapsed, and then the villagers, becoming braver, tore it to

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pieces and dragged the fragments to and fro behind a horse. Which reminds one of the reception which Lunardi, another maker of early aerial history, had when he came floating down over a field at Standon, near Ware, after having been the first man to make a balloon voyage above England. He threw out a rope as he neared the ground, and called to some labourers to hold it for him. But they refused to touch it, saying that they would have nothing to do with anyone who "came riding down on the devil's horse."

A young woman working in that field was, however, more courageous. She ran without hesitation and seized the rope, whereupon the men, ashamed of their previous reluctance, hurried forward also to help.

A great French patron of science, the Duc de Chartres, financed the building of a cylindrical balloon, or crude type of early airship, in which four people sat with light oars, "rowing" it through the air. And the Duke did more than this. He even went up in that machine himself—and almost lost his life in so doing. For after it had ascended a little way it threatened to burst in mid-air, and had it not been for the presence of mind and swift action of the Duke, who pierced a hole in the envelope, they would certainly have crashed to their death. As it was, a rough descent was made in a park near Meudon.

Amazing were some of the projects with which inventors came forward, seeking the aid of rich patrons. That eagles should be trained to raise

MAKERS OF AERIAL HISTORY

a man into the air was one of the schemes propounded; and some of the others were equally fantastic.

Naturally, the early voyages in balloons, which drifted at the mercy of the wind, caused inventors to think of some way in which a gas-filled air machine could be guided and controlled. One well-known member of the French Academy, M. Brisson, wrote a paper, which he read as far back as January, 1784, outlining plans whereby aerial voyagers in specially-designed navigable balloons might fly from point to point independent of the wind. What M. Brisson suggested was a large gas-container of a cylindrical shape, with a car suspended beneath it. In this car men were to be seated at large, light, wide-bladed oars, with which they were to row the machine through the air. But all schemes such as these failed to achieve success. An actual test was made at Dijon with a balloon worked by two pairs of oars, one pair being in the car, and the other pair being attached to the envelope, and being worked by a crank from the basket. But even the most strenuous "rowing" failed to do more than make the balloon move a little sideways as it drifted before the wind.

Among those who, in those far-off days, were convinced that any system of "rowing" balloons through the air was unpracticable was General Meusnier, a French engineer officer. He devised, for a large navigable balloon which he had planned, three "rames tournautes," or revolving oars; and according to the drawings which he made

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of these, showing them in position just above the car of the vessel, it is clear that he intended them to serve the same purpose as do the propellers of an airship or aeroplane to-day. These "revolving oars" were, in fact, air-screws. But, failing any satisfactory mechanical power, Meusnier could do nothing better than suggest that his screws should be revolved by human power; and for this and other reasons the big machine he advocated was never built.

III—THE FIRST AIR CROSSING OF THE CHANNEL

A MEMORABLE event, in 1785, was the first aerial crossing of the English Channel by a balloon. Blanchard, a famous aeronaut, was the pilot, with Dr. Jeffries—an American scientist—as his passenger. It was on January 7th that the balloon, carrying thirty pounds of ballast in addition to its two occupants, rose from Dover Castle about midday. Blanchard had waited for a favouring wind, and the balloon was quickly borne out towards mid-Channel. Then it began to lose height rapidly. Blanchard discarded about half his ballast. But this stopped the descent only temporarily. In a few minutes the balloon began to sink again. Blanchard was obliged to throw over all the rest of his ballast, and soon had to follow this by heaving over a big bundle of pamphlets. Even this did not check the balloon's descent for more than a minute or so. They were now somewhere out beyond mid-Channel, and falling towards the water fast. Things looked serious. Blanchard had a spare coat with him. This he heaved over the side. The doctor, too, pitched over a number of articles. Still the balloon kept nearing the surface of the water. The occupants of the car put on cork jackets,

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fearing the worst. Then, however, just at the last moment, the balloon ceased to fall, and they crept on, full of anxiety, until they were carried by the wind over the French coast, coming to the ground ultimately in the forest of Guines, in Artois.

IV—FURTHER LINKS IN THE AERIAL CHAIN

IN Vienna, in 1809, there was a watchmaker named Jacob Degen who, abandoning his trade to take up the study of aeronautics, built a man-carrying machine with deeply concave wings. These were operated by a valvular action, and imitated the beat of a bird's wing. There is a good deal of mystery about what Degen actually did with this apparatus. One report, which became current in London, was to the effect that, by his own muscular power, he had lifted himself fifty feet or so into the air. Another story—more likely to be true—credited him with having suspended the machine beneath a balloon, measuring its lifting power by means of instruments he had devised. An interesting fact in connection with Degen's work was that the news of it which reached England induced the famous Sir George Cayley to embark upon a series of aerial experiments.

Sir George was the first research-worker in this field to present the problem of aeronautics in an ordered form. He carried out a long series of experiments to determine the lifting effect obtained from wing surfaces moved through the air at slight inclinations to the horizontal. He suggested the use of tail-planes as a means of obtaining longitudinal stability in a heavier-than-air machine. He

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indicated how wings up-tilted at an angle would improve lateral stability. He built a large gliding machine which, when launched from a hill, would fly with perfect steadiness to the valley below, and which would turn from side to side according to the inclination of its rudder.

It is on record that when anyone ran forward with one of these big gliding machines it was sufficiently large, and developed enough lift, to raise them off their feet for a few yards. It is said that a coachman employed by Sir George attempted to make gliding flights supported by this apparatus; the result, however, being a fall which led that coachman to observe, somewhat ruefully, that his job was driving horses, not flying machines.

It was in 1809 that Sir George, when lecturing before the Institute of Civil Engineers, indicated that in his view the problem of human flight would be solved by the application of power to an inclined plane. He foresaw many of the features of the flying machine with which man did ultimately conquer the air. It would be impossible to stress too highly the importance of the conclusions he reached as to the necessity for employing a curved rather than a flat surface in the wing of any man-carrying machine.

Now another remarkable figure appeared on the aerial stage—William Samuel Henson. It was he who, in 1842, filed his famous specification for "improvements in locomotive apparatus and machinery for conveying letters, goods, and

FURTHER LINKS IN THE AERIAL CHAIN

passengers from place to place through the air." What Henson proposed, but was never in a position to build, was a large steam-driven monoplane—a machine which was referred to at the time as "the aerial steam carriage." Many pictures of this machine were produced, one showing it in flight to China; while cartoonists made merry at the idea. Henson had calculated that one square foot of wing area would sustain half a pound of weight when his machine was moving through the air. He planned to have a total surface of 9,000 square feet, and the machine was to be driven by a steam engine developing from 25 to 30 horse-power. So many difficulties faced him, however, that he had to content himself with building a large model. This, a monoplane, had a wing-span of 20 feet. There were two propellers behind the main surface, and at the rear the machine had a fan-shaped tail which could be opened or closed, or moved up and down.

Henson was joined in his experiments by John Stringfellow, an extremely able engineer, and together they built several more models, in one of which they fitted a small specially-designed steam engine. All these models bore a remarkable resemblance to the man-carrying monoplanes which appeared, and were flown successfully, at a later stage in aerial history. It was in 1847 that Henson and Stringfellow took out one of their big models to some neighbouring downs, and attempted a free flight with it; but this was not successful.

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Then, after this, Henson left England; but Stringfellow continued to work alone, producing a series of models of his own design. With one of these he experimented in a large empty building. To launch the machine, he made it run along a wire. Free flights across half the length of the building were accomplished, the machine showing a tendency to rise after it had left the wire, as well as to continue in horizontal flight. These successful trials had the historical significance of being the first of their kind in the world with a power-driven model flying machine of the heavier-than-air type.

Stringfellow's machine had a 10-foot wing-span. It was 2 feet across the widest part of the wing, the total area being about 14 square feet. The power-plant was a steam engine with a cylinder three-quarters of an inch in diameter and with a 2-inch stroke. Between the engine and the crankshaft was a gear giving three revolutions of the propellers to each stroke of the engine. The two 4-bladed propellers were 10 inches in diameter. The total weight of this famous model, with its engine, was 8 pounds.

V—PIONEER AIRCRAFT DRIVEN BY STEAM
AND ELECTRICITY

ANOTHER milestone in air history came in 1852, when Henri Giffard, a French engineer, convinced of the futility of the man-power airship, designed a dirigible to be driven by a steam engine weighing 100 pounds and developing approximately 5 horse-power. Giffard filled the envelope of his airship, which had a capacity of 88,000 cubic feet, with coal gas. But the power developed by the steam engine was so small that the dirigible moved through the air very slowly, and never succeeded in making a circular flight. This little airship showed, however, that it would respond to its rudder, and Giffard was thus able to demonstrate the feasibility of manœuvring a power-driven lighter-than-air machine.

It was in France, in 1855, that some remarkable experiments in the heavier-than-air field were carried out by Captain Le Bris, a retired sea captain. He designed and built large man-carrying, bird-like machines, fashioned on the lines of the albatross. In one trial, after he had been towed by a cart against the wind, he rose in the air to a height of nearly 300 feet, his craft exercising such an upward pull that when the carter, by some accident, became entangled

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in the rope attached to the glider he, too, was lifted off his feet and dangled, shouting, in the air.

The year 1866 saw the foundation of the British Aeronautical Society, the oldest body of its kind in the world, and at its inaugural meeting Mr. F. H. Wenham, a well-known engineer, read an important paper in which he indicated the lift that might be obtained from using long, narrow sustaining surfaces in heavier-than-air flying machines. What he suggested was a craft with two or more curved surfaces placed one above another, so as to secure a maximum of lifting power within a reasonable space. The type of construction he advocated was, in fact, that of the biplane or triplane as afterwards adopted. In 1868 the Aeronautical Society organised an exhibition at the Crystal Palace, and bird-like machines were on view in which their inventors proposed to flap their way through the air. Balloons, kites, and airships also figured among the exhibits, a place of honour being occupied by a model triplane built by Stringfellow. This pioneer air exhibition was visited by the late King Edward—then Prince of Wales—and he was particularly interested in the Stringfellow machine.

The French Government carried out a series of airship experiments in 1870, the machine, which was 119 feet long, being built to the designs of Dupoy de Lome, a naval architect. A revolving screw 30 feet in diameter was worked by the muscular efforts of eight men. Dupoy de Lome had decided to rely upon man-power because he



ONE OF THE BIG AIR-BOATS OF THE EMPIRE FLYING MAIL GLIDING DOWN AT DUSK.

AIRCRAFT DRIVEN BY STEAM AND ELECTRICITY

held the view that the steam engine, as then applied to airships, was dangerous from the point of view of the risk of fire. In one of its trials this man-power dirigible was "rowed" through the air, with fourteen people on board, at about eight miles an hour.

In 1874 a young French experimenter, Alphonse Penaud, decided to try twisted elastic as the motive power for small model flying machines. This proved successful, and Penaud's models became the forerunners of many ingenious toy machines. Penaud also worked out plans for a man-carrying, power-driven monoplane.

The distinction of building the first model aeroplane to lift itself into the air after a run forward along the ground on a wheeled chassis was gained in 1879 by another Frenchman, Victor Tatin. He also made experiments with a model on a circular track in the Chalais Meudon riding school, these being watched with interest by military officers. Tatin employed an ingeniously constructed compressed-air motor.

Another landmark in airship progress was reached in 1882, when a small dirigible driven by an electric motor was designed, built, and flown in France by Gaston and Albert Tissandier. They employed an electric motor developing $1\frac{1}{2}$ horse-power. In one of their flights at Grenelle they flew for $2\frac{1}{2}$ hours in the neighbourhood of the observatory.

Then, in 1884, there appeared another famous air pioneer—Colonel Charles Renard. It was he

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who, in France, constructed a remarkable electrically driven airship. The first time it ascended this dirigible—the motor of which developed 8 horsepower—remained in the air 23 minutes and attained a speed of 14 miles an hour. It was also the first power-driven airship to accomplish a circular flight.

At about this time, in the United States, Professor Montgomery built a number of gliders, their lifting surfaces modelled upon those of a sea-gull's wing. These models, which the professor tested by dropping them from a cable stretched between hill-tops in California, had such stability that even if they were launched upside-down they would turn over, assume a correct position, and glide down to earth.

An Australian student of aeronautics, Lawrence Hargrave, was giving demonstrations in 1885 with some flapping wing models driven by elastic. These made many flights. One of the interesting points about them was the mechanism Hargrave employed to impart a "feathering" as well as an up-and-down motion to the wings.

In England, at about this time, Horatio Phillips, was carrying out research work of great value. One of the theories he evolved was that the curve on the upper side of a cambered surface, at its entering edge, caused the air to be deflected upward after it had passed over the edge, thus forming a partial vacuum above the surface of the plane—this vacuum exercising a powerful upward lift.

AIRCRAFT DRIVEN BY STEAM AND ELECTRICITY

A man-lifting machine which took the form of a monoplane with bat-like wings was produced in France in 1890 by Clement Ader, and with it he is said to have made several short glides; while in the following year Sir Hiram Maxim began the construction in England of a large aircraft driven by a steam engine developing 360 horse-power. This machine, which with its crew of three weighed more than $3\frac{1}{2}$ tons, was several years in construction.

One of the greatest air pioneers, Otto Lilienthal, built in Germany in 1891 the first of his famous man-carrying gliders, comprising a pair of rigid outstretched planes, covered with cotton twill stretched over a framework of willow. The apparatus weighed about 40 lb., and had a space between the wings through which Lilienthal could thrust his head and shoulders, grasping the machine with either hand. In his first experiments, he jumped from a spring-board, but soon began to make short glides through the air, supported by the wings on either side of his body.

In Australia, in 1891, Hargrave built a little flapping-wing model which flew for more than 300 feet; while in the United States Professor S. P. Langley began experimenting with model machines which took the form of tandem monoplanes. It was at about the same time, also, that Lilienthal began to glide in winds blowing at 15 miles an hour and more, balancing his machine by movements of his arms, legs and body. Like a human bird, he taught himself by instinctive

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movements to combat the efforts of the wind to overturn his machine.

In England, in 1893, Horatio Phillips made important experiments with a view to obtaining data as to the lifting power of a number of long narrow planes, mounted one above another. A track was prepared round which the apparatus—resembling a Venetian blind in the arrangement of its surfaces—could run without making free flights. In one trial with this machine, which was driven by a 9 horse-power steam engine, it remained airborne for more than 1,000 feet while circling its track.

In Australia Hargrave was still continuing his experiments. In 1893 he evolved the cellular or box-kite type of apparatus which is associated with his name. And it was in 1893, in St. Petersburg, that David Schwartz built the first rigid-type airship which had any resemblance to the rigids of to-day.

In 1894 Lilienthal constructed a biplane type of glider with a larger amount of lifting surface than he had employed before, and succeeded in making glides for a distance of 300 feet; and in the same year Sir Hiram Maxim found himself ready to carry out trials with his large steam-driven aeroplane. A railed track was laid down, and upon this the craft was mounted on a wheeled chassis. In one test, after running for about 1,000 feet, the machine developed so much "lift" that it not only raised itself as far as the check-rails which had been fitted to prevent any free flight, but

AIRCRAFT DRIVEN BY STEAM AND ELECTRICITY

actually broke through one of these rails and began to rise higher. At this the power was cut off and the machine, sinking back, embedded its wheels in the turf. When writing afterwards about this test, Sir Hiram Maxim observed :

“ The marks showed that the machine had been completely suspended in the air before it settled down to earth.”

Although no free or controlled flight was possible with this big machine, the value of Sir Hiram Maxim's work lay in its proof of the lifting-power of large, suitably-arranged surfaces, and of the propelling force of aerial screws ; while his steam-plant was a triumph of expert engineering.

The first Englishman to make experiments with man-carrying gliders, Percy Sinclair Pilcher, began his tests in 1895, making some successful trials at Cardross, on the banks of the Clyde ; while in America an experimenter who adopted gliding to gain practical experience was Octave Chanute, an engineer who carried out a long series of tests.

By 1896 Professor Langley had begun to obtain encouraging results with his model flying machines. One of them, driven by a steam-engine developing $1\frac{1}{2}$ horse-power, flew for 1 minute 30 seconds, covering approximately two-thirds of a mile. The machine, a tandem monoplane, was launched from a house-boat on the Potomac River, and the stability of the little craft was perfect, this flight being the first of any real duration accomplished in the open air by a power-driven heavier-than-air model craft.

Pioneer aviation suffered a sad loss in 1896 by

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the death of Lilienthal. After accomplishing more than 2,000 glides he was killed at Stollen, in Germany, when one of his biplane gliders nosedived from a height of 50 feet. Lilienthal had done more for the progress of aviation than any other experimenter who had been working up to that time. He had demonstrated that it was possible, using wings of moderate dimensions, to derive support from the impact of the air upon those surfaces ; also that it was possible, in free flight, to maintain some degree of control over a machine heavier-than-air.

VI—THE WRIGHT BROTHERS ENTER THE AERIAL FIELD

OTHERS were inspired by what Lilienthal had done to carry on the quest, among them being the famous Wilbur and Orville Wright—those two brothers who were, ultimately, to reach the goal of success; but it was not until they had studied all the aeronautical literature available that they began their long series of experiments. The conclusion they came to, following a study of all the data then available, was that the main problem still to be solved was that of establishing really adequate control over any man-carrying machine after it had left the ground.

“When this one feature has been worked out,” wrote Wilbur, “the age of the flying machine will have arrived.”

These first researches of the Wright brothers occupied several years; and, in the meantime, Clement Ader had begun to build in France a large man-carrying machine, driven by a steam-plant, which was fitted with two air-screws. It was arranged that there should be an official trial of this “Avion,” and a commission of military officials watched the tests at Satory in 1897. But soon after the machine had started to run forward it was caught by the wind, and deviated from its

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course. Then it was seen to move down wind, and after having travelled some distance it suddenly turned over. As for the question whether this trial of the "Avion" was to be regarded as a "flight," or merely as just a momentary "hop," an examination of the ground over which the machine had travelled showed that at first its wheel-marks were clearly visible. Then they could only be seen at intervals. After which, for a short distance, no marks of any kind could be detected; and the considered opinion of experts is that this machine did actually leave the ground, but that no proof was given that any effective control was being established over it for the very brief period during which it was in the air. But, in any case, even if this test was only just a "hop," it is recognised that Ader's experiments were of the highest value.

In 1899 British pioneer aviation suffered a heavy loss. Pilcher was killed while gliding, being the first Englishman to give his life in the cause of aviation; and his name merits a high place in the annals of the air.

In the United States, in 1900, the Wright brothers began their gliding flights with a biplane type of apparatus. They decided that Lilienthal's method of obtaining balance by movements of the legs and body was not effective enough for gliding in anything like strong winds. So they adopted a system of control by means of a front elevator and the "warping," or moving up and down, of the extremities of the wings. Also, to lessen wind

WRIGHT BROTHERS ENTER THE AERIAL FIELD

resistance, they decided that the operator should lie prone on the lower wing. The first trials by the Wrights were at Kitty Hawk, North Carolina, the glider being flown as a kite in its preliminary tests. The machine, however, did not develop as much lift as they had expected, and they decided to alter the camber of the wings; also to employ a larger amount of surface.

In Europe, in 1900, an outstanding event was a flight by the first Zeppelin airship. The hull of this great machine, 420 feet in length, was built of aluminium lattice-work girders, and the dirigible had two cars, each containing a 16 horse-power motor. In the first tests, which took place from a floating shed on Lake Constance, Zeppelin No. 1 attained a speed of about 20 miles an hour, which was considerably greater than had been achieved, previously, by any power-driven lighter-than-air craft.

In 1901 Santos-Dumont, the famous little Brazilian aeronaut, piloting a tiny airship of 22,000 cubic feet gas capacity, driven by a 12 horse-power engine, won a prize offered by M. Deutsche de la Meurthe—a pioneer patron of aeronautics—for a flight from St. Cloud, on the outskirts of Paris, round the Eiffel Tower and back again. A condition was that the aerial voyage must be accomplished in half an hour. Santos-Dumont made the trip in 29 minutes 31 seconds.

In America, in 1901, the Wright brothers, at their camp in North Carolina, were testing a biplane glider with a wing area of 308 square feet.

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After some difficulty concerning the centre of gravity of the machine, they found it possible to make glides of 300 feet. Then, after further practice, they decided to reduce slightly the curve or camber on their wings, and this was a considerable improvement.

An airship with many interesting features was built in France in 1902 by Paul and Pierre Lebaudy. It was of the semi-rigid type, having an arrow-shaped steel-girdered keel, from the centre of which was suspended a car containing a 35 horse-power motor. This dirigible, after certain modifications, was acquired by the French army, being the first airship considered of a sufficiently practical type to be employed, regularly, for military purposes.

By 1902 the Wright brothers had adopted, in their latest glider, a vertical rear tail-plane, pivoted to act as a rudder, and in the last six days of their trials from the Kill Devil sand-hills they made more than 300 glides, the longest being one of 622 feet. The Wrights now felt they had gained all the data they required at the moment from gliding, and they decided that the time had come to try to obtain longer power-driven flights by the use of an engine and propellers.

VII—FIRST PETROL-ENGINED AEROPLANES

By this time the development of the motor-car had produced petrol engines of a type generally applicable to aerial use, although in their form as the power-plants of road vehicles they were far too heavy for use in flying machines. At first, in their quest for a light-weight petrol engine for their glider, the Wrights tried to obtain what they required from outside sources. But here they were disappointed; and, having workshops of their own in their cycle business, they decided to build a special four-cylinder petrol aero-motor of a light and simple type, developing from 12 horse-power to 15 horse-power, and this was put in hand at the end of their gliding season of 1902.

Now progress with heavier-than-air flying machines reached a most interesting phase, because the Wright brothers, on the one hand, and Professor Langley, on the other, both began to approach the goal of man-carrying, power-driven flight. The Wrights, as I have just mentioned, were building a petrol aero-engine to use in the latest of their gliders, while Professor Langley, after his many experiments with models, had embarked on the construction of a full-scale man-carrying power-driven craft, funds to aid him in this work being granted by the United States War Department.

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This man-carrying machine weighed 830 lb. and was driven by a 52 horse-power petrol engine, the pilot chosen to handle it being C. M. Manly.

Before the Wrights were ready for their engine-driven trials, Professor Langley was in a position to make a first experiment in power-driven flight from his house-boat on the Potomac River. The date of this first test was October 7th, 1903. The machine, after its motor had been started, ran forward along 60 feet of launching track ; but then, instead of rising, it dived into the water. Major Macomb, the official observer, wrote afterwards :

“ The front guy-post caught in its support on the launching-car, and was not released in time to give free flight, causing the front of the machine to be dragged downward.”

By December 8th, the machine had been made ready for a second trial. But on this occasion, immediately after leaving the track, the nose of the machine rose vertically and it fell back into the water. Of this second experiment Major Macomb wrote :

“ The rear guy-post seemed to drag, bringing the rudder down on the launching ways, and a crashing, rending sound, followed by the collapse of the rear wings, showed that the machine had been wrecked in the launching ; just how, it was impossible to see.”

If one thing, more than any other, emerged from these trials, it was that the failures were due not to the machine but to its launching system. And, this being so, it might have been expected that

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the authorities would continue to assist Professor Langley. Such, however, was not the case. The Government appropriation had now become exhausted and, after Major Maccomb's report on the two fruitless trials had been considered, it was decided not to finance any further experiments. This was a great blow to Professor Langley, because he could not continue, unassisted, with such costly research work. His death took place in 1906, at the age of 72.

How much control Manly would have been able to exercise over the Langley machine after it had risen into the air—assuming that the launching had been successful—it is of course impossible to say. It has been argued that any operator would have been unlikely—for technical reasons—to have been able to exercise such a control over the Langley machine as was possible in the case of the Wright biplane. But, in any event, nothing can detract from the fundamentally important research work which Professor Langley actually accomplished. Many years later, in 1914, after certain adjustments, his original machine—which had been preserved in the Smithsonian Institution—did actually accomplish a short straight flight, and that it should have done so is not surprising, having regard to the stability shown by the models which were small-scale replicas of it.

VIII—THE WRIGHT BIPLANE FLIES

It was in the same month of December, 1903, which had seen Professor Langley's unsuccessful trials, that the Wright brothers were ready to make their first tests with their engine-driven man-carrying machine, and after one or two delays, owing to weather, these took place on December 17th. For their launching system the Wrights had adopted a more simple method than that of Professor Langley. A track, 70 feet long, had been laid along the ground, and on it ran a trolley supporting the aeroplane. In order to obtain initial acceleration, the trolley was connected by a cord to a weight which was released from the top of a portable tower. The fall of this weight pulled on the biplane and ensured, in conjunction with the thrust of the propellers, that it acquired sufficient forward speed before coming to the end of the rail.

The first actual ascent—which had the significance of being the world's first controlled flight by a man-carrying, power-driven aeroplane—was made by Orville Wright. The machine left its trolley at the end of the launching rail and made a short straight flight lasting for 12 seconds. Other flights followed on the same day, in the fourth of which the machine flew for 59 seconds,

THE WRIGHT BIPLANE FLIES

covering a distance of 85 $\frac{1}{2}$ feet against a 20 miles-an-hour wind.

Wilbur Wright summarised these achievements when he said that the flights were "the first in the history of the world in which a machine carrying a man had raised itself into the air by its own power in free flight, had sailed forward on a level course without reduction of speed, and had finally landed without being wrecked."

After this the aim of the Wright brothers was to improve their motor-driven biplane until it could be introduced to the world as a practical flying machine. Very little became known about the phase of their work that followed; but on the authority of Mr. Octave Chanute they had, during 1904, increased considerably the length of their flights, while Wilbur had been able to make a circular flight, remaining in the air for 5 minutes 17 seconds. A flight of 38 minutes, during which they covered 24 miles, was made by the Wrights in 1905, and it was at this juncture that Captain Ferber, representing the French Government, was instructed to go over to the United States and enter into negotiation with the Wrights with a view to obtaining the use of their invention by the French army. This mission Captain Ferber undertook promptly and, on his return to Paris, recommended the French Government to secure the rights of the machine. There were, however, hitches in the subsequent negotiations, and after a time the affair fell through.

In the United States, in 1905, there was not

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only the wonderful progress of the Wrights to record, but also some remarkable experiments by Professor Montgomery. He had now produced man-carrying monoplane gliders with a system of wing-warping to produce lateral stability, and to fly these machines he had engaged several professional aeronauts. His method was to send the machines up suspended from beneath balloons. When at the required height the craft were detached from the balloons, and their pilots steered them down in a glide. Some remarkable descents were made by these glider pilots—Maloney, Wilkie, and Defolco. Unfortunately Maloney was killed in a fall, owing to the fact that his glider had been damaged, without his noticing it, during the operation of releasing the balloon for its ascent.

In England, in 1905, Mr. S. F. Cody was experimenting with his famous man-lifting kites, and in one trial a sapper of the Royal Engineers remained in the air for an hour, suspended beneath one of these big kites at an altitude of 2,600 feet.



{Photo: Photopress.

**CAPTAIN OLLEY AT CROYDON IN 1927 WITH THE FIRST THREE-ENGINE
MACHINE SPECIALLY PREPARED FOR PRIVATE CHARTER WORK.**

IX—EARLY AEROPLANES IN EUROPE

IN 1906 a Danish experimenter, Ellehammer, made an aeroplane flight which, if it had been observed officially, might have ranked as the first in Europe. Watched by friends and mechanics on the island of Lindholm, he left the ground and flew approximately 50 yards at a height of about 5 feet. His machine, driven by an 18 horse-power engine, had a triangular main-plane, while above it there was a second non-rigid surface, or "sail." This was raised into position by the force of the wind as the craft moved forward.

It was in 1906 that Santos-Dumont turned his attention to heavier-than-air machines, giving orders for the construction of a biplane fitted with a motor of 50 horse-power. With this machine he made a flight of more than 200 feet, following this up soon after with a flight of 700 feet. Then, in 1907, H. Farman in a Voisin biplane flew for more than 300 yards; while early in 1908 he won the Deutsch-Archdeacon prize for a circular flight of one kilometre. In the same year the Wrights were in communication with the British War Office, but were informed that the War Office was not disposed to enter into negotiations with any manufacturer of aeroplanes. It was in 1907, also, that the first British airship, "Nulli

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Secundus," was built and flew to London, alighting at the Crystal Palace.

In 1908, having placed their affairs in the hands of a business syndicate, the Wrights emerged from the obscurity which had shrouded their experiments since 1905. Orville remained in the United States, to prepare a machine for fulfilling the terms of a military contract, while Wilbur brought another machine over to France. In one of his first flights, at the Hunaudières racecourse, he accomplished a series of figures of eight, and other evolutions, and a French airman, Delagrangé, after watching the ease with which Wilbur handled his biplane, declared :

" We do not exist. We are beaten."

But, all the same, the French pilots were far from idle. Farman, in October, 1908, made a pioneer cross-country flight, while Bleriot effected an aeroplane journey from point to point with intermediate landings.

It was in the United States, in 1908, that Mr Glenn H. Curtiss, flying a biplane called " The June Bug," won a cup presented by *The Scientific American*. In England Mr. A. V. Roe succeeded in flying for 75 feet at Brooklands. Mr. Cody, experimenting for the British Government, also made a brief " hop " in a large power-driven biplane. And then in February, 1909, Mr. Cody made what is regarded as the first controlled aeroplane flight of any duration in this country, flying for approximately 400 yards.

X—THE GREAT PRE-WAR PHASE

IN July, 1909, a milestone was reached in air history when M. Louis Bleriot made the first aeroplane crossing of the Channel, flying from Calais to Dover in 37 minutes in a 25 horse-power monoplane of his own design and construction. And then soon after this came the world's first flying meeting at Rheims, Glenn Curtiss winning the international speed contest at 47 miles an hour. It was in 1909, also, that Wilbur Wright flew with a passenger for 1½ hours; and Farman, flying alone, remained aloft for 4 hours 11 minutes. In this country Mr. Moore-Brabazon, in a French Voisin biplane, flew for 500 yards in the Isle of Sheppey; while Mr. A. V. Roe, in a triplane of his own construction, flew for about 200 yards at the Lea Marshes.

In March, 1910, at Martigues, Henri Fabre made a short flight in a seaplane—the first of its kind; while in April, Louis Paulhan won a prize of £10,000 by flying, with one halt *en route*, for 183 miles from London to Manchester. His rival in this famous contest was Mr. Claude Grahame-White who, in an endeavour to overtake Paulhan, made the first aeroplane flight across country by night.

Now air events crowded thick and fast upon

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each other. The army of airmen grew. Flying schools increased in numbers. Mr. Grahame-White bought the tract of land at Hendon which he converted into the famous London Aerodrome. And other early centres of British flying—about each of which a special history might be written—were at Brooklands and at the Aero Club's ground in the Isle of Sheppey. Great air races were organised in which pilots flew long distances across country. Beaumont (Lieut. Conneau) won a £10,000 prize for a flight of 1,010 miles round Britain, and was also successful in the circuit of Europe and the Paris-Rome race; while Vedrines won the race from Paris to Madrid.

In 1911 an experimental air-mail—the first in this country to be recognised officially by the Post Office—was flown between the London aerodrome and Windsor, approximately 130,000 letters and post cards being carried by pilots of the Grahame-White Company. In 1912 a British competition for military aeroplanes was won by Mr. Cody; while the Aerial Derby, among other events, was organised as a popular attraction at the London Aerodrome. In 1913 Prevost won the first Schneider Trophy race for France at 44.7 miles an hour, and Pegoud gave his famous demonstrations of “looping the loop” in an aeroplane.

In 1914 Pixton won the Schneider race for Britain at 55.3 miles an hour, and then soon after that the world found itself plunged in the Great War. For that titanic struggle I have not space, here, for even the briefest history; but,

THE GREAT PRE-WAR PHASE

looking back from one's point of view to-day, one seems to see two main points emerging. One of them is human. The other is mechanical. The war produced magnificent pilots. It also led to an amazing progress in the design and construction of aircraft and aero-engines. At its conclusion, such strides had been made, with both pilotage and aircraft, that flights were soon attempted, and accomplished, which would have been looked upon as impossible in the days just before the coming of the war. But with such post-war flying—having paid my tribute to the pioneers—I shall be dealing later.

PART II

MY OWN EARLY AIR DAYS

I— LEARNING TO FLY

BIRDS and aeroplanes are not the only things that fly. Time flies swiftly, too. It seems only yesterday, that, in the first great rush to join up when the war clouds burst, I hurried to enlist in the Queen Victoria Rifles. That was in August 1914, and I was just twenty years of age.

I remember we started drilling in Hyde Park, wearing our lounge suits and soft hats. And the next thing I recollect—and I have cause to do so—was a fire-eating old sergeant of the traditional kind, all blood and thunder, who glared at us fiercely, and rattled out his orders like a machine gun.

One day, when we were on parade, I had the misfortune to arouse his ire. He was casting an eagle eye along our ranks, and observed my feet were out perhaps an inch or so too far. But that was enough for him. With a roar of anger, he rushed down upon me, stamping with his heavy army boots upon my thin civilian shoes.

The result was so painful, from my point of view, that my immediate instinct was to retaliate in some way; and so I whipped up my carbine and dealt that sergeant a smart blow. After which, as can be imagined, there was more than a little trouble. But when things had quietened down

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somewhat I was allowed to go back to my lodgings—barrack accommodation not having been found for us at that time. Next day, however, when I came to turn things over in my mind, it seemed to me that the irate sergeant and his stamping boots were really rather more than I could bear. And so I fled—only to re-enlist immediately with the Royal Fusiliers.

I was a motor-cyclist, and had a machine of my own, and so I found myself appointed as a dispatch-rider. But things soon began to get pretty dull. I took dispatches to and from Whitehall. I waited about a lot. There seemed little prospect of an early draft out to France. Then one day, when I was delivering one of my dispatches, I applied at the headquarters of the Royal Flying Corps to find out if there was any chance of their taking me over.

Luckily for me, they turned out to be short of dispatch-riders, and so I found myself transferred to the flying service, being sent out to France and attached to the R.F.C. No. 1 Squadron. The station I was posted to was at Bailleul, near Ypres, and here one day, while I was driving a car, a spent bullet came through my wind-screen and grazed my cheek. But dispatch riding in France, I found, was hardly less irksome from my point of view than similar work at home, and so after a few weeks I went to my officer, Major Salmond, and told him that what I wanted to do was to learn to fly.

This led to my being made a corporal observer,

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and I flew with an extremely fine Canadian pilot, Lieutenant Dore. Fighting in the air was a queer, primitive sort of affair away back in 1914. We went up at first with nothing more formidable than Winchester repeating rifles, and took pot-shots at enemy aircraft which seldom came nearer to us than about a thousand yards. Then, after a time, machine guns were mounted in aeroplanes, and we used to cruise about over German rail-heads, looking out for troop-trains. Whenever we managed to spot one we dropped a few bombs, and when the Germans came running out of their train, we dived low and opened fire with our machine-guns. It all sounds very deadly, but actually, in those early days, it was not very often that we hit anything.

The German "Archies," or anti-aircraft guns, kept loosing off at us. Their shells, when they burst anywhere near one's machine, did not explode with any ear-splitting roar, but simply with a puff of white smoke and a "wuff" rather like a dog barking. The pilot I used to fly with, Lieutenant Dore, became a past-master at dodging in and out of this anti-aircraft fire. But, even so, the air casualties soon began to grow considerably, and there was an urgent demand for new pilots. In my case, seeing that I had already gained experience as an observer, it was not long before I found myself sent home to Salisbury Plain in order to learn to fly, and to qualify for my "wings." I began my tuition on a Maurice Farman biplane, and, after three hours of instruction, I was sent up

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for my first solo flight. My instructor said he wanted me to take off, fly round once, and then land just in front of where he was standing. But the moment I was up in the air I forgot everything I had been told. The exhilaration of that first solo flight was a sensation I shall never forget ; it drove everything else out of my mind. I flew off across the Plain and made my first landing—it was fortunately quite a smooth one—some distance away from the aerodrome. Then I took off again, flew several more miles above the Plain, and made another landing. Again it was quite according to plan, with no damage done. So off I went again. Actually I made something like thirty landings that afternoon ; until at last I found myself in a field near Newbury, having quite lost my bearings, and with only a few drops of petrol in my tank. But I did not care. I was too happy for that. I just sat there in my cockpit and sang, feeling too pleased with myself to worry about anything. But retribution was at hand. Suddenly I saw an ominous shape in the sky above. It was the aeroplane of my instructor, who had come flying in search of me. He spotted me from above, landed in the field beside me, and then reprimanded me severely for having failed so completely to obey instructions. After which he made me fly back with him to the 'drome—where I received another severe talking-to from the officer in charge ; although I seemed to note a twinkle in the eye of this official even while he was lecturing me. At any rate, I got off with no worse punishment than

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a command to remain on the ground for the next three days.

Following this first escapade I went ahead pretty quickly, and after ten hours of solo flying I found myself promoted to an Avro type of 'plane. But now I became the victim of an accident which reminded me forcibly that I was still a novice at the flying art. Engine trouble, one day, compelled me to make a forced landing in a ploughed field. I glided down at the right angle, and touched ground at just the spot I had chosen ; but unfortunately, in my inexperience, I landed with my wheels across the furrows of that field, instead of in line with them ; the result being that my Avro turned right over, leaving me suspended head downwards in the cockpit by my safety-belt. The machine was undamaged and I was unhurt. But I could not extricate myself from my undignified posture until some of the mechanics came hurrying across to help me, and that whole incident was rather a blow to my pride.

It was not long, however, before I found I had spent something like twenty hours in the air, flying machines of a number of different types, including single-seater scouts and fighting craft ; after which I went back to No. 1 Squadron in France as a sergeant-pilot. Those were the days in which one had to learn to extricate oneself from all sorts of queer predicaments. One day, I remember, after a fierce "scrap" up in the air, I had to make the best landing I could with

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most of my under-carriage shot away. Somehow or other I managed to get the machine down without its turning over; and then it slid along the ground for some distance, the wings finally collapsing and folding down all round me in such a ludicrous fashion that the incident would have been worthy of one of Mr. Harry Tate's comic sketches.

My luck held good during those days of peril. I survived my first month and my first year; and then, in 1917, I was drafted back home to join that company of R.A.F. airmen—"ferry pilots," they were called—whose task it was to fly new aeroplanes out from England to the aerodromes in France. And among my colleagues at that time were Colonel Henderson—who lost his life, subsequently, in the Meopham crash—Captain F. L. Barnard, Captain Hinchcliffe and several others who figured prominently in the post-war development of civil aviation.

For weeks and months we "ferry pilots" carried out a programme which entailed taking over a new machine somewhere in the morning, flying it across the Channel to France, and then returning immediately by boat and train to repeat the process.

Just when this "ferry" business began to get monotonous I was sent to a big aircraft firm in the provinces to test some new aircraft they were producing, and then to deliver these machines by air to various home stations. This work of testing new and untried craft certainly had its exciting

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moments. Cylinders would suddenly blow off engines. Mechanical defects of all kinds would develop up in the air. One had to make hurried forced landings in all sorts of awkward places. But, though it was all rather trying, it was, of course, fine experience from a flying point of view, teaching one to be ready for any sort of emergency that might arise. And, somehow or other, I always managed to get down without serious mishap.

II—THE COMING OF CIVIL AVIATION

WHEN the War ended, and I was demobilised, I determined not to drift out of aviation, but to continue my work as a pilot at the controls of commercial aircraft. And here I was fortunate enough to obtain an appointment as a pilot on the pioneer air service between London and the Continent started by the Handley-Page Company with a fleet of big twin-engined bombers which had been adapted for commercial use.

One of my early trips on the London-Paris route will always linger in my mind, and it is hardly surprising that it should do so, seeing that I made as many as seventeen forced landings after leaving London and before I got to Paris ; while by the time I neared the French capital it was so dark that I could not find the proper aerodrome and had to finish up eventually in a football field. Obstinate trouble with the petrol feed of my engines was the problem I was grappling with that day, and this meant that after perhaps a few miles flying I had to alight and pump petrol by hand from one tank to another. But in each of these seventeen compulsory landings I had no difficulty in finding a suitable field into which to glide and alight safely ; while in every instance, also, I managed to fly out of that field again without



(Photo: Photopress.)

LOADING MAILS AT CROYDON

THE COMING OF CIVIL AVIATION

the slightest mishap. Seventeen forced landings in one flight to Paris, finishing up in a field just as it was getting dark! That gives some idea of the difference between air transport fifteen years ago and the air transport of to-day, when the dependability of our big multi-engined air-liners is such that the latest British figures for all-the-year-round reliability stand at just on 100 per cent.

That story I have just told of engine trouble reminds me of another occasion, in the early days, when a motor let me down suddenly in distinctly awkward circumstances.

I was piloting a 'plane from which a photographer was taking a series of aerial views of London. Our task was nearly ended, and we were about to steer out for the aerodrome from which I had ascended when, with nothing more than splutter of warning, my motor failed completely. That, by the way, was in the era prior to the multi-engined air-liner, and I had just a single motor on which to rely.

The position, as one can imagine, was decidedly awkward, because I was still flying above a densely-populated area, and the prospect of having to come down among houses, streets, and trams was far from inviting. I made a swift survey, while holding my machine on a steady glide, of the entire district which lay within range, and, just as things were beginning to look distinctly unpleasant, I caught sight, amid a wilderness of roofs and streets, of an open space with a sheet of water glinting in the centre of it.

It did not look too promising, being, as I peered

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down at it anxiously, a very small oasis amid buildings, railway lines, and telegraph wires. Still, there was no other choice. So I began immediately to manœuvre so as to reach this spot. All might have gone well had I not observed, as I came lower, that the only available alighting space in this park was thronged with groups of children. This put completely out of the question any idea of coming down on one of the open stretches of grass, because I should have been certain, either when gliding in, or while taxiing along the ground after alighting, to have struck some of these children—who would, of course, have been running about in all directions.

Now, what was I to do? I was losing height rapidly, and no other landing space offered itself. Well, at such times as this one has to think quickly, and in a flash—before I was too low—I decided there was only one thing to do, and this was to come down in the lake which lay in the centre of the park. So I brought my 'plane right in over this lake, and then, when just above the surface, I checked my forward speed by a quick movement of the controls, and "stalled" the machine so that it came down abruptly flat on the water. There was a shock, an immense splash, and there we were! That lake, however, was shallow. So there was no risk of our being drowned. And, beyond some trifling damage to its alighting gear, the aeroplane was uninjured; while we who were in the machine—the photographer and myself—were both unscratched.

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Another early experience of mine on the Continental air lines is one I am not likely to forget. On that occasion I was flying from London to Brussels with several passengers, and, when not far from Brussels, I encountered a terrible snow-storm. Those were in the days before wireless on the airways, and I was flying completely blind. To reach Brussels was impossible; but I was lucky enough to be able to bring off a forced landing without accident near a Belgian monastery. Here I and my passengers were received hospitably, spending the night in the monks' cells. Next morning I flew on to Brussels and, after setting down my passengers, started back again for London. But I had not been long in the air when one of my engines stopped, and I had to make another hasty landing, this time among some of the battle-fields, desolate with all the aftermath of war. Actually where I had come down was in No Man's Land, not far from Zillebeke Lake. Here and there, already, I saw that peasants had begun the arduous task of restoring their ruined fields, clearing away from them the grim debris of war; while an occasional plough was beginning to turn up the scarred and shattered ground. I had been obliged to come down in such a cut-up area that I soon found I should never be able to get my big machine into the air again until I had managed to prepare some kind of a runway. And so, for the time being, I was obliged to camp out in one of the old German dug-outs which the local peasants had converted into

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living places while they were at work in the fields near by.

Actually, it took me nearly a week before I was able to get into the air again. It was late one afternoon when I eventually got away, and I was not able to fly on any farther that day than St. Omer. Here I came down at a point near where a number of army motor lorries were drawn up ready for disposal, and before I turned in for the night in a neighbouring officers' mess, I fastened the wings of my machine to a couple of these lorries. We were in a very bad spell of weather just then, and in the middle of the night I was aroused and told that a gale of wind had sprung up and that my machine was in danger. I rushed out just in time to see an amazing sight. A great wind gust had lifted up the aeroplane, the two lorries being dragged off the ground with it; and then a moment later the machine turned over on its back, damaging itself seriously.

Repairs, however, were carried out on the spot, and it was not long before that aircraft stood ready again to take the air. But even then the chapter of accidents was not over—because on the very day the machine was about to start another gale sprang up suddenly, and once more that ill-fated craft was overturned and damaged. After which things were given up as a bad job, and it was dismantled and made its return journey to England in sections.

In those early days commercial flying often seemed to us to have as many thrills as we had

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been associating, just previously, with war flying. I have vivid recollections of one special charter flight which was entrusted to me. I had to take a passenger as quickly as possible from London to the Isle of Man. We duly reached Blackpool, and then an obstinate fog began to make piloting difficult. I managed to reach the Isle of Man, however, only to find nothing of it visible, owing to the fog, but the summit of Snaefell, and with no possible hope of making anything like a safe landing. So I turned round and flew back again in the direction of Blackpool. By now, however, my petrol supply was running low, and I had a very anxious time of it. Presently I found myself near Morecambe Bay, with the fog thinning slightly; which was just as well, because I now realised that I should have to come down pretty quickly, my petrol being practically exhausted. I chose what looked like a good field. But, as it happened, a nearby river had been in flood, and the surface of that field, although so smooth-looking and green on the top, was little more than a quagmire beneath. As I landed my wheels sank up to their axles, my machine turning a complete somersault. Luckily for me, though, I received nothing worse than a few cuts and bruises, while my passenger, after being flung out of the machine, landed so softly in the rain-sodden grass that he escaped without a scratch.

Another of my early special-charter flights, carried out soon after this, proved to be of a very different character. The actual origin of

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this air adventure was a discussion which took place privately one night in the House of Commons, during an all-night sitting of Parliament, as to the use of parachutes in escaping from an aircraft which might be in difficulties. Some of the little group of members who took part in this discussion held the view, apparently, that any ordinary person would, in all probability, be so paralysed with fear, when confronted suddenly with the need to leap from an aeroplane in mid-air, that the employment of parachutes by passengers who had not been trained to use them would not be a practicable proposition. One young member, however—and having regard to all the circumstances of the case I am not going to mention his name—took up a quite opposite view and, in order to prove his contention, said that on the next day he himself would be prepared to make a parachute jump from an aeroplane, although he had never done such a thing before. This sporting offer was promptly accepted by the others, and it was arranged that I should pilot the aircraft from which the drop was made.

In those days, I may mention, parachutes were being used which were folded beneath the fuselage of a machine, with the attachment cords carried inside; so that directly a parachutist had jumped from a 'plane he automatically pulled the parachute out of its rack—after which it opened and carried him down to the ground. With the parachutes in use generally to-day the apparatus is not connected in any way with the aeroplane. One has

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it in a pack on one's back, or in the form of a cushion ; and after one has jumped and fallen clear of the aeroplane, one pulls a ring which opens the parachute.

Well, up we went that morning in the aircraft which had been chosen, one or two friends of the would-be parachutist accompanying him to watch the feat actually performed ; there being a door in the side of the fuselage from which the operator could make his leap out into space. I climbed, as we had previously arranged, to about 2,000 feet, and then throttled down to a slow flying speed, waiting for my passenger to make his appearance at the door and "do his stuff." But nothing happened. I circled round again. Still nothing happened. Then I looked back into the cabin through a little sliding panel which communicated with my cockpit. And a very remarkable sight met my gaze. There, near the door in the side of the fuselage, stood the hero of the occasion. But I am afraid he did not look very much of a hero just at that particular moment, because he was fighting a terrible mental battle against his very natural disinclination to open that door and spring into nothingness. What was happening, in fact, was what those other Members of Parliament had predicted. The will to jump was struggling against the quite instinctive fear of doing so. One moment he would brace himself for the ordeal. Then a second later he would hesitate and retreat. And so it went on. Personally—never having made what pilots refer to quite

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casually nowadays as a "brolly hop"—I felt every possible sympathy for that poor young man. He had let himself in for a dreadful ordeal. But, even so, what was to be done? I flew slowly round, and then peered in again. By now he had opened the door of the fuselage, and had one foot actually on the brink. But then, once more, he drew back. One of his friends, however, standing just behind him in the machine, could not endure this sort of thing any longer; and so without warning he raised one of his feet suddenly, placed it firmly against the would-be parachutist's back, and with a strong thrust sent him pitching outward and downward through the air. The parachute functioned perfectly, beginning to sink slowly towards the aerodrome beneath. I circled down round it. The young man dangling below the parachute saw me coming and waved his arm quite cheerily. All his qualms had gone now, apparently. He seemed quite to be enjoying himself, dangling there below that parachute; and, immediately after he had landed safely, he wasted no time in collecting a bet which it appeared that he had won by making the drop. But my view of the matter then—and it is the same now—is that he had earned that money ten times over, however much it may have been.

III—MY ADVENTURE WITH THE ECCENTRIC PASSENGER

IT is an essential mental attribute of the flying man that he should always concentrate when he is up in the air ; that he should keep himself ceaselessly on the alert. By this I do not mean that you have to sit at the controls of an aeroplane in a state of nervous tension. Far from it, because if one made that mistake one would soon get tired, and it would be impossible to carry out, comfortably, any really long non-stop flight. No, it is not in the least a question of keeping one's nerves on the stretch. As a matter of fact, you want to relax at the controls of a flying machine just as you need to sit easily and comfortably at the wheel of a car. But, all the same, what one must cultivate when up in the air is an attitude of quiet, never-ceasing watchfulness. And one has plenty to do, say, when on a cross-country flight, even though your aeroplane itself is so easy to fly. You have your map and compass to keep an eye on, for example, so as to make sure you are steering an accurate course. Then there are the instruments on your dashboard—such as your speed and height indicators, and others which tell you all you want to know about the running of your engines. And, of course, you have to keep an eye out for other

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aircraft ; while constantly your eyes rove over the expanse which lies below you of land, sea, or coast-line. Every now and then, too, a pilot will cast a look round over his machine just to see that everything is all right—more particularly if he is flying one of the big air liners and has a number of passengers in the saloon behind him.

And now here let me give you a personal incident which illustrates this need for constant watchfulness—and it happens to be one of the most curious of all my early experiences in civil aviation. One evening I was piloting from Paris to London a big twin-engined passenger plane of a type which is now obsolete. Sitting beside me in the roomy cockpit was my engineer ; while behind us, separated from our cockpit by a sliding door, was a saloon in which there were some half a dozen passengers. It was a very pleasant summer evening—really ideal flying weather—and everything was going according to plan. We were punctual to the minute on our schedule, and our big machine was humming through the air with hardly any movement to show us that we were in flight.

I was sitting with the control wheel in my hands and with my feet on the rudder-bar, looking out forward and then giving a glance over my instruments, just as it becomes one's habit to do when making one of these regular flights. Also—again by force of habit—I leaned back presently and took a look along the body of the machine behind me ;

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and it was certainly as well that I did, for an astonishing sight met my eyes.

One of the windows of the cabin, which was situated just over the bottom wing, had been pushed wide open, and one of the men passengers was half out of this window, striving apparently to leap from the cabin in mid-air. One needs, as I have said, to be pretty alert when you are at the controls of an aeroplane ; but I must confess that I found this emergency an exceptional one. Whatever happens, however, one needs to act promptly, and in this case it was an easy matter for my engineer to slide open the bulkhead behind us and dash through into the cabin—which, at a word from me, he did instantly. As he rushed through he found several of the other occupants of the saloon struggling with this apparently demented passenger, who was still trying to force his way through the window. One arm and leg this amazing person had, in fact, already succeeded in getting outside, but the remaining arm and leg were being gripped frantically by a couple of his fellow-travellers. My engineer, who was a strong, active fellow, quickly got to work ; while I myself, out forward, thought it best to pilot the machine down towards an intermediate air station which, as it happened, lay only a few miles ahead. Before I had reached the ground this struggling passenger had been dragged back into the safety of the saloon, and was being held down in a dazed condition in one of the arm-chair seats. Immediately I had landed the machine I went through into the cabin

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myself to interrogate him, and found him apparently in his right senses again and full of the most abject apologies. He told me he was afraid he could not account in any way for his extraordinary conduct, except to confess that an impulse he had found it impossible to resist had suddenly caused him to try and get out on the wing of the machine, as he had apparently seen photographs of trick pilots doing.

Well, what could one do in such a case as that? From my point of view the most important thing was to continue my flight without delay, as I had mails as well as passengers on board my machine. But I certainly did not fancy having this eccentric person up in the air with me again. It was impossible to say what he might do next. So the air station officials arranged that, as soon as he had pulled himself together a little more, he should continue his journey on to London by boat and train. When I come to look back over my air career, I can recall no other such experience as this.

It must be remembered that when you are in an aeroplane you get no uncomfortable sensation of height at all. Sometimes, when people look down from a tall building they experience an unpleasant sensation because their eyes follow the downward line of the building instinctively, and this gives them a feeling of being poised, insecurely, at a considerable height. But in an aeroplane you have no connection with the ground that tells you how high you are. The earth, when you look

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down, is simply spread out in a great panorama as far as the eye can see. For this reason people who do not feel at all happy, say, on a tall building or near the edge of a cliff, experience no sense of discomfort whatsoever when flying. Of course, in the case of the eccentric passenger I have mentioned, there was no question at all of the height affecting him. He had simply seen pictures of trick flyers sitting out on the wings of aeroplanes; and, just as a sort of mad prank, he had apparently made up his mind that he would astonish everybody else in the cabin by trying to do the same.

IV—EARLY COMBATS WITH THE WEATHER

It has always been the pilot's aim, from the earliest days of civil aviation, to complete successfully every flight he undertakes, even though in doing so he may have to fight his way through the worst kind of flying weather. When commercial aviation began fifteen years ago people were inclined to say: "Oh, yes! Of course we admit the speed of the aeroplane. But what we do not believe is that you will be able to fly regularly in bad weather as well as in fine." That, as you can imagine, put us on our mettle, and those of us in England who began flying commercially made up our minds that we would win through in every case where it was humanly possible to do so. But in those pioneer days it was far more difficult to fly in bad weather than it is to-day, and this simply for the reason that in the early phases of civil flying we had none of the scientific aids to navigation—in the shape of organised wireless, meteorology, and guiding beacons—which we find at our disposal at the present time.

Never shall I forget one air dash which I made with a passenger from Spain to England. He was anxious to reach London for urgent business reasons, and begged me to start even though we had just been told the weather among some of the

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mountains we should have to cross was the reverse of encouraging. But I was flying a fast, powerful machine, and felt that if my passenger did not mind being tossed about a bit in the "bumps" over the mountains, there should be no special difficulty about the flight.

"Go ahead," was my passenger's reply when I explained matters to him. "What I want you to do is to get me to London as soon as possible."

Well, that was good enough for me. Off we started at more than a hundred miles an hour. All went well till we found ourselves over the mountains. Then we encountered conditions which were certainly the worst I have ever met with. The wind began to blow in gusts of phenomenal strength. We met squalls of driving rain which, as we climbed to pass over the highest of the mountain peaks, turned every now and then to sleet and snow. The wind, too, seemed to grow even stronger—if that was possible—while the bumps we encountered in the rushes of air over and round the peaks were simply colossal. I have never experienced anything like them before or since. At one moment I was flying at about 12,000 feet. Then an instant or so later I found myself in a violent descending wind trend which swept me down to not more than about 7,000 feet. It was the grimmest battle with the weather I have ever had—wind, rain, sleet, and even snow, with great masses of cloud which, while one was sweeping through them, reduced visibility almost to vanishing point.

Ice and frozen snow began to gather on my

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wind-screen, and along the wings of my machine. Mountain peaks loomed up around and below. The wind blew with what appeared ever-increasing violence. But my engine continued to run smoothly, and each time I was swept down I managed to regain height again, and to struggle a little farther towards the calmer conditions I know would be found on the other side of the mountains. While it lasted, though, it was an exhausting experience, and more than once I thought of the passenger in the saloon behind me, and wondered what sort of weather he was making of it. But I need not have worried. Just when our battle with the elements was at its worst a little sliding door between the saloon and the cockpit was pushed open, and a hand was thrust through, offering me a sandwich! In spite of the raging gale, and of those ominous peaks yawning just beneath us, my passenger was calmly enjoying his lunch. This, no doubt, was a proof of his confidence in my pilotage. But I am afraid I was too much occupied just at that moment to do justice to his proffered sandwich. I may add that we won through all right, and that this business man, thanks to the speed of the aeroplane, told me that he had managed to pull off a big deal in London; while as for myself—well, I added a few more hundred miles to the many thousands I have spent up in the air.

The hero of a great combat with the weather in those early pioneer days was my friend and fellow-pilot, Lieutenant H. Shaw. His flight from Paris



"The Aeroplane," Photograph.

HENGIST, AN IMPERIAL AIRWAYS LINER OF THE HERACLES CLASS, PHOTOGRAPHED AT NIGHT IN FRONT OF THE CONTROL TOWER, AIR PORT OF LONDON, CROYDON.

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to London in a gale, when piloting a machine on the first daily airway between the two capitals, will always be remembered by those who played their part in establishing the air transport which we have at our service to-day. In London, on that particular morning, it was raining hard, and the wind rose until it was blowing at gale force ; while to make matters more difficult from a flying point of view there were masses of low cloud. At Hounslow, then the London air-port, the machine on the service to Paris stood waiting to ascend. And in spite of the weather its pilot was anxious to get away. But when the official weather report described conditions as "impossible," the officials in charge felt compelled to order the abandonment of the flight. From Paris, however, a few minutes later, a message came through saying that the service for London had started at its scheduled time. Actually, it seems, there had been some slight improvement of the weather at the Paris end, and the pilot, Lieutenant Shaw, had decided to get away without delay. Soon, however, the weather deteriorated again, and the farther the pilot flew the worse conditions became. By the time Lieutenant Shaw had reached the Channel, and was about to make his aerial crossing to the English coast, the wind had reached such a strength that, at a height of 2,000 feet, it was blowing in gusts which attained a velocity of 100 miles an hour. But still the pilot fought his way on, and was duly signalled as having passed over Lympne, on the English coast. But even now his difficulties were

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not over. Far from it. The farther he flew inland on his way to London the more difficult the conditions became. Heavy rain-clouds forced him to fly lower and lower. The visibility grew worse. At one moment he found himself flying up a rain-swept valley, with the dim outline of hill-tops higher than his wing-tips on either side. But he fought grimly on, and at length reached Hounslow, being so exhausted on alighting that it was with difficulty that he could clamber from his driving seat. A performance, that, which no pioneer air pilot will ever forget!

Writing of the weather reminds me of an adventure of my own with a "line squall"—which is a relatively small and rapidly-moving area of bad weather which sometimes sweeps along just in between two fair-weather systems. Such "line squalls" vary in size and severity, but the worst I ever encountered, and one which at the time aroused considerable interest in meteorological circles, swept across the country between London and the coast as I was flying up towards Croydon on a trip with some passengers from Paris. After I had reached Folkestone and was nearing Tonbridge, I saw this "line squall" just ahead of me—a great "wall" of bad weather, with thunder, lightning, and heavy rain. At the point where we were flying the weather was perfectly fine, and I guessed that conditions on the other side of this squall would be equally favourable. So I decided to dive down in the hope of being able to creep through underneath the worst of the weather. I

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got down to not more than about 500 feet, and from there I could see right underneath this "wall" of bad weather to a point where the sun was shining on the other side. But, as I began to fly through beneath the squall, I came under the influence of a violent up-trend of wind which is characteristic of such disturbances. My machine began to rise rapidly, and though I throttled down my engine we still ascended as though in a lift. In fact, though my motors were now only just "ticking" over, and in all normal circumstances we ought to have been losing height rapidly, we were still continuing to shoot upwards, carried on this immense rising current of air, until at 3,000 feet we suddenly came out with a tremendous "bump" into quite clear air. At which I opened my engines again, and we finished our flight without any further surprises. But for a big machine to be whisked up like that, from 500 to 3,000 feet, was certainly a remarkable experience.

Apart from such weather freaks as line squalls, fog is an airman's greatest enemy; although to-day the difficulties of fog-flying are being lessened greatly by the assistance which science gives a pilot in instruments and wireless direction-finding, and in the special illumination of air stations with fog-piercing lights. But in our early days we had to grope our way through as best we could, and some of our experiences were far from pleasant. I remember one extraordinary piece of good luck which befell me when fog-flying. I was bringing a passenger to London from one of the Continental

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cities, and I had hardly begun my journey when fog-patches appeared. The fog grew rapidly worse. It lay everywhere in a thick, impenetrable blanket. For a couple of hours I flew as best I could, trying to find a clearing in this fog through which I might dive and make my way to some suitable alighting point. But for a time I could not find a "hole" anywhere. The position became somewhat serious when my petrol gauge told me that I had very little fuel left in my tank.

Then suddenly, to my immense relief, I did espy a small opening in the fog-bank just below. Not much bigger than a swimming bath that clear patch looked, but it was good enough for me. I dived through it and there, almost exactly beneath me, I caught sight of white lettering which spelt out the name of an aerodrome. Hamburg it was, and it seemed to me an amazing bit of good fortune that, with hundreds of miles of country obscured by fog, I should have dived through that hole to find myself exactly above an organised alighting ground. This story, I remember, found its way into the press, and one of the newspaper headings bore the words, "Luck—By (G) Olley"!

Flying in bad weather, and particularly in fog, makes one very observant. You watch anxiously for any visual signs that will help you on the obscured face of the earth below. One thing I used to find, after crossing the Channel and heading towards Croydon in foggy weather, was that the passage of express trains along the main line between London and the coast had the effect

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of cutting a visible pathway or track through the fog. This was owing to the movement of the trains causing a sort of vortex in the fog behind them. At any rate, this movement of the fog along the railway often acted as a useful guide. Then, again, when flying, say, from London towards the north in foggy weather, one learned to identify certain towns and cities owing to the different colour of the fog-belts lying above them. Over Birmingham, for example, the fog is usually of a dull, greyish colour. Over Darlington the fog—because of the furnaces below—has a dirty sort of orange glow.

One of the most remarkable fogs I remember lay over the London area one day while I was flying to Croydon from Paris. As I neared Croydon from the coast I could see this quite local fog resting above the metropolis, just like some enormous, dull-coloured umbrella. The edge of this huge "mound" of fog seemed to stretch out just beyond the Croydon 'drome; while outside, where I was flying, the air was perfectly clear and normal. As I drew nearer to the air station I could see the top of the control-tower and some of the buildings projecting just above this low-lying pall of fog, which was so dense that in the thick of it, close to the ground, the visibility was not more than a yard or so.

My problem in landing, under such conditions, was not an easy one. I could—as I have said—just see the tops of the surrounding landmarks; but the actual surface of the alighting-ground was

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right in the thick of the fog. By manœuvring carefully, however, I got my machine into just the position I wanted. Then I crept down very cautiously, gliding in just over where I knew there was an unobstructed landing space. And when I entered the belt of fog I found I had been able to judge my position and height in such a way that, though the actual landing was a completely blind one, I managed to make my contact with the ground quite smoothly, and in a perfectly normal way. After which perhaps the strangest thing of all happened ; because as we dipped into the fog, just before touching ground, we lost sight of everything ; and, when I had brought my machine to a standstill, we found ourselves engulfed in a fog so dense that one could hardly see one's hand before one's face. It was hopeless to attempt to taxi over towards where I guessed the air-station buildings must lie. We might have come into contact with some unseen obstruction and caused damage to the machine. So we had just to sit there, fog-bound, and wait till officials from the aerodrome buildings, groping their way slowly through the gloom, managed to reach the spot where my machine stood. After which I taxied along at a snail's pace, and eventually reached a point just outside the main buildings.

V—A FORCED LANDING ON THE GOODWIN
SANDS

THERE was a period, not long after civil flying began, when for a time I acted as a pilot for the Royal Dutch Air Lines, flying between Amsterdam and London ; and it was during my spell of service on this route that one of their passenger monoplanes, flown by a Dutch airman, met with an adventure which had in it all the drama of a play or film.

The machine was *en route* to London with passengers when the pilot found that his engine was beginning to fail him. A leaky radiator, if I remember rightly, was the cause of the trouble. At the time the machine was not very far from the English side of the Channel ; but even so, the pilot—whose motor had now stopped completely—realised that he would not be able to glide far enough to reach the coast. The tide happened to be out, and he did the only thing possible under the circumstances : that is to say, he made a forced landing upon a fairly firm stretch of the famous but treacherous Goodwin Sands. At the point where the machine came down, the sand was hard enough for the passengers to get out and walk about ; and while they did so the pilot was busy sending up emergency rocket signals. But

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any chance of immediate rescue did not seem too good, as there was a rather thick haze over the water and no vessel of any kind appeared in sight.

Soon another danger threatened these marooned travellers. For the tide had begun to turn, and they could see a line of breakers encroaching steadily upon the sandbank where they stood. Every minute, in fact, the position grew more serious. Before long the tide was swirling round the wheels of the stranded monoplane; and still there were no signs of rescue. The pilot made an effort to move the machine away from the oncoming waves. But this proved impossible, and he and his passengers had to retreat step by step until they found themselves driven back to the highest point on the sandbanks. Meanwhile the waves had surrounded and engulfed the aircraft, and it vanished from sight, never to be seen again. The pilot kept on firing his rockets until they were all exhausted. And yet there was no sign of aid. Things began to look pretty hopeless, and the water was creeping up just near their feet, when something appeared through the mist, moving fast. It was a motor-boat! The pilot and his passengers redoubled their cries for aid, and these were heard by those on the boat. The vessel swept towards them, and they were taken off the sandbank just in the nick of time, as in another few minutes the waves would have swept them from their last precarious foothold.

One of my fellow-pilots on that pioneer Dutch air line was the famous Captain Hinchcliffe—who

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was later to lose his life in attempting an Atlantic flight ; and I remember particularly one incident in which he and I were involved. In those days, I should mention, we had none of the luxury in air-station equipment which is now to be found at the big London air-port. Our pilots' room was then just an old army hut, and in this we would gather and " talk shop " to our hearts' content.

It was during one of these chats in the pilots' room that Hinchcliffe bet me he could take me up and, by the way in which he " stunted " a machine, make me fall a victim to an attack of air-sickness. I had never been air-sick before, and I did not believe that any kind of stunting would make me feel queer ; and so I took him on, the other pilots joining heartily in the joke.

Well, Hinchcliffe jumped into the pilot's cockpit, and I joined him as his passenger. Up we went to gain height, and then Hinchcliffe—who was a magnificent pilot—did everything he knew of to win that bet. I may say that I was not unfamiliar with stunting, having done a good bit of it myself both during and after the War ; but some of the things that Hinchcliffe did were certainly surprising. However, I just sat there and did not feel any the worse for wear. Hinchcliffe had a look at me, and smiled. Then he began to do it all over again, only worse this time. And now I felt myself beginning to grow strangely quiet. The muscles of my face seemed to tighten. I felt a nasty, clammy, " all-gone " sort of sensation ; and,

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stiffening myself in the passenger's seat, I tried to think of such things as lemons and aspirins and nice cold water. Hinchcliffe had another look at me, and it seemed to me that he began to fling that machine about in an even more crazy fashion, if that had been possible. But still I managed to repress my unpleasant feelings. Finally, Hinchcliffe gave another quick glance in my direction and—apparently thinking that it was no good—he stopped his stunting suddenly, and came down towards the aerodrome in a long, very slow glide. And somehow or other, although I do not know why, that glide proved fatal so far as I was concerned. Though I had managed to survive more than half an hour of Hinchcliffe's "aerobatics," this final dip down to the 'drome was more, apparently, than my much-abused system could stand. At any rate Hinchcliffe won his bet when we were not more than 20 feet or so above the ground; because it was just at that last moment that I found myself a victim of what one might perhaps call "mal de l'air."

There was certainly much that was amusing, as well as exciting, in our flying in the days when air transport was in its infancy. I remember the case of the pilot—a colleague of mine—who duly reported for duty one morning to take a passenger plane over to Paris. He asked, as usual, to be allowed to look at the weather forecast which had just been wirelessly from Paris. This document was duly handed to him by one of the officials.

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"But what's this?" asked the pilot irritably, pointing to one of the paragraphs of the message. Those standing near gathered round him to read the passage he had indicated, and there was a shout of laughter when it was seen that pilots flying on the Paris route that day were warned that "bolsons" might be encountered over the Channel.

"But what are 'bolsons'?" What on earth does it mean?" asked the pilot. "I've been through some pretty 'dud' weather from time to time, but I never remember, so far, noticing anything that looked remotely like a 'bolson.'"

This odd message from Paris was queried, of course. But when it had been repeated the mysterious word "bolson" still appeared in it. Airway pilots, however, are pertinacious fellows. It takes a good bit to keep them on the ground. And so that airman set off for Paris, "bolsons" or no "bolsons."; and I remember that he shook his head with a grin when someone at the last moment offered him a revolver with which to defend himself against one of these strange aerial monsters, should it seem at all hostile. He duly crossed the Channel, seeing nothing in the least unusual; and, as a matter of fact, the mystery of that word "bolson" was never solved. What had happened, no doubt, was that there had been some error in transmission, which the operator persisted in even when he was asked to repeat the message.

Such mistakes were, indeed, fairly common in

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those early days, and they often provided us with amusement. On another occasion, I recollect, pilots in London were warned in a message from Paris that conditions in the Channel, during the period immediately ahead, were likely to be "squoggy." By now, however, we were getting used to such verbal eccentricities in our reports, and beyond expressing some pardonable curiosity as to what a patch of really "squoggy" weather might look like, we just took off and flew as usual. And though we kept a look out while we were in the air for anything that might possibly come under the heading of "squoggy," nothing in the least unusual actually occurred.

Recalling such incidents as these brings to one's mind a "leg-pull" to which young pilots in the R.A.F. were subjected sometimes when they were going up for altitude tests. This joke took the form of solemnly warning them to be on the look out for "spandules."

"'Spandules'?" the young pilot would echo in a rather startled, uncertain voice. "What are 'spandules'?"

Other pilots who were in the joke now gathered round, and the novice's informant would continue gravely:

"Well, we can't let you go up without warning you about 'spandules.' It's a kind of seaweed up in the air, my boy, and you may encounter it in huge, impalpable sort of drifts at a height of about 10,000 feet. It's pretty ghastly stuff to get mixed up with, too. It clogs one's propeller,

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to say nothing of fouling the engine ; and I believe it's even been known to suffocate a pilot who has flown into a really bad patch of it. And it looks just the sort of weather to-day when you might run into some of it up there. Well, keep your eyes open, that's all."

Feeling none too happy about things, the young pilot gets into his machine and climbs steadily. And while he ascends, keeping an eye on his altimeter, he is thinking apprehensively about aerial seaweed and pilots who have been strangled. Up he goes. Now the height-recorder shows 5,000 feet. Now it stands at 8,000 feet. Slowly he begins to get into that "danger area" in the neighbourhood of 10,000 feet. Anxiously now he peers here and there through the immensity of the sky. Everything looks perfectly clear. There is hardly a cloud in sight. But these "spandules" are obviously queer affairs. One cannot be too sure. Very cautiously, therefore, he reaches the 10,000 feet mark, and then begins his downward glide. Nothing out of the way happens. The whole affair passes off quite successfully. But he is a very thankful young pilot, all the same, when he sees the aerodrome just below him and makes a smooth landing near the sheds. And then a group of laughing pilots, with a ring of grinning mechanics just behind them, hurry across to him in mock anxiety and question him as to the presence up aloft of those dreaded "spandules." But now that young pilot, his perceptions rather more keen, looks from face to face and suddenly grasps

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the fact that it had all been an elaborate bit of "spoof." Whereupon he joins in the laughter, and is prepared to play the same game with the next novice who comes along.

VI—ENCOUNTERS WITH BIRDS

APART from such mock perils of the air as are suggested by "spandules" or "bolsons," a pilot may have an adventure occasionally which takes a more serious form; and that is when he encounters some large and aggressive bird, such as an angry eagle.

One experience of my own in this connection still stands out clearly in my mind. I was flying a single-seater 'plane over Scotland one day, and the weather was extremely bad, with intermittent falls of snow. The visibility under such circumstances was far from good, but the air was clear enough for me to observe suddenly that a very large bird was flying along level with my machine. My first impression was that this bird was trying to race me, for every now and then, after flying steadily along beside my 'plane, it would swerve in towards me as though to challenge me to further efforts. That the bird had any idea of attacking me did not enter my head at the moment, and I was watching it with curiosity, rather than with any feeling of insecurity, when it suddenly darted on ahead of me, rose slightly, and then wheeled round swiftly and charged directly at my machine. There was a tremendous impact as it flew straight into my propeller, not only killing itself instantly,

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but smashing my propeller to pieces. After which, of course, all I could do was to make the best kind of landing I could, gliding down into a small snow-covered field. I was unhurt, and the 'plane was undamaged save for the loss of its air-screw; but I had been obliged to make my abrupt descent in a most desolate locality, and I could see no sign of life in any direction. After managing to drag my small machine under the shelter of a neighbouring hedge, I set off in search of aid—having to toil across bleak country for some time before I came to a tiny hamlet; and here, as darkness was now about to fall, I decided to spend the night. Next morning, accompanied by some of the villagers, I set off for the point where I had left my aircraft. I found the locality without difficulty, and soon came to the actual field in which I had made my descent. But now, to my amazement, there was no sign of my machine. It seemed to have vanished during the night. But if it had actually been removed, I told myself, there must be some tell-tale signs on the snow; and so I looked closely to see if I could detect any footprints or wheelmarks. Nothing of the kind was visible, and then suddenly the explanation of this apparent mystery dawned on me. The snow had been falling heavily during the night, and it had been accompanied by a high wind, the result being that a snowdrift had been formed along the line of the hedge sufficiently deep to cover my small aeroplane, hiding it completely from our view. This fact once ascertained, we set to work



[Photo: *Sport and General.*]

PASSENGERS GOING ABOARD GREAT WESTERN RAILWAY AEROPLANE USED ON FIRST RAIL-AIR SERVICE
PILOT, CAPTAIN G. P. OLLEY.

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with a will and dug the machine out of the snow-drift, after which, as soon as another propeller had been sent to me, I managed to get into the air again.

Very different is the attitude of various birds when they are confronted suddenly by an aeroplane. Some seem as though they want to fight. Some turn and fly away. Others are merely curious. I remember an experience which was described to me by the late Lieutenant-Colonel F. Minchin, a colleague of mine of the early days who lost his life—as did Captain Hinchcliffe—while attempting an Atlantic flight. Colonel Minchin was on a flight to Cairo in a British aeroplane, and when he alighted at the Tatoi Aerodrome at Athens he was warned by the authorities that some big and pugnacious eagles, located in eyries in the mountains along the coast of Greece, were flying out and attacking any aeroplane they could see. Colonel Minchin had a passenger with him, a Mr. Meyer, and after they had ascended they kept a keen look-out for any hostile eagle—more particularly as one of the aerodrome officials had informed them, before they left the ground, that just previously one of the Greek Government aeroplanes had been attacked by an eagle, the bird smashing the propeller of the machine, which crashed out of control, killing the pilot. Not a very cheerful bit of news, that—and when, on approaching the mountains, Colonel Minchin and his passenger actually saw a big eagle dart out towards them, they felt none too comfortable for

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the time being. Mr. Meyer, the passenger, thought it best to adopt a bold attitude. So he snatched up a Verrey pistol from a locker in the cockpit, and began firing this as the bird drew nearer. This action, to their relief, seemed to have the desired effect ; because the eagle, after eyeing them for some moments, dived away again towards the mountains, without attempting any onslaught upon their machine.

That tale reminds me of the story pilots used to tell of the French airman who was attacked by a particularly aggressive eagle while flying over the Pyrenees from Paris to Madrid. The machine he was piloting was a small monoplane, and perhaps the eagle mistook this machine for a large and rival type of bird. He seems, at any rate, to have decided upon a fight to the death. After flying all round the monoplane, inspecting it with an angry eye, he began to make a series of furious darts at the machine. The pilot, however, had not been idle. He had a revolver with him, and this he proceeded to fire at the bird every time it drew near the machine. These frequent pistol reports seem to have been rather more than the eagle reckoned with ; and it is also possible that it was hit by one of the bullets. At any rate, after some further demonstrations of a hostile character, it evidently thought discretion the better part of valour, and dived away towards some eyrie amid the peaks below.

Quite a different kind of an encounter with an eagle was, I remember, reported by another pilot

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after he had been flying near some mountains. In this case, it appears, a large bird flew towards him and seemed by its actions to be challenging him to a high-flying contest. Up soared the big bird, and up level with it, entering into the spirit of the game, flew the airman. But that eagle had underrated the capacity of its engine-driven rival. For by the time the bird's wings had begun to flag, and it was evidently near its "ceiling," or limit of height, the motor of the aeroplane was still driving it upward. But that bird seems to have been a game one, and it managed to struggle a little higher still. Then, however, it suddenly reached the limit of its climb, and, apparently quite exhausted, extended its wings motionless and glided away towards the ground, leaving the aeroplane master of the situation. An amusing tale that—if it happens to be true; but I have always had my doubts about some of these bird stories. Still, they used to go the round of the aerodromes, and they helped to pass the time, if nothing else.

Quite apart, however, from any question of tall stories, the observations which airmen have been able to make of bird life have already been of value to ornithologists, reinforcing the studies which are made, systematically, from ground level. Aeroplane pilots see the birds actually in their own element, and can often throw light on such subjects as the height and speed at which birds fly, and also upon the problem of bird migration. One gathers, from the general observations of pilots, that birds are rarely sighted above a height of about 3,000

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feet. Occasionally, however, there is an exception to this rule. I remember one pilot who said that when he was at an altitude of nearly 12,000 feet he saw a couple of birds which he took to be eagles flying at a height appreciably above that of his machine. There are many theories which need to be proved or disproved as to the height attained by birds when on migration. It has been said that they sometimes reach an elevation of nearly 20,000 feet, while other estimates put the figure at not more than about 5,000 feet. It is in such a question as this that ornithologists now think the observations of airmen may prove of value.

VII—STUDYING ANTIQUITY FROM THE AIR

ONE'S bird's-eye view as an airman shows one the world from a new angle. You catch glimpses of objects, while in flight, which cannot be seen from ground level—shoals of fish, submerged sandbanks, wrecks, submarines! Ancient ruins assume a new significance when viewed from aloft; and I remember the case of a cathedral spire which, though it seemed quite all right to those looking at it from the ground, was shown to be slightly out of truth when inspected from an aerial point of view.

Such aspects of aviation have always interested me, and more particularly the way on which an aeroplane pilot, from his viewpoint aloft, can help the archæologist in his study of antiquity. Man's most modern vehicle is carrying him back to the dawn of history. Photographs from aeroplanes reveal signs of ancient camps, earthworks, and roads which the human eye, at ground level, fails to locate. An aerial view of a field of corn may, by a difference in the tinting of the print in certain places, show traces hitherto unsuspected of some old-time ditch or excavation. They stand out ghost-like on the plate; the explanation being found in the varying moisture of the subsoil in the vicinity of such old-time earthworks. This difference in moisture affects crops as they grow,

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and a visual record of change, though not manifesting itself on the ground, is revealed by a faint difference in the colour of the corn when viewed by the aerial camera.

On some air photographs of ancient sites traces of the successive earthworks of the Stone and Bronze Age can be seen overlapping. Some aerial photographs taken of earthworks on a Somerset common revealed a faint pattern of lines which had never been seen before, and an inspection of these prints suggested that instead of this spot being, as had been thought, the locality of an old-time sacred place, the markings shown by the air-borne camera indicated the existence of an ancient system of cattle enclosures and cultivation. Another aerial view, taken over a site in Warwickshire, told a story of remote cultivation in such detail that certain queer, curved markings were visible which were believed to have been caused by the twist of great eight-ox ploughs as the leading oxen were pulled round, ready for turning, at the end of the furrows. Old Roman roads, Celtic fields, and the ancient tracks of pack-horse traffic, stand out in wonderful detail when viewed by the all-seeing eye of the air-borne camera, and archæology in Britain, and in foreign lands as well, has no better ally than that of the aerial camera.

VIII—THE GROWTH OF AIR TRAVEL

I HAVE just been looking through some of my note-books dealing with those critical years of British air transport from 1919 to 1924; and it was certainly a trying time that we went through in those five pioneer years. Air travel was new to the public. We had an immense amount of prejudice to overcome. The financial resources of the British companies were slender. Their expenses were very great. And, to make matters worse, they were called upon to compete, on the Continental air routes, with foreign companies which were being subsidised heavily by their Governments. Such competition was all the more difficult to meet owing to the fact that an official edict had gone forth that our British air-lines must "fly by themselves," and must not receive anything in the shape of financial assistance from the Government.

Well, that might have been all right if the same had applied to our foreign rivals; but their State assistance, compared with our unaided flying, put us in an awkward position. I well remember the critical situation which developed not long after British air travel had been established between London and the Continent. We had been doing quite well, all things considered, and on one or two

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of the routes it really looked as though the corner would soon be turned financially. But then a bombshell fell among us. Our foreign rivals, not liking the look of things, and with their Government assistance behind them, suddenly decided to cut their air fares drastically in their endeavour to gain more traffic. That hit our British air-lines very hard. Flying without subsidies as we were, and with our rates already reduced to a fine point, it was simply impossible for us to cut our charges any further in order to meet this sudden competition from abroad. It could not be done. Ruin stared us in the face. Representations were made to the authorities, of course, but for a time without avail; and so there was nothing left for the British air-lines but to close down. This they did very reluctantly—the pilots even making a sporting offer to go on flying for a time without any pay.

The cessation of British flying on the Continental routes led to one remarkable situation. Our London airport at Croydon, provided at the taxpayers' expense, was for a time being used entirely by foreign aircraft, our own machines remaining idle in their sheds. That intolerable state of affairs persisted for 19 days, and then there was such an outcry, among press and public, that our authorities found they could hold their hands no longer. Something had to be done, and done quickly, and this led to the hasty introduction of a scheme of State assistance for our air-lines; the result being that British aircraft began flying again

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on the Continental routes, being now able to adjust their fares so as to reply to the competition of foreign rivals.

That was a milestone in British air transport history. With Government aid to accelerate our progress, we were able to go ahead actively. New routes were opened up. Ground organisation was improved. And this phase led to another in which it was decided that British enterprise should be focused into one spearhead of effort instead of being distributed over the operations of several companies. It was this decision which led to the institution of Imperial Airways, and opened up an era of air-lines extending not only across Europe but also for thousands of miles across the Empire. That was in 1924, and, with a settled policy of air development, we were soon able to make rapid strides.

One big need for improvement lay with the machines we were flying. When civil aviation began, in 1919, the passenger aircraft we were given to fly were hastily-converted war machines. They served their temporary purpose well; but they were far from ideal from any commercial viewpoint. Passengers found them cramped and noisy. The airway companies found them expensive to run, not only because of the high power of their engines, but also because they had been designed and built for a short-lived military service, and not for the regular wear-and-tear of daily commercial flying. In war it does not matter so much how you get your results. The thing is to get them—

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and to get them quickly. This being so, the extra performance that was called for in war machines was obtained very largely by piling on engine-power. And that was quite all right from a war point of view. But, when it comes to civil aviation, the aim is to carry the biggest possible paying load for the lowest possible expenditure of horse-power. Also, in civil aviation, you want an aeroplane which can be kept flying with a minimum of maintenance and overhaul. Although, therefore, the war-converted craft played their part in instituting civil aviation, aircraft operators felt that no definite progress could be made until we had abandoned these war-time bombers which had been adapted as passenger-carriers, and designed and built machines which were intended simply and solely for commercial purposes.

It was after Imperial Airways had been formed that the experts of the Company made a thorough study of the economics of air transport, and the result was that production of a machine in which I and other pilots did a very large amount of successful flying. This was the 3-engined "Argosy," an air-liner built largely of metal, and with a saloon carrying 19 passengers. One of the advantages of this machine, apart from the reliability afforded by its multi-engined power-plant, was that it was big enough to carry a uniformed steward as one of the regular members of its crew ; and this led to our modern era of comfort in flying, in which the air-liner carries its stewards and well-equipped buffet, and five and six-course meals

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are served up in the air just as deftly as they are in a restaurant or hotel at ground level.

I had the privilege, I remember, of being the pilot of the first air-liner on the Paris route in which a complete dinner was served while up in the air. It was at Christmas-time, and the meal was a seasonable one, comprising all the well-known features of the festive season. But those were in days when flying was still an adventure; and, though many more passengers were beginning to patronise the Continental routes, they still felt that an aircraft was a strange and rather intimidating machine. The idea of eating a meal in an aeroplane was so novel that it did not meet with much acceptance that day. Those passengers felt hardly comfortable enough in the air to settle down to eating with anything like real enjoyment. But I remember that there was one exception, and that was a school-boy who was flying over from London to join his parents in Paris. He made up his mind that no qualms about being up aloft were going to prevent him from doing justice to that Christmas fare. Even while we were still over Kent, on our way to the coast, he had made a very good beginning, and before we had completed our Channel crossing he had dealt successfully with a couple of large helpings of turkey. And then after that, as we were flying along above France on our way to Le Bourget, he polished off a couple of big portions of Christmas pudding, to say nothing of several mince pies. An enthusiastic believer in aerial catering, that boy was!

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When I look back on these early years of air travel, one fact which stands out more clearly than any other is the immensely favourable influence which was played, in the encouragement of passenger traffic on our air-lines, by the introduction of large and really comfortable aircraft. Time and again, during our pioneer days, people used to come up to me and say that it was not any of the alleged risks of flying which deterred them from making a regular use of our Continental air routes. What they could not stand were the cramped and noisy cabins of those early, war-converted 'planes. And as soon as we could put machines on the Continental routes which provided real comfort up in the air, the whole aspect of the problem changed, and the increases in traffic began which continue so uninterruptedly at the present time. It is astonishing the difference a comparatively few years have made. In the first weeks of the daily air express to Paris the officials concerned used to study their slender bookings with an acute and somewhat painful attention. One of them would walk into the little office where the clerk dealing with this work was seated and would ask: "How many have we got for to-day?" "Two," the clerk would answer. "And how many are there for to-morrow?" "Three," would be the reply. And from that mere trickle of traffic we have reached the position when, during a busy spell at the present time, 250 passengers fly between London and Paris in a single day in our big British air-liners.

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For some time, during the early period of which I am writing here, we had to rely very largely upon the patronage of American passengers. These visitors from the United States—flowing over as they did in the period before the depression—used to take a particular pride in making the air trip between London and Paris. They liked to see the special airway labels on their luggage, and they liked to go back home again and tell their friends how they had looked down on the landmarks of England and France from the air. They were a boon to us, those Americans! Not only did their air fares replenish our depleted coffers, but most of them had the habit of travelling with large quantities of luggage, and for their many trunks and cases they willingly paid excess rates. It sometimes happened, in fact, that one of these travelling families from the United States had so much luggage which had to be flown over to Paris that, after they themselves had filled one of our passenger-planes, we had to put on an extra cargo machine which flew across behind the passenger craft, loaded to capacity with boxes and trunks.

Those were in the days when passengers by air, looking upon themselves as pioneers and adventurers, were inclined to make heroes of the pilots who flew them to and from the Continent. Amusing incidents often took place. I remember one old lady who had embarked at Croydon, on a flight to Paris, with a good deal of trepidation. I was piloting that particular machine, and she came up to me and begged me not to fly too high or too

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fast. I promised her that her flight should be a smooth and uneventful one, and so as a matter of fact it was, the weather conditions being quite ideal. The result was that this old lady was delighted with her experience and, after she had stepped out of the machine at Le Bourget, she hurried across to me, beaming with smiles. Patting me on the arm, she murmured: "Brave boy," and then pressed half-a-crown into my palm!

We used to find that travellers who had become confirmed in the habit of tipping simply insisted upon slipping "presents" into the hands of the pilots who had carried them on swift and exhilarating flights between London and the Continent. Laughing, good-humoured protests seemed quite unavailing. "If you won't take it yourself, then hand it over to one of your air charities," was the remark of one American who persisted in tipping a pilot after he had enjoyed a specially pleasant trip. One elderly and peculiar passenger who flew regularly for a time on the Continental airways, and was then seen no more, adopted a most eccentric method of tipping. Once or twice this traveller, who was taciturn to a degree, was reported to have handed to some pilot who pleased him a sum that was handsome in the extreme. And then another time, in grim silence, he is said to have proffered nothing bigger than a sixpence. The desire to tip an air express pilot seemed to become irresistible when circumstances such as a favouring wind enabled an airman to complete a journey in less than scheduled time. American

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travellers, as one might imagine, were always specially pleased at anything savouring of a record flight, and were equally prone to signify their pleasure in the usual way.

It was amusing to study the psychology of early air passengers. Many of them would arrive at the air-port looking very subdued. They would enter the aircraft with a hunted look, as though they already regretted having decided to fly. In fact it used to be said that the air-port authorities were in the habit of ushering passengers quickly into a machine so as to give them no time to escape. But, once these passengers were well aloft, their fears soon subsided, and they began to enjoy themselves, being fascinated as a rule by the panorama of land and sea which lay below them. I remember one little business man whom I had to pilot on an urgent flight to the Continent. He was very nervous indeed before starting. But directly he was up in the air, and well away from the ground, his confidence soon came back. In fact he began to feel so pleased with himself that it was not long before he passed a note through to me in the cockpit. On scanning this I was surprised to read :

“ Please do some stunting for me.”

Well, we were all out in those days, as we are to-day, to please those who patronise the airway, and so I quickly performed what I considered was rather a neat little programme of impromptu “ aerobatics.” Actually, I am afraid, I must have put just a little bit too much vim into those

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manœuvres, because a moment or so later another note was pushed through to me, written in decidedly shaky hand. And all that was on it was :

“ Stop, for pity's sake ! ”

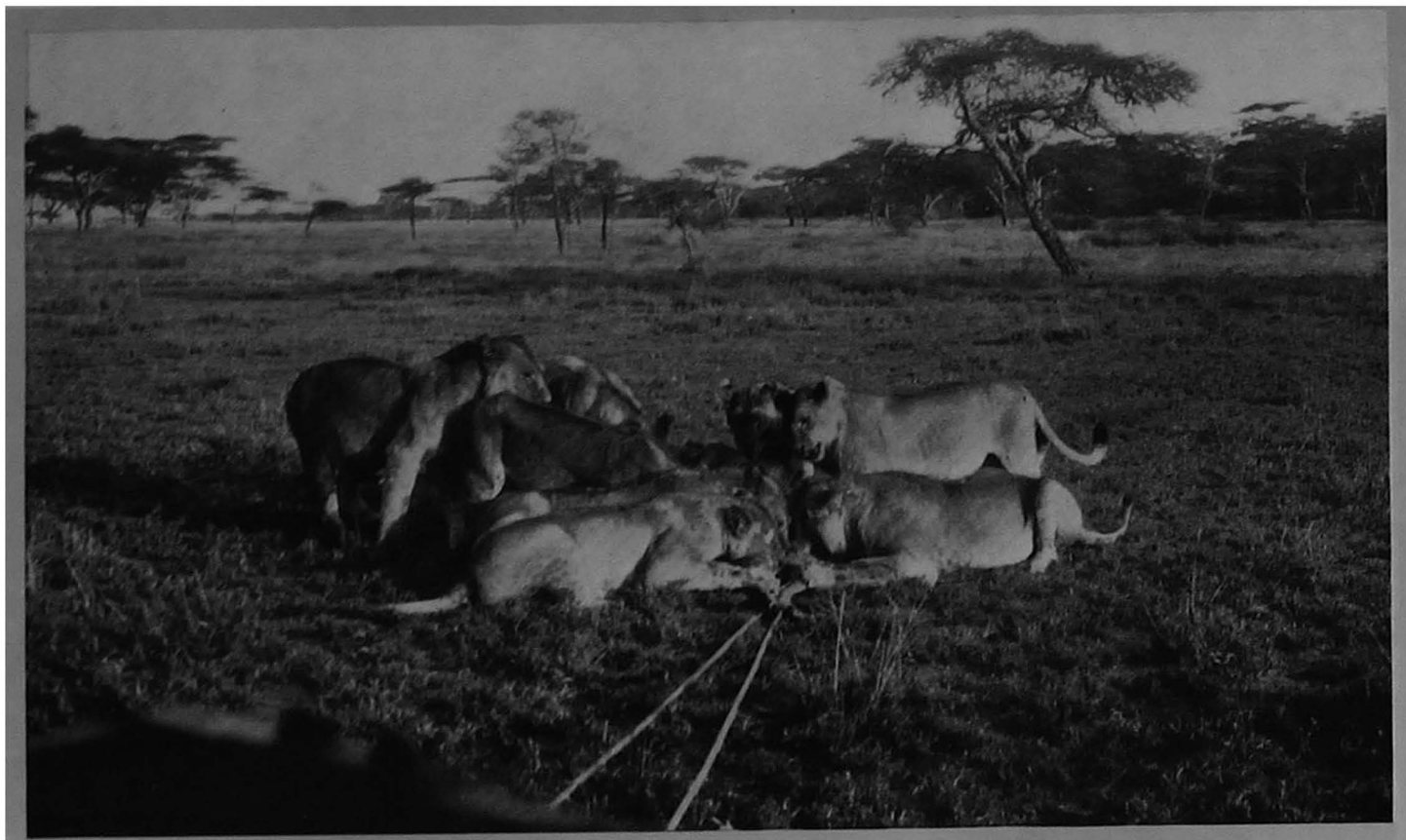
This early system of message-writing between passengers and pilot, and the passing of these missives through from cabin to cockpit, often led to amusing situations. On one of the first flights with passengers, from London to Paris, the weather from the pilot's point of view was extremely “ dud.” Wind, rain, and bad visibility all added to his troubles. But he kept steadily plugging along. The passengers inside the tiny cabin, protected from the elements and with no anxieties as to course-keeping to worry them, were quite enjoying themselves, and at one stage of the journey they decided to pass one of the usual slips of paper through from the cabin to the cockpit. The airman, grasping it and glancing at it quickly, as he battled with the weather, read the words :

“ How are you ? We're getting on fine in here.”

The pilot's reply, scribbled curtly on the edge of that slip, was :

“ It's a hell of a time I'm having ! ”

We had some queer passengers sometimes. The air has attracted a good many cranks in the shape of inventors, and our first air-lines seemed to attract some remarkably odd people in the form of passengers. They all used to like to talk to the pilot, and one day I remember that one of them, a very learned gentleman of the professor type,



LIONS ENJOYING A ZEBRA LUNCH ON THE SERENGETTI PLAINS AT TANGANYIKA.

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entertained me by explaining a theory that, as flying developed, all those who used the air regularly might come to have a typical expression on their countenances—what one might call a “flying face.” He pointed out that in the early days of the bicycle boom people began to wear an expression which became known as the “cycle face.” Then, with the coming of the motor-car, it was declared that there was what one could recognise as a “motoring face.” After which he went on to give me a learned description of the set of tiny nerves and muscles which control one’s expression, and which are so delicate that they may easily become set so as to produce one typical sort of expression—a strained or restless look, just as the case may be. I thought the idea of an “air face” decidedly amusing, and I found myself studying the expressions of aeroplane passengers flying in and out of the London ‘drome. But I am afraid that those observations of mine were rather inconclusive. I could not detect anything that looked in the least like a “flying face.” One thing I did note, though, was that passengers often alight after an air voyage with a very decided look of pleasure and animation in their faces. There is a sparkle in their eyes. Every trace of boredom seems swept from their faces. They talk eagerly and quickly. There is, indeed, an immense exhilaration about flying. One pilot used to say that as soon as he got about 5,000 feet up he felt he wanted to sing. Another pioneer air pilot, who was in private life a composer of music, used to declare

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that some of his best ideas came to him when he was in the cockpit of an aeroplane. It might be thought that the face of an air pilot, a man who drives his machine habitually at such a high speed, might wear an expression suggesting strain. On the contrary, however, the flying man's expression is usually one of steadfast composure. He has the quiet, far-seeking look of the man who sweeps wide vistas with a watchful eye.

One evening I found myself motoring up from the air-port to the West End with an experienced traveller who had become an ardent patron of air-way travel.

"Doesn't it strike you as remarkable," he said, "how man adapts himself to a constantly-changing environment, and how one's senses accustom themselves to an ever-growing speed? If one could take an early cave-man, plank him down suddenly in a motor-car, and then take him for a fast spin, he would probably be in a terrible state of mental distress. The speed to which we have grown so accustomed would prove a fearful ordeal to him. From the jogging stage-coach we have progressed to the express train, in which we eat and sleep while tearing along the iron road. And now from the railway train we have gone to the passenger air-liner, flying at more than twice the speed of the fastest surface transport."

And at this point I reminded him of the story of those doctors who, many years ago, solemnly declared that if a man ever dared to travel at a speed of 60 miles an hour, he might run a serious

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risk of heart failure. I wonder what those doctors would have said if one could have told them that a man would, in due course, be moving through the air at 400 miles an hour and more, and would alight without having suffered any ill-effects. At any rate, that is what has actually happened, because the world's air-speed record, at the present time, stands at 423 miles an hour; while those who are making a study of high-altitude flying tell us that ultimately we may be flying at great heights at a speed of 1,000 or 1,200 miles an hour.

IX—WITH THE NIGHT AIR-MAIL

It seems to me, when I think things over, that man's adoption of his new power of air travel is best illustrated by the flight of a modern air-liner above the Channel on one of those evening services when twilight gives place to dusk, and dusk to night, and the big machine is flying a mile or more above the water, with its lights gleaming. In its control-cabin, peering out into the dark, sits the commander—a pilot who knows his sky-ways just as sailors know their sea-ways. And beside him, at duplicate controls, is the first-officer. The "brain" of that big machine, this! Behind the control-cabin, in the long, tapering body, are luggage and mail compartments; and then on through a doorway lie the big saloons. Here, oblivious of the fact that they are thousands of feet up in the night sky, with nothing below them but the waves of the sea, twenty or thirty passengers are enjoying all the luxuries of modern travel just as they would do in a Pullman-car train. From their buffet two white-jacketed stewards have been serving a six-course dinner. Shaded lights gleam down on the tables. Passengers lean back in their arm-chairs, many with their after-dinner coffee before them. Some are reading books or magazines. Others sit talking. One little group is

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playing cards. The stewards walk deftly to and fro. And the sound of the big engines is heard in a steady, sleepy drone. Just on fourteen tons weighs this metal-built Pullman of the air. It is cleaving the night at a steady 100 miles an hour. And it flies with such smoothness that cups of coffee on the tables in its saloons, even if filled to the brim, do not spill a drop.

Out in the control-cabin, with shielded lights above dials and instruments, the first-officer moves over a small lever and speaks into a telephone. Instantly his voice flashes through the sky and reaches an operator who, with head-phones to his ears, is listening many miles away in a big chamber at the top of the control-tower at the London air-port. They annihilate distance, these two, one up in the air and the other on the ground below. "Hullo, Croydon! Hullo, Croydon!" "Croydon answering!" "Croydon answering!" And then they have a little chat about the weather. At Croydon some mist has been gathering since darkness fell; but it will not be enough to bother the incoming air-liner, more especially in view of the great flood-light which throws its beam across the alighting area, almost turning night into day. The first-officer tells the commander what Croydon has just said. The latter nods. He is looking forward and downward through the night. The sky is clear. No clouds obscure the view. A panorama of twinkling lights can now be seen below. The air-liner is approaching the English coast near Bexhill. Away to the right—bright

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pin-points against the dark background—lies Hastings. To the left is Eastbourne. The lights of piers and promenades, though dwarfed by height and distance, stand out brilliantly. The first-officer busies himself for a moment, writing up his log-book. Height, speed, the revolutions at which the engines are running—such details, and others, are all jotted down. This log-book tells the story of the flight.

Another wireless message is flashed to Croydon, telling the operator in the tower that the air-liner is passing in over the English coast. Regularly such signals pass from 'plane to tower, enabling the controller at Croydon to plot out on his big map, from time to time, the position of air-liners in flight. It is now, with a word to his first-officer, that the commander hands over control to him and, opening the door leading to the saloons, strolls through just to see that everything is all right from the passengers' point of view, and that the catering arrangements are proceeding with their usual efficiency. A word here and there, a quick, comprehensive glance at the work of the stewards, and the commander makes his way back again to the control-cabin. It is all part of his routine, this. He is just as at home up in the air as earth-folk are on the ground below.

Beneath, on the night-shrouded country-side, flicker the lights of towns, alternating with the flashes from the airway beacons which mark the route from the coast to Croydon. Throwing its beam skyward, each of these beacons sends up

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distinctive flashes which enable it to be recognised easily. Here and there, seen from above as glimmers of moving light, trains pass thousands of feet below; while head-lights cast ghost-like gleams as motor-cars wind their way through the darkness. Now, 3,000 feet below, lies Tonbridge. The commander, looking out through the control-cabin windows into the blackness ahead, catches sight of a familiar gleam. It is the "neon" light-tower at the Croydon 'drome—its intensely penetrating light being visible to incoming airmen when they are still miles distant. On through the night flies the aerial mail, heading directly for this beacon. In the saloons the stewards move to and fro, telling passengers that the air-liner will soon be alighting, and there is just the same bustle of impending arrival as one sees in a boat or train. One or two passengers glance at watches, smiling with satisfaction. The air-liner is flying exactly to time. In the control-cabin the first-officer exchanges a final wireless signal with Croydon, telling them that the air-liner is nearing the 'drome, and that he is winding in the weighted wireless aerial which, during flight, trails below the machine. When Croydon receives this message, warning bells ring in the air-station, and airway officials and porters hurry to the flood-lit arrival platform. Out of the darkness, rendered visible by its swiftly-moving lights, comes the aerial mail. Round it sweeps in a wide circle. A green light flashes from the control-tower—the signal that all is clear for landing. The drone of the engines sinks to a

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murmur as they are throttled down, and the machine comes gliding in down the illuminated path furnished by the great flood-light, making a smooth, perfectly-judged landing on its huge, pneumatic-tyred wheels.

Passengers reach for hats and handbags as the air-liner taxis to the arrival platform. The exit door in the hull swings open. Porters busy themselves with luggage. A motor-coach stands waiting to carry passengers from Croydon to the West End. And so, night after night, is our conquest of the air epitomised by this romance of the flying mail.

PART III

MORE LEAVES FROM MY LOG-BOOKS

I—THE EPISODE OF THE FLYING JOCKEYS

THE latest figures from my log-books show that I have now spent 11,000 hours up in the air, flying approximately 1,100,000 miles, and during a large part of all this flying I have devoted myself to special-charter work, carrying out urgent flights at a moment's notice in all directions. One has to be available at all hours, day and night, when undertaking tasks like this. I remember going to bed very tired one night, after a strenuous day, hoping for a good many hours of uninterrupted sleep, when suddenly the telephone at my bedside broke out into its insistent call. I switched on the light and looked at my watch. It was just three o'clock in the morning, and I don't think I have ever felt sleepier in my life than I did at that particular moment. However, when one is a special-charter pilot one has one's job of work to do, irrespective of how you may feel at the moment. "Now what's this, I wonder," I said to myself as I grabbed up the 'phone. "Some urgent job, no doubt"—and in this I was not mistaken. The voice at the other end of the wire was now speaking.

"This is Gordon Richards. I'm ringing you up from the Piccadilly Hotel."

"Is it *the* Gordon Richards?" I asked.

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"Yes. The one who rides horses," came the quick reply. And then the famous jockey went on to explain :

"I'm marooned here with Harry Wragg and Johnny Dines. We've missed the night train up to Ayr, and we're due there to ride in the race-meeting to-morrow. The first race starts at 1.30 p.m., and I've got a mount in it. Do you think you can fly us up there in time?"

I did a quick bit of thinking. Then I called back to Richards.

"We'll have a good shot at it, anyhow. But of course we can't do anything until morning. You be down at the air-station at 8.45 a.m. sharp, and in the meantime I'll get busy in ordering a machine to be ready, and in making other arrangements."

I had the aircraft out on the departure platform dead on time, and my jockey passengers arrived promptly from London, too. They were soon in their seats in the aeroplane saloon, and I promised them that, all being well, I would get them to Ayr by one o'clock, so as to give Richards time to get ready for his ride in the first race. We flew through from London to Blackpool quite according to plan, and I stopped there to re-fuel, and in order that we could stretch our legs and have a snack. Then I flew off again, passing on across the Solway Firth—only to find myself suddenly flying into a barrier of dense cloud which seemed to grow thicker every mile I flew, and which soon blotted out all sight of the landscape below. I tried climbing, and went up through those clouds until, at 8,000

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feet, I came out into sunshine. After which I flew on for a bit, hoping to see some breaks in this cloudbank. But it still stretched in an unbroken mass below, and I must say that I did not like the look of things at all, because I knew that below that sea of cloud lay the peaks of Scottish hills, and that to creep down through that opaque mass of cloud, trying to get a glimpse of landmarks, might be a decidedly risky business. However, something had to be done, and so I reduced height very carefully until suddenly the tops of a group of fir trees, standing on a cloud-obscured hill-side, slipped past just beneath the wheels of my under-carriage. A very nerve-trying experience anything like that can be, particularly when one is anxious, as I was that day, to keep my word with the passengers in the saloon. The only thing to do, of course, in such circumstances as these, was to keep on flying cautiously, hoping against hope for some chance of finding a "hole" in the clouds through which one could steal and get some idea of one's exact whereabouts. From the check which I had kept on my flying from the moment of leaving Blackpool, I now felt pretty certain that I could not be far from Ayr. But it was one thing to be somewhere in the neighbourhood, and quite another to make a safe landing in such conditions as continued to persist in the locality where I was flying. I dodged about, seeking in vain for even some small clearing in the cloud-bank. It seemed to hang, impenetrable, over the entire country-side. Presently I looked

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at my watch and saw that it was not far short of one o'clock. Something drastic would have to be done, that was certain. So I made up my mind to strike off towards the Irish Sea, knowing that once I was over the water I could get down to a low altitude without any risk of flying into any such obstruction as a hill-side. This plan I adopted, flying now at full throttle. As soon as I had passed out over the coast I dived until I was only a few hundred feet above the surface of the water, after which I turned inland and managed to grope my way along just under the lower edges of the clouds. In this way I flew at top speed in the direction of Ayr, and soon the race-course, which I could see was packed with people, came into view. I looked at my watch. The hands pointed to 1.28, and I knew that Richards was due to ride at 1.30. Actually it was 1.29 when, after a quick landing, I taxied my machine up near the paddock entrance. Gordon Richards and the other jockeys dashed out of the machine, only to be met by one of the officials who said: "I'm very sorry, Gordon, but, after waiting as long as we possibly could, we've had to engage a substitute to ride for you in this first race."

Things did not turn out so badly after all, however, because I watched Richards ride the winners of three subsequent races that afternoon; while Harry Wragg, one of my other passengers, was victorious in another two. So I felt that my air dash, difficult though it had been, was certainly not in vain.

II—MY ADVENTURE WITH THE BULLION PLANE

It was quite early in the development of organised air travel that banks found it advantageous to send gold in bulk by air, and to-day the consignment of bullion and other articles of value by aeroplane has become so reliable and safe that insurance rates are now lower, in the case of air transport, than they are for shipments by surface transport. Many millions of pounds worth of gold has been flown between London and the Continent, and bullion is also being flown nowadays along our Empire air routes from Africa and India. I myself have often been the pilot of a "bullion plane," and in these modern days of air transport, with multi-engined machines which ensure a virtual immunity from any risk of a forced landing, such journeys are made with a complete reliability and absence of any unforeseen event. But, naturally, it was not always so. There were occasions, before we attained the mechanical reliability of to-day, when some small defect might compel one to make a forced landing before one's journey could be completed. On one of my earliest trips with gold I set off from Croydon, accompanied by a mechanic, in a machine in which there was about a quarter of a million pounds worth of

bullion. We were bound for Switzerland, the gold having been consigned to the Swiss Federal Bank. All went well at first. We made our crossing of the Channel without incident, and had got as far as the district near the Vosges Mountains when engine trouble began to develop, which I realised would soon compel me to make a forced landing. Suitable spots were few and far between in the district where I was flying, but I managed at length to put my machine down in a field on the outskirts of a small village. So far, so good; but that bullion in the cabin weighed heavily on our minds. "Gold is the root of all evil," observed my mechanic, and I felt inclined to agree with him. But it was up to us to do something. Already a number of peasants had begun to surround our machine, and I did not much like the look of some of them. "You had better make your way down to the village," I said to my mechanic, "and get hold of some kind of conveyance—motor-car, taxi, lorry, or anything in which we can put this bullion and get it taken to some place of safety. And while you're away I'll stand on guard."

This plan we carried out. My mechanic hurried off, and I stood near the cabin door of the aeroplane, exchanging friendly gestures with the watching peasants. In a short time my mechanic returned, having obtained the use of an extremely tumbledown cart, drawn by an equally ancient-looking horse. Anything, however, was better than nothing at such a moment as this, and we started unloading the bullion boxes from the 'plane



[Photo: By courtesy of the Daily Sketch]

CAPTAIN OLLBY LANDING THE PRINCE OF WALES AT SMITH'S LAWN, WINDSOR, AFTER A FLIGHT FROM PARIS.

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and storing them away in the cart. During this process I noticed the peasants began drawing very much nearer, and soon they were thronging round us in a very inquisitive fashion. Whereupon my mechanic decided to say something which would have the effect of putting them off the scent. So, handling one of the bullion boxes in a gingerly way, and with a somewhat anxious expression on his face, he observed in a French which was very bad, but which was understood all the same :

“ There’s enough of the stuff in these boxes to blow the whole lot of us sky-high ! ”

This hint I observed was very quickly taken. The peasants evidently reckoned that what we were handling was a load of dynamite, or some other deadly explosive, and they backed away from the neighbourhood of the machine as quickly as, a moment before, they had been jostling round us. Which was a decided relief, as it enabled us to finish as quickly as we could the operation of transferring the bullion from the aeroplane to the cart. But our troubles were not yet over. Far from it: We started off for the village with the bullion piled on that rickety cart, and with the peasants following us at a respectful distance. In this way we duly reached the main street of the village, a steep and cobbled thoroughfare. And then suddenly there was another catastrophe. Our poor old horse missed his footing and fell, and his struggles in getting up again had a disastrous effect on that shaky old cart. It tilted over, and then literally fell to

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pieces. And the result was that our bullion boxes were scattered in all directions. One crashed into the front of a neighbouring estaminet. Others lay partly smashed in the gutter. More than one had been broken to such an extent by the violence of the fall that there was a tell-tale glint of gold as the bullion bars protruded through split and broken woodwork. This was certainly a trying moment for us. The suggestion that our load was of an explosive nature was now shown to be nothing more than a piece of bluff, and the peasants, with astonishment written on their faces, drew rapidly nearer and gazed with fascinated eyes at the gleaming contents of those broken boxes. It was a moment, that, which seemed to call for some fairly definite move, and so I drew from the pocket of my flying-coat a loaded revolver, and stood fingering this weapon as my mechanic hastily collected the scattered bullion boxes and got them into a heap just beside the broken cart. When on these bullion flights to the Continent, I should mention, it was a rule that the pilot should be armed. The peasants, looking at my revolver, became somewhat more subdued, although they could not keep their eyes off that glimmer of precious metal from within one or two of the broken boxes.

I had been told that the local police station lay not far away, and so I handed the revolver to my mechanic and hastened off to obtain the assistance of the local authorities. I duly found the police station at the bottom of a hill; but even then my difficulties were not at an end. Because the

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local officials seemed to regard me as a madman—or perhaps as a dangerous spy. At any rate, my story of the gold scattered about in the village street seemed to them, at first, too preposterous to be listened to seriously. However, I soon managed to convince them; and it was not long before that gold of mine was in safe keeping, and I was able to heave a sigh of relief at the termination of a decidedly troublesome episode.

The transport of gold by air has touched the public imagination, and the flights of "bullion planes" are usually recorded in the newspapers. Not long ago something like twenty tons of bar gold was flown in a few days between London and the Continent, and it is amusing to see how little fuss is made of the precious metal by those who are accustomed to handling it. It is shifted about in trucks, and dumped into vans, just as though it was any quite ordinary kind of load. But as a matter of fact the precautions taken, though they are unostentatious, are pretty thorough.

Just lately the transport of gold by air along our Empire air lines from Africa and India to London, has increased by as much as 60 per cent. Roughly, three weeks can often be saved if bullion from mines in Africa is sent to London by air rather than by surface transport. Consignments by land and sea have, in many instances, to go by rail to one of the coastal ports, and then continue their journey to England by steamer—the result being a total transit time of perhaps thirty or forty days. But when air travel is utilised the

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gold has only to be taken from the mines to one of the neighbouring air-stations ; after which it is flown at such speed that it reaches London within a week of being handed to the air officials in the heart of Africa. Naturally, consignors have to pay for such speed, but they are perfectly willing to do this, bearing in mind the fact that the sooner the gold is on the market the sooner it becomes interest-bearing ; while the use of the air route—as I have already mentioned—has the advantage that insurance rates are as a rule very considerably lower than they would be if consignments went by ship and train. As a matter of fact, in the case of mines which have to consign their gold by rail to a coastal port before it can be put on a steamer, but which are located conveniently from an air point of view, it is often found cheaper nowadays to consign a load to London by the flying route—taking all factors into consideration—than it would be to send it by boat and train.

III—QUEER AIR CARGOES

To fly on some very strange errands, and to carry some queer cargoes, often falls to the lot of a pilot who is doing special-charter work. Here is the story of one odd trip that I was called upon to make. A wealthy traveller and his family had left Brussels for Southampton to catch a liner which would take them to New York. On arrival at Southampton, where it was necessary for their trunks to be opened, it was suddenly discovered that all the keys which would open these trunks had, in a last-minute rush of departure, been left behind in an hotel in Brussels. An urgent 'phone message came through to the London air-station, and in considerably less than an hour I was in the air, flying as fast as I could to Brussels to get those missing keys. On the aerodrome at Brussels I found an hotel official waiting with them. Quickly refuelling, I started back again, and those travellers had their keys handed to them so promptly that they had an hour in hand before the boat sailed.

One often hears people talking of the romance of modern transport. Well, all I can say is that if you want the real thing—the authentic, genuine article—you can find it at London's busy airport. One morning not long ago, when I was at Croydon,

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the air mail for India was on the point of departure when a last-minute parcel was rushed down from the West End by special messenger. And what do you think the consignment note showed that it contained? Just a false beard! That, and nothing else. And the explanation was quite simple. An amateur theatrical performance had been arranged in India, and for the make-up of one of the actors taking part a special type of false beard was essential. The lack of this had not been discovered until it was too late to obtain one from London in the ordinary way. But by air that beard was in India in five days, and the situation was saved. And here is another of these romances of speed. Not long ago an engineering plant, located far out along one of our Empire air lines, was brought to a standstill by the failure of a small but vital part which could only be obtained from a special source in England. To have got it out by ordinary means might have meant weeks of delay. But a cable to the firm here, telling them to invoke the assistance of air transport, meant that the part required was actually delivered, thousands of miles away, in not more than a week.

Air transport is now creating new traffic of its own. Here is an example. Grown at various points along our Empire routes are rapidly-ripening tropical fruits which hitherto, owing to the time taken by ordinary transport, have never reached London in a suitable condition. Now, if a consignment is placed in one of the home-coming

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mail planes, the fruit is in the London shops a few days later in a prime condition for eating. In many other ways is the air mail proving a boon to industries far distant, whose territories it serves. Take the coffee planters of Kenya. They now send samples of their crops to London by air in a matter of days as compared with weeks of surface travel. Samples of the Egyptian cotton crops are also coming through regularly by air.

How speed attracts loads is shown in the transport of livestock by air. Take the frequent consignments by air of day-old chicks. Here the airway can do something impossible by any other means. A special crate of chicks, if put on an outward-bound 'plane at Croydon early in the morning, will be delivered at some point far across Europe that same evening. Not long ago, in one consignment, as many as 2,000 chicks were flown through from London to Rumania. Our experts who deal with this livestock traffic think nothing of arranging for the aerial transport of a lion, a tiger, a crocodile, or a performing horse. At a moment's notice they are prepared to fit up one of the big cargo planes as a sort of flying menagerie. One machine actually came in at Croydon carrying a bear, a number of monkeys and parrots, and a big consignment of tropical fish in tanks. Several times fully-grown lions have been brought over from the Continent by air. A strong cage is fitted up inside the hull of one of the air freighters, and the keeper travels in the machine with his charge. All these performing animals prove docile

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air travellers. In fact their keepers say that they give far less trouble on an air journey—remembering that it is over so much more quickly—than on any long surface journey with changes from train to boat and back again to train.

One of the queerest loads to arrive at Croydon took the form of 300 live locusts which, after having made a journey of 4,000 miles by air from Africa, travelling in special crates and being fed and tended *en route*, afterwards met death in various unpleasant forms in the laboratories of the War Office Chemical Department on Salisbury Plain. Some of them had creosote sprayed on them in wind tunnels. Others were subjected to bombardments with sodium arsenite dust—all this being part of a new war on the locust plagues of Africa. In the past few years locusts in vast swarms have done millions of pounds worth of damage in Africa, and as much as £1,000,000 is now being spent on scientific methods for their extermination. One of the chief aims is to evolve methods whereby they may be attacked by aeroplane and destroyed in huge numbers while on the wing. Conditions in wind-tunnel experiments with live locusts, as brought from Africa by air-liner, are made to correspond as exactly as possible with those which would exist in an aerial attack on the insects when they are in flight, and various chemical combinations have been tested which seem most likely to prove deadly to the insect hordes. Sodium arsenite has already been used with effect against locusts in the countries where the insects are such a

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pest, and what is being evolved now is a method of killing them in their millions while on the wing. How formidable these locust plagues can be may be judged from the fact that sometimes the enormous swarms take several days in passing through the sky, and fill the air so completely that the sunlight is almost completely obscured.

The value of air transport lies not only in its speed. A great advantage is the lessened risk of damage in transit, or of pilferage, when a consignment is air-borne. Many valuable pictures and works of art are now conveyed by airway. They not only travel swiftly, but receive individual attention at every stage, and are handled throughout with the utmost care. Recently, when Manet's picture, "A Bar at the Folies-Bergere," left this country for exhibition in Paris, it went over in one of our big air-liners to Le Bourget. The absence of jolting or vibration by air, and the fact that transshipments are avoided such as have to be made from train to boat, and vice versa, make the airway an ideal means of transit for delicate electrical apparatus, and also for such things as wireless valves and loud-speakers. Urgently-consigned medicines and vaccines are often found among aerial freight.

IV—BY AIR TO ANYWHERE

AN aeroplane pilot who is engaged on special-charter work never knows where he is going, or how long he will be away. It is a strange life—but a fascinating one. I remember a morning when, on leaving home in my car for the 'drome, I told my wife I should be home for dinner that night. But I little knew! As soon as I got to Croydon I found that I had been booked to fly Mr. John (Jock) Whitney, the American millionaire, and a couple of friends to Paris. Well, that seemed all right, because I pictured myself back in Croydon that same evening. But after we had reached Paris, Mr. Whitney turned to me and said: "I think it would be a good idea, Olley, if we flew on to Berlin to-morrow. Will you take us on?" Of course I was not going to let them down, and so I agreed. We flew on next morning to Berlin, and they enjoyed the trip so much that they decided they would like a further little "flip" on to Munich. Off to Munich we went, therefore, and at Munich Mr. Whitney decided to buy a valuable daschshund dog. And then from Munich, with our new passenger in the shape of the dog, we did another aerial trip to Vienna; and then from Vienna on to somewhere else. In fact, we "flipped" about here and there over Europe to

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such an extent that, instead of my being home to dinner on that night I have mentioned, it was a month before I found myself looking down on Croydon again.

On another occasion—it was a winter's night—I was sitting at home enjoying the somewhat rare pleasure of reading a book when my telephone bell rang and I went to answer it with the usual feeling of curiosity as to what was going to turn up next. And this time, as things turned out, it was something like a trip! A big-game hunter was speaking, and he wanted me to fly him out with some friends, for an expedition into the heart of Africa. The necessary preparations were soon made—the machine used being a roomy, comfortable saloon plane, with a table and some arm-chairs in its cabin, and with additional fittings such as racks for guns, and a supply of special emergency rations in case we might have to make an unexpected landing some distance from any centre of supply.

We flew across Europe and on to Africa, reaching Nairobi without incident; and here we took on additional stores and then flew on to the Serengetti Plains—that paradise of the big-game hunter. Our aeroplane was drawn up under the lee of a group of rocks, and it was no unusual sight for us to see several lions prowling inquisitively in the neighbourhood of the machine. At night-time we encircled the 'plane with a sort of hedge of prickly bushes, not only to keep away the lions, but also to protect the machine from the attention

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of the hyenas, who are fond of eating rubber tyres if they can get anywhere near them. We ourselves slept in tents pitched just near the wings of our 'plane, and we were waited upon by a number of bush natives. Some of these natives we taught to cook and serve a six-course dinner every night. It is true that grapefruit, soup, fish, and sweets all came out of tins—as did the milk and butter—but the meat course at any rate was fresh, our springbok steaks being a speciality. And every day the hunters were busy, their bag including lions, leopards, cheetahs, deer, and other game. After a fortnight of such wild life, I flew the party back to Port Sudan, and here they boarded a yacht to set off on a fishing expedition.

After seeing those passengers leave me at Port Sudan I was rather like a taximan without a fare, being faced with a long flight back to London with my machine empty. So I thought that it might be a good idea for me to see what I could do locally in the way of picking up another passenger, before I set off back in the direction of Croydon. I cabled to them in London, mentioning what I proposed to do; and I had hardly received an answering message telling me to go ahead, when I learned that a liner was due in at Port Sudan with Mr. Willie Vanderbilt and some friends on board. Here, I thought, was a possible client. So I went aboard as soon as the ship came in and explained matters to Mr. Vanderbilt. And he was only too glad, I found, to avail himself of my services to fly him by an interesting route on to

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Port Said, where he could join the liner again in a few days. This idea was duly explained to the captain, who had no objection. Whereupon I flew the party on over the Sinai Desert, stopping for the night at Wadi Halfa. Next morning, up at dawn, we flew along the banks of the Nile, obtaining a splendid aerial view of those wonderful temples of Abu Simbel, with their colossal figures hewn out of solid rock. And I remember that as these great effigies came into view the morning sun was shining on them, imparting to them a magnificent golden hue, and I flew lower so that my passengers could obtain a full view of this splendid sight. And after this we went on in stages to Port Said, where I landed my passengers in ample time for them to continue their liner voyage. And now I was lucky again, for at Cairo I managed to pick up another special charter—this time a party of scientists from Chicago, who were making a tour of inspection of a number of sites where archaeological researches were in progress. I took that party on a fortnight's trip, during which we covered a distance that would have taken them months of weary travel if they had attempted it by ordinary transport. First we flew to Tel Asmar, about 50 miles from Bagdad, and from there on to Bushire, on the Persian Gulf; after which we ascended more than 11,000 feet above the Persian mountains and alighted at the ancient city of Persepolis. Just before we reached Persepolis, looking down from my cockpit I had observed on the hill-sides and plains a number of curious,

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distinctive shapes which looked rather like small black mounds. I did not know what they were, but the scientists who were my passengers did. They told me that they were the camps of a nomadic and treacherous tribe known as "The Black Tents"—this name being derived from the fact that they carry large black blankets over their shoulders and arrange their bivouacs by the simple process of making tents by slinging these blankets across poles or rifles. It was not long, as a matter of fact, before we had an experience—and it was a rather startling one—of the hostile attitude of these "Black Tents" towards any intruders upon their domain. One night, motoring out of Persepolis, we were approaching a cutting between two tall masses of rock when, without the slightest warning, flashes of flame from rifle-fire stabbed the darkness on either side, the cracking of the reports being accompanied by the whistle of bullets all around us. It was a party of these dreaded "Black Tents" on the warpath! The chauffeur who was driving us appeared, however, to be familiar with such emergencies. Without a moment's hesitation he switched off our headlights, and then put his foot down hard on the accelerator. The car leaped forward and, the chauffeur knowing every inch of the passage through the gorge, we managed to maintain an accurate course even while rushing through the darkness. Rifle-fire pursued us, but the reports grew fainter and, thanks to the speed of the car, we soon drew clear from that ambush.

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From Persepolis we flew to Mosul and thence across the Iraq desert to Aleppo; after which we passed over the Sea of Galilee and on over Bethlehem. Then, before landing my passengers at Cairo, I flew them to Luxor to take photographs of the famous Valley of the Kings. So ended a memorable series of "special charters," during which my log-books showed that I had flown more than 30,000 miles.

V—HELPING A ROUND-THE-WORLD RECORD
BREAKER

ONE morning, while I was looking through some urgent correspondence at the London air station, a cable was handed to me. It was from John Goldstrom, an American "hustler" who was attempting to set up a new record for a dash round the world by ship, train, and aeroplane, his schedule being to complete this globe-girdling rush in thirty-one days. In his cable he told us he was arriving at Plymouth at noon that day, and he asked that a special aeroplane should be sent to Plymouth to meet him and fly to him on to Berlin in time to catch a night air service on to Moscow.

We had to get busy. There was not a minute to lose. A fast machine was prepared at once, and we sent Goldstrom a reply guaranteeing to get him to Berlin in time to catch his night plane on to Moscow, which left the Berlin airport at 11 p.m. Then I shot off at top speed for Plymouth. Arrived there, I chartered a speed-boat and went out to the incoming liner, bringing Goldstrom ashore as quickly as I could, and being in the air again, bound for Berlin, by 3 p.m. Darkness fell while we were in flight, but the weather was favourable, and we continued to make excellent progress. Actually I landed Goldstrom at the Berlin airport



THE PRINCE OF WALES, BEFORE EMBARKING AT PARIS FOR WINDSOR, DISCUSSING HIS SOUTH AMERICAN TOUR WITH CAPTAIN OLLEY.

HELPING A ROUND-THE-WORLD RECORD BREAKER

at 10.40 p.m., twenty minutes before the departure of the night air mail which he was to catch for Moscow. The American Ambassador and a number of other prominent people were waiting to welcome the globe-girdling traveller. But Goldstrom had no time for polite conversation. He dashed into the aerodrome hotel and had a shower-bath to refresh himself. Then he ate a sandwich and, after shaking hands hurriedly, jumped into the waiting mail-plane on the night service to Moscow. And that was the last I saw of him, although I was glad that we had been able to play our part successfully on the Plymouth-Berlin section of this round-the-world race. I remember studying the details of Goldstrom's subsequent stages with a good deal of interest. Actually, in spite of having to use ships for his Atlantic and Pacific crossings, and after having been held up on several of his long train sections, he managed to complete his world circuit within six hours of his scheduled time. That feat, I should mention, was accomplished before the day of the round-the-world rush by aeroplane. At the present time the man who has circled the globe in the fastest time is the well-known American airman, Mr. Wiley Post, who in 1933 achieved a world air circuit in the record time of 7 days, 18 hours, 49 minutes.

VI—RACING THE “ FLYING SCOTSMAN ”

ONE often hears it declared that air travel is destined to replace all other forms of transport. But such is certainly not the case. Airways, railways, and shipping lines are all working in close co-operation with each other. What the air does is to provide a high-speed link between those older forms of travel. The commercial aircraft does not supplant, but merely supplements, travel by land and sea ; and nowadays we see railways running their own air lines to augment the facilities they offer the public. It was, incidentally, my privilege to act as pilot on the first regular railway air service to be operated in this country. This was a route instituted by the Great Western Company from Plymouth to Torquay and on across Exmoor and the Devon hills to Cardiff. A considerable amount of time was saved by the use of this air route, as compared with surface travel, and I had many holiday-makers and business men among my passengers, the railway authorities having chartered an aeroplane from Imperial Airways to operate this experimental route. After a few months the service was extended to Birmingham, and it proved so successful that it paved the way for the establishment, not long afterwards, of a regular organisation by the main railway companies, in conjunction with

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Imperial Airways, for the operation of a network of internal air lines in this country ; and it is this era of the inland airway which is dawning as I write these lines.

Another interesting experience which came my way was a friendly race from London to the north with the well-known " Flying Scotsman " train. This was in the early days of its non-stop run from London to Edinburgh, and it had been arranged by the railway authorities, in conjunction with Imperial Airways, that two parties of journalists should be formed—one of them making the trip north in this famous train, and the other flying with me in a big multi-engined air liner. Both train and 'plane were to leave London simultaneously, but the demonstration was not to take the form of a race. Had it done so I should have won easily, of course. No, the idea was not a speed contest, but was arranged as as to afford the two parties an opportunity of contrasting the pleasures and comforts of a journey north as accomplished by train and 'plane. For my part I promised that, though I should have to land at an aerodrome some distance from Edinburgh, necessitating a motor run into the city, my party should be on the platform at Edinburgh when the time came, waiting to receive those who arrived by train. To add to the interest of the trip there was a wireless installation in the train which enabled us to communicate with it from the air. We also arranged an exchange of passengers which took the form of my having an experienced engine driver in my aeroplane with me,

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while one of our Imperial Airways pilots travelled with the driver of the train. Of course, having regard to my superior air speed, I had any amount of time in hand. I not only made two intermediate halts for fuel, but I also deviated from my course from time to time to pass over any picturesque piece of scenery which might lie within easy reach. From time to time, also, we sent joking messages from the aeroplane to the train, asking them how they were getting on down below. The engine driver I had with me in my machine was a fine fellow—a man of immense experience on the iron road. But this was his first experience on a “flying train,” and it made such a profound impression on him that he had very little to say. But though he was amazed at the way our air liner reeled off the miles, he would not have a word said against that famous “Flying Scotsman” down below, and I do not think he altogether approved of some of the chaffing, rather flippant messages which were sent down to them in the train, asking them how long it would be before they reached some given point. But that engine driver got his own back, one might say, in one little incident which occurred. It had been arranged that I should come up with the train and fly over it, just as it was passing over Berwick Bridge—the idea of this being that some photographers who were stationed there might get a picture showing both aeroplane and train on the same plate.

Soon I sighted what I took to be the right train, and flew down quite low over it. But, to my

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surprise, no hands were waved, and no signal of any kind came from the train. And then, still more to my surprise, the train came to a halt a few hundred yards after it had passed over the bridge. I knew, of course, that the " Flying Scotsman " was not scheduled to stop at all, and so I reckoned that something must be wrong. And a moment or so later my suspicions were confirmed by my engine driver friend. " That's not the ' Flying Scotsman ' you've been following," he told me. " It's a train we call the ' Junior Scot,' and it is timed to run five minutes behind the Flyer."

Well, that was a bit of a shock to me, I must confess. But of course I still had my superior air speed upon which I could rely. So I opened the throttles of my engines and set off up the line, at full speed, in pursuit of the real " Flying Scotsman." Presently, with a sigh of relief, I sighted the right train just ahead, and we were flying level with it by the time we got to Dunbar. After which I shot ahead and headed for our landing-ground near Edinburgh. Here cars were awaiting us, and we drove as fast as we could into Edinburgh, arriving on the railway platform almost at the exact moment that the " Flying Scot " came steaming into the station. So all was well that ended well; but my friend the engine driver who had been up in the air with me made his colleagues of the " Flying Scot " laugh heartily when he told them how, for several hectic minutes, we had found ourselves pursuing the wrong train!

VII—MY PREDICAMENT WITH THE BROKEN
UNDER-CARRIAGE

I HAVE mentioned once before how vital it is for a pilot to be on the qui-vive while aloft, ready for anything that may arise. And I certainly wanted all my wits about me on the morning when I was confronted with the emergency I am about now to describe. I was scheduled to fly a big machine to Paris, and my wife had come to the air port to see me off. All the usual preparations were made without any hitch and, with my passengers all aboard, I taxied out and took off, steering my usual course, and gradually gaining height as I settled down on my flight towards the coast. The assistant pilot who was with me in the cockpit was listening on his head-phones for wireless signals; but atmospherics were rather bad that day, and it was difficult to distinguish a good many of the signals. Still, there seemed nothing special to look out for, and the coast was just coming into view, when I observed from my assistant's manner that something was troubling him. He took off his head-phones for a moment and turned to me with the words: "Croydon have been trying to get us, but they've been badly 'jammed' several times. I can't make it out what they're after. It seems to me, now, as though they want us to fly

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back there." I pricked up my ears at that. There must be something unusual going on if Croydon wanted us to interrupt a scheduled flight on which passengers were being carried. I took over the head-phones from my assistant, and tried a spell of listening myself. The atmospheric were certainly bad, and for a time I could not make head or tail of it. But then things cleared up for a few seconds, and I found I could hear Croydon fairly well. But what they were trying to tell me still puzzled me. Then, however, I suddenly caught the words: "Look at your starboard landing wheel. Look at your starboard landing wheel."

And now instantly the thought flashed into my mind that on taking off from Croydon—and without the fact having been observed at the time by either my assistant or myself—something had gone wrong with the under-carriage of my machine, and that the wireless people had been struggling all the time against the atmospheric in order to acquaint me with my predicament. Without wasting another moment I popped my head over the side of the fuselage and peered down towards the landing wheels, which, as long as one sat normally in the cockpit, were hidden from one's view by the hull of the machine. And I must say that what I saw gave me a nasty shock. For something had evidently given way in my chassis just at the moment when I was leaving the ground at Croydon; and now, as I looked below, I saw that everything was in such a mess that it would mean that when

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I came down I should have to do so practically without any under-carriage at all. Not a nice prospect, certainly, but one which had to be faced ; and it seemed obvious that the best thing to do was to turn round and fly back to Croydon, making full use of the big alighting space there to pull off the best sort of landing that I could contrive. I did a good bit of thinking on that trip back to Croydon, running over in my mind the details of a forced landing I had made during the war in a machine with a damaged under-carriage ; and I decided to try again the methods I had adopted then, and which had worked out fairly well.

Croydon soon came into view, and as I circled, losing height, I saw that they had been making provision for every sort of contingency, and that the ambulance and the fire brigade were in readiness to dash out at a moment's notice if called upon. Not too cheerful a sight, that ! But I felt certain that, crippled though my machine was, I should be able to pull off a landing which would avoid any need for their services. Well, now for it, I said to myself, and, manœuvring into just the position I required, I came stealing in over the 'drome, losing height gradually until I was skimming along only a few feet above the ground. While losing height I had also been slowing up the forward speed of my machine until the moment came for which I had been planning. Waiting until the last available second before I acted, I suddenly pulled back my control lever and " stalled " my machine just a few feet above the

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ground, bringing it to a standstill in the air in such a manner that it just "sat down" on the aerodrome, and remained almost exactly where it had landed, without any further movement forward at all. A trifle abrupt it was, and there was naturally a bit of a jolt. But nobody in that machine felt any ill-effects at all, and we just got out and smiled at each other as if that sort of thing was an everyday occurrence. But personally I was glad to hear that my wife had gone home some time before. Those would have been anxious moments for her if she had been on the 'drome to see me coming in with all that stuff dangling underneath my machine, and with nothing that you could call a landing-carriage to alight on at all.

VIII—WHEN MINUTES SEEM HOURS

I HAVE just been looking through the notes of what, I really think, was one of the most desperate air dashes I ever made—a dash which had in it almost every aspect of human drama.

The story began, I see, when we suddenly received at Croydon one of those urgent cables which had the effect of setting all the wheels in motion. It came from Mr. J. D. Mooney, Vice-President of the General Motors Corporation, and it told us that he was racing across the Atlantic in a fast liner so as to reach the bedside of his small son, who was very seriously ill indeed in a nursing home near Guildford. And what Mr. Mooney wanted us to do was to send a 'plane to Plymouth to meet him, and to fly him as quickly as possible to the nursing home where his son lay. We ascertained the probable time of the arrival of the liner at Plymouth, and I flew down there in one of our fastest taxi-planes. But then things began to go wrong. First of all the liner was a good bit late coming in, and that threw out of gear my time-table for the flight on from Plymouth. Added to which there was a breakdown with the launch which was scheduled to take the port officials out to the liner. Time was passing. Every minute seemed like an hour, and in

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desperation I chartered a fast speedboat for my own special use, and made a dash out to the liner to take off my passenger. I found Mr. Mooney in desperate haste to get away. He was being kept informed as to his son's condition, and he wanted at all costs to reach the boy's bedside that night. I told him, of course, that I should do my very best, whereupon I rushed him ashore in my waiting speed-boat, and in next to no time we were in the aeroplane and aloft. But our troubles were very far from being at an end. The liner had been so late getting in that it was now growing dark; and not only that, but the weather had become distinctly bad, with a driving wind which was beginning to approach gale force. I did not like the look of things at all, but I was determined to push on all the same. I rang up Croydon on my wireless telephone, telling them that I proposed to alight with my passenger at the Brooklands aerodrome, and as it would be dark by the time I got there, I asked them to tell the aerodrome people to put on their night-lighting, and also to arrange for a fast car to take Mr. Mooney on from the flying ground to the nursing home. After which for a time I was kept pretty busy with the navigation of my machine above the rapidly-darkening country-side. Then a new idea occurred to me. As time was getting on, and I knew the anxiety of my passenger to complete his journey, I thought that we might save some precious minutes if I altered my landing point from Brooklands to Farnborough. And here you have another

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illustration of the value of the wireless telephone in such cases as these. In no time I had got into touch with Croydon again, telling them of my change of plans, and asking them to arrange everything they could for me at Farnborough. And after that it was just a case of struggling on through the darkness in the ever-rising wind. My engine ran perfectly. The visibility was none too bad. And so I just stuck at it until Farnborough lay below, and I landed my passenger and escorted him to the car which stood waiting. After which there was a final dash from aerodrome to nursing home, and the father found himself at the bedside of his sick boy. There was one aspect of this air dash which was very gratifying to me personally when I heard of it. It seems that the boy in the nursing home had been very bad indeed. In fact, during those hours we had been battling through the night sky his condition had begun to cause the gravest anxiety. But when his father appeared suddenly at his son's bedside, and the boy recognised him, the effect was so beneficial that the little patient began to improve at once, and soon all danger was over. Which only shows the value of the aeroplane in such eleventh-hour dashes as these. And not only can it bring friends and relatives to the bedside of those who may be gravely ill, but it provides a means of saving life by rushing surgeons to perform urgent operations. Often has it fallen to my lot to make one of these life-or-death air dashes, carrying a doctor or a surgeon to some urgent case perhaps many hundreds of miles away.

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And of course in the case of any urgent operation the question of even a few hours may make all the difference between success or failure. Another point about the use of the aeroplane in these cases is that it affords such a smooth and effortless means of transport that a doctor or surgeon will arrive fresh and unfatigued at his journey's end, ready to cope with any emergency that may arise.

This absence of jolting or fatigue in flying has another valuable aspect from a medical point of view. It means that a specially-equipped aeroplane forms an ideal ambulance for patients who may have to be moved considerable distances when in a bad state of health. One case which illustrates this I remember particularly. The patient was suffering from a grave spinal complaint, in which any sudden movement implied severe risk. Yet it was urgently necessary that this patient should go across to the Continent for treatment by a certain specialist. Travel by boat and train was out of the question, and there remained only the possibility of a trip by air. The doctors concerned came to us in this emergency, and we worked out a special scheme to help them. Taking a roomy saloon-plane, we transformed its cabin into a special flying ambulance, the bed for the patient being slung on springs in the centre of it. Provision was also made for a doctor and nurse to fly with the patient, having anything that they might require close at hand. And, thus well equipped, we started on our flight to the Continent. My chief preoccupation, as pilot, was to avoid bumps

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or disturbed areas in the sky. To this end I had made a very special study of the weather conditions beforehand ; with the result that I was able to take my machine up to exactly the right height and hold it rock-steady as we made our way across the Channel. As a matter of fact, that patient bore the journey extraordinarily well, and the doctors were delighted at the success of the experiment. Nowadays the use of ambulance-planes is a regular feature in modern transport, and they often enable patients to make journeys which would be impossible by any other means. This applies particularly to trips to and from the Continent, the aeroplane avoiding all the fatigue and bother of changing from train to boat and back again to train.

Such medical aspects in the use of the aeroplane have always had a special interest for me, and I have studied closely the conditions necessary for ensuring a maximum of comfort for patients making a journey by air. And here, of course, so much depends on the pilot. The ocean of the air is in constant motion. At some heights the currents are moving in a smooth, evenly-flowing tide. In other areas they may be in a state of considerable disturbance, implying a good bit of bumping and tossing about for any aeroplane which gets mixed up with them. And here, of course, as I have already indicated, lies a chance for the pilot to show his judgment and skill. By the adroit way in which he manœuvres his machine he can make all the difference between a smooth or bumpy

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trip. This is all-important in the case of the transport of invalids. And it is important, also, in regard to the comfort of ordinary air-line passengers. If it is a rough day in the Channel, and you are making the crossing by steamer, then you have no chance at all of avoiding all the tossing about that you will get on the boat. But the air-liner pilot can do something that is quite impossible for the captain of the ship. He can, that is to say, rise right up out of the disturbed lower air, and find a region, thousands of feet high, where his machine will move without bump or jar. In proof of which one may take the typical example of a bad day in the Channel. The cross-Channel boats are heaving and rolling, with spray breaking all over them. And high aloft an air-liner flies so steadily that not a drop of soup is spilt from the plates as the stewards serve lunch above mid-Channel. The pilots of our British air-liners are all instructed to seek out smooth layers of air when they are carrying passengers between London and the Continent, and their skill in this direction ensures that every flight is made under the most comfortable conditions for those seated in the saloons.

I have been particularly impressed, recently, by what I have learned as to the development of medical air services in a great and only partially developed country such as Australia. Here the provision of urgent medical aid may prove all the difference between life or death for those located away somewhere in the "back-blocks" far removed

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from the nearest organised centre. Hitherto, in many cases, these problems have seemed insoluble, and terrible sufferings have been entailed. But a new era is dawning with the use of the aeroplane. Centres are being established where fast 'planes stand ready at a moment's notice to fly doctors and nurses to urgent cases. And a special organisation of wireless now plays its part in this life-saving scheme. Remote out-stations are being equipped with a simple type of installation which enables calls for aid to be flashed through urgently to the nearest medical centre; whereupon a 'plane with a doctor and a nurse is soon in flight, and journeys which might otherwise take days and even weeks become merely a matter of a few hours. Another development of this flying medical service takes the form of the use in emergencies of larger aeroplanes which have their saloons fitted up as completely-equipped operating theatres. In cases where time is too precious to bring in a patient to some hospital for an operation, the surgeons can fly out in this specially-fitted 'plane and carry out an urgent operation actually on the spot; and it is easy to understand that, in many instances, the time thus saved may mean the recovery of a patient otherwise doomed to almost certain death.

There are many other predicaments in modern life, less serious than those I have just been describing, but none the less of great importance, in which a specially-chartered aeroplane can solve problems in a way impossible by any other means. Here is a typical case in point. A business man



SIR ALFRED YARROW, THE WELL-KNOWN ENGLISH SHIPBUILDER, WITH CAPTAIN OLLEY AND A FRIEND BEFORE EMBARKING ON A EUROPEAN TOUR.

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whose operations take him far afield arrives in a taxi, at a London railway terminus, just a minute too late for the boat-train connecting with an ocean-liner, outward-bound, in which he has booked a passage, and by which it is vital he should travel. No other train, he finds, will get him to the seaport in time. But, even so, there is no need to despair, as he still has the speed of air transport on which he can rely. An urgent 'phone message to Croydon is acted on so promptly that a taxiplane, its pilot in his cockpit and the propeller revolving, is out on the departure platform, awaiting that traveller, by the time he can motor down from town. Into the saloon the passenger springs, and in a moment or so he is in high-speed flight, effecting his journey so quickly that he catches that liner with a margin to spare.

Well, that is just an incident in the daily routine of an air special department. The other day—to give you another example—a 'phone call came through from one of the chiefs of a firm in London which was engaged in urgent negotiations with certain big foreign groups. Affairs had reached a stage, this executive explained, when it was vital for him, with the least possible delay, to have an interview in Brussels, talk things over with some important people in Paris, and be back at the earliest moment to draw up final plans in town. What could the flying people do for him he asked? Well such a problem as that is precisely what the high-speed taxiplane exists to solve. That business man motored down to Croydon early the next morning

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and enjoyed his breakfast up in the air while a fast machine was flying him to Brussels. Arrived there, he had time to devote several hours to the interview which had been arranged beforehand. Then, re-embarking, he took lunch in the air while *en route* to Paris. At the French capital the executive he wanted to consult had come out to Le Bourget to meet him, and their talk at the air-station lasted for some time. But, even so, his air-taxi brought him back to London in ample time for him to arrange a dinner, that same evening, at which he was able to explain to his fellow-directors the results of this lightning dash to and from the Continent by air. It is by such swift strokes that business which might otherwise take days, or even weeks, is settled sometimes in a matter just of hours. Time is money when some departmental chief has to leave all his affairs in London to keep an urgent appointment far across the Continent. And it is here that the high-speed "taxiplane" can, and does, yield such service to the business world.

Apart from the medical or commercial uses of specially-chartered aircraft, they are now playing a growing part in pleasure flying and aerial touring. It has become quite an institution, for example, to go by air to Aintree to see the Grand National, and to fly over to Paris for the Grand Prix; while more and more people, every year, use big "air specials" as flying grand-stands from which to obtain a bird's-eye view of the Oxford and Cambridge Boat Race. Another delightful experience, which

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thousands have already enjoyed, is to take a tea flight over London, and see the metropolis spread out in a great panorama far below. Very popular too, in the summer, are air trips during the evening from London along the south and south-east coast. Parties of tourists are also hiring big passenger-planes, complete with crews, stewards, buffets, and uniformed couriers, so as to fly off on conducted tours in which they are not only free from all the delays and fatigue of surface transport, but are able to travel infinitely greater distances, in any given time, than would be possible by any other means. One can see Europe in a week, or at any rate a good part of it, if one plans an air tour beforehand, while to use a large saloon-plane as a form of flying motor-coach means an immense saving of time in the case of shorter pleasure trips. Already, in this regard, big firms are chartering special machines to take parties of employees on trips to inland beauty spots, or seaside resorts. And this means not only the novelty and pleasure of the aerial journey but also, owing to the swiftness with which the journey is made, so much longer for sightseeing and amusement at the journey's end.

Every day, now, there are fresh instances of the speed of modern travel, not only in cases where air-liners or air specials are employed, but also in journeys in which ocean liners and aircraft both play their part. A record in the speed of long-distance transport was established, not long ago, by a passenger from New York to Calcutta, Mr. L.

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Jones. Embarking at New York in the liner *Comte de Savoia*, which set up a fresh record on her voyage to Genoa, he went on at once by train to Brindisi, where he caught one of the Indian-bound aircraft ; the result being that he succeeded in making the complete journey from New York to Calcutta in 14 days. Another striking example of the speed of air transport was forthcoming in the case of a District Commissioner who had to make a journey up the Zambesi river. In three hours, by aeroplane, he accomplished a journey which would have taken him three weeks by river barge. And there is the instance of the traveller in Africa who, by air-mail, effected in just over six hours a trip which, only a year previously, had taken him 16 days by motor-car.

Fresh uses are constantly being found for "air specials." One big machine was engaged to fly a party of critics from London to see a new play in the provinces. On another occasion a saloon-plane was chartered by a managing director to take a party of guests to the opening of a new branch of his business in the Midlands. Football teams go by air nowadays, and "specials" are often booked by newly-wedded couples who begin their honeymoon on the Continent with an air trip from London to Paris.

PART FOUR

SOME OF THE PASSENGERS I HAVE PILOTED

I—THE PRINCE OF WALES

I WAS going through my records the other day, and I see that from the time I first began flying, fifteen years ago, I have carried more than 40,000 passengers, while I am very glad to say that during all this time, and in all these many flights, I have never met with any mishap causing injury to any of the passengers who have been in my care.

One of the keenest believers in the future of air transport, and more particularly of British air transport, is His Royal Highness the Prince of Wales. The Prince has been described more than once as "British aviation's best friend," and it is a description with which those actually in the air world will heartily agree. And His Royal Highness is no aloof patron of aeronautics. He is personally interested in every aspect of this new movement. He flies enthusiastically whenever he gets the chance and, as he himself said the other day, he now regards his own private fleet of passenger 'planes as his swiftest and most valuable means of transport when fulfilling royal engagements which take him some distance out into the country.

Before he acquired and used aeroplanes of his own, and also on certain occasions since, the Prince has honoured Imperial Airways by flying in their big air-liners on the Continental routes ; while he

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also used an Imperial Airways flying-boat of the "Scipio" type when, some time ago, he paid an aerial visit to the Mediterranean fleet.

I had the honour of acting as the Prince of Wales's pilot when, in one of the big air-liners of Imperial Airways which he had chartered, he flew home over the last stages of his journey from South America. The Prince not only loves flying as a swift method of travel, but he himself can pilot an aeroplane with judgment and skill. When he makes one of his journeys by air he is not content to remain seated in his arm-chair in the saloon. When His Royal Highness charts an air-liner in that way, he has not been long in the air, as a rule, before he jumps up and makes his way to the cockpit, taking his seat beside the pilot, and interesting himself keenly in every aspect of modern aerial navigation. The Prince is, as I have said, an expert pilot, while what interests him particularly is the system of wireless communication between an aeroplane in flight and ground stations, which has been brought to such a state of perfection in modern airway working. On the flight to which I referred just now, when I piloted the Prince on his return from South America, we had a capital example of the value of wireless. Bad visibility—the airman's bugbear unless he has wireless to help him—dogged our aerial path. But, being as I was in constant touch by wireless with the control-tower at Croydon, I came through accurately to schedule, and without a moment's doubt as to my position above the obscured face

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of the earth below. The Prince, sitting out with me for long spells in the cockpit, followed attentively each phase of this application of modern science to aerial navigation; and, after I had landed him in his own private aerodrome in Windsor Great Park, he spent some time in discussing the technical development of commercial aviation. His Royal Highness has a clear grasp of the one essential fact, and this is that speed is the vital asset of the aeroplane. It is speed which brings us our loads in commercial flying; and what the Prince advocates keenly—always bearing in mind the need for safety and reliability—is a steady increase in the speed at which our civil 'planes fly. He wants to see Britain lead the world in this new industry which may, ere long, prove to be as important as, and perhaps even more important than, our great shipbuilding industry.

And what the Prince emphasises is that, in addition to our fine workmanship and our world-wide reputation for the safety and reliability of our aircraft, we must keep always before our eyes the slogan of speed and still more speed. Not long ago this country produced the world's fastest four-engined passenger 'plane—a machine capable, when fully loaded, of a speed of 175 miles an hour. In America they have big twin-engined transport 'planes which carry their loads along scheduled routes at just on 200 miles an hour. And what the Prince has told the British air world we should now design and plan for is a commercial air speed of as much as 250 miles an hour. Well, we have

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got the designers. And we have certainly got the engines. And, with trade conditions improving, we ought to be able to augment our cruising speeds and, at the same time, keep before our eyes the goal of making air transport a normal, profit-earning enterprise. The progress of air speed has to be logical. It has to be governed by developments which aim at carrying the biggest loads for any given horse-power and, at the same time, attaining the highest rates of travel compatible with safety, reliability, and remunerative operation. To-day's record speed cannot be to-day's commercial speed. Air adventurers blaze the trail. The regular services follow. And this means that the record speed of to-day may very well be the commercial speed of to-morrow. Certainly science, never resting, is always at work. Many avenues lie before us for augmenting air speeds, and for doing so in a way which will ensure that such speeds are commercially practicable.

Another royal air traveller who was an enthusiast in regard to everything appertaining to aviation was the late King Albert of the Belgians, and by his death flying suffered a heavy loss. He believed thoroughly in the scope of the commercial aircraft as an influence for good in world affairs, and took the keenest possible interest in every new development in airway operation—and more especially, of course, in the progress of air transport in the Belgian Congo, where flying can reduce journeys of weeks to days, and those of days to hours. I remember that on one of his visits to the Congo

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King Albert utilised the ordinary trans-African service of Imperial Airways, being a keen believer in the all-round dependability of British air transport. He was one of the most unassuming of monarchs, avoiding all ceremony wherever possible, and he just took his air ticket like an ordinary passenger, seeking no special privileges of any kind, but chatting amiably with everyone, and making himself thoroughly at home.

When he came to make his return trip from the Congo to Europe, I flew out to pick him up at Khartoum in one of our fastest machines, and I brought him through from Khartoum to Assuan in a single day, a performance which, I remember, pleased him very much. He came and sat with me in the cockpit while we were in flight, and showed by his conversation that he had a very complete grasp of the main features and problems of civil aviation. King Albert's frequent use of the aeroplane as a means of transport was all the more praiseworthy in view of the fact that for some reason or other he was particularly sensitive to the effects of bumpy weather when flying, and often suffered discomfort when passing through disturbed air. But he never allowed that little personal disability to prevent him from making an air trip whenever an opportunity offered, and I do not think he ever enjoyed himself more than when he was sitting in the cockpit or the saloon of a high-speed commercial aircraft. King Albert's keen interest in aircraft progress was shown clearly enough when Imperial Airways put into service

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the first of their fleet of monoplane air-liners of the "Atalanta" type. King Albert sent through a special request that one of these new machines, which are capable of a speed of 150 miles an hour, should be sent over to Belgium in order that he could make a trial trip in it. This royal request was, of course, complied with promptly, and the King and some of the other members of the Belgian Royal Family enjoyed a flight in this high-speed air-liner which, they said, impressed them very much with the fact that it is possible to ensure very ample factors of comfort even when a machine is designed and built for high average speeds.

Another royal patron of the airway was his late Majesty King Feisal of Iraq, who, when journeying to England, used a specially-chartered aircraft to carry him from Bagdad to Cairo, being accompanied on the flight by the members of his suite. Yet another enthusiastic aerial traveller is ex-King Ferdinand of Bulgaria. Not long ago, flying over Northern Africa by Imperial Airways, His Majesty accomplished in 36 hours a journey which, some years before, had taken him 26 days. One thing which impressed him particularly, he said, was the moderate temperature which, even when flying through the tropics, it was possible to maintain in the air-liner saloons, and he declared on completing his trip that there is only one way, nowadays, in which to make such a journey in comfort, and that is the air way!

There is plenty to amuse one on the ground during one of these Empire air trips, as well as all

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the bird's-eye views you see while aloft. This was shown during the flight which Lady Willingdon, wife of the Viceroy of India, made from Karachi to London. On alighting at Sharjah, for example, which is one of the Arabian coast halting-points along the Persian Gulf, she was entertained with much picturesque ceremony by the Sheikh of Sharjah, who is himself an ardent believer in flying, and who not long ago made a trip to Bagdad and back by the air-mail. Lady Willingdon was invited by the Sheikh to visit him at his fort. Here Arab sweets and coffee were served and a salute of guns fired from some ancient cannon, after which, for the further entertainment of his distinguished guest, the Sheikh and some of his followers gave a superb exhibition of horsemanship.

There is, incidentally, another Arabian ruler who takes a keen interest in aviation nowadays, and that is the Sheikh of Koweit, whose domain lies at the head of the Persian Gulf. It was he who, not long ago, flew by the Indian air-mail to pay a ceremonious call upon the Sheikh of Sharjah, afterwards returning to Koweit by air, and being welcomed by great throngs of his admiring followers.

Kings, statesmen, sheikhs! They all fly nowadays; and after an air voyage through from South Africa to London, accomplished not long ago, General Smuts spoke in the highest terms of the safety, comfort, and reliability of the air-mail. And, while I am on the subject of such long-distance flights, I feel I should like to make a

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special mention of a really remarkable trip which was carried out recently by an American traveller, Miss Allison. Leaving New York by ocean liner, she flew from Cairo to the Cape by air-mail, and then back to Johannesburg and Durban, afterwards crossing to India by steamship, after which she flew to Brindisi, and then on by airship across the South Atlantic to Pernambuco, continuing her tour via Pan-American to Miami, and by Eastern Air Transport to New York. This whole tour totalled approximately 20,000 miles, and is regarded as a particularly interesting illustration of how a woman passenger, travelling alone, can now fly in comfort over the main air-lines of the world.

II—MY FLIGHTS WITH SOME MEN OF
MYSTERY

It has fallen to my lot, at various times, to carry some strange and picturesque travellers on their urgent high-speed flights between this country and the Continent; men with vast schemes on hand, and with millions at stake; men to whom the cost of a specially-chartered aeroplane was as nothing if only it would save them a few hours in rushing to some urgent conference. One hears often enough the words "Time is money," but one hardly grasps their real meaning unless one has been brought into contact with men who are thinking and operating in vast sums, and to whom even a brief delay, in clinching some important deal, may mean the loss of hundreds of thousands of pounds. I have just been looking through some of my notebooks in this regard, and I think that two of the strangest travellers that I ever rushed about Europe, flitting here and there with never a moment to lose, were Captain Alfred Lowenstein, the Belgian financier, and Francis Lorang, of the ill-fated "Bluebird" enterprises. Both of these men had extraordinary personalities, and apart from acting as their pilot on a whole series of lightning dashes by air, I found it fascinating to study their actions and methods, and their general way of looking at life.

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During those post-War "boom" years, which now seem so far-off and dim, Lowenstein dominated European finance by the sheer swiftness and boldness of his schemes. He made millions and he spent millions. He had an energy which seemed inexhaustible. He was here, there, and everywhere, flying from one European capital to another with a speed which staggered financiers of a less impetuous school. An amazing man, in fact, and I had some unique opportunities of watching him when he was in the hey-day of his triumphs. No sort of cheap-jack puppet, this, just thrown up into a temporary prominence by a turn of fortune's wheel. No. Lowenstein, as I saw him, was a really big figure, not only in his actual accomplishments, but also in all his thoughts and actions—a Napoleon in the tireless energy of his mind and body, and in the immense plans and visions which were fitting constantly through his brain.

The life Lowenstein actually lived was the sort of life one reads about in fiction. It seemed almost incredible. And yet it was true. It was estimated, at the time I was piloting aeroplanes for him, that the scale on which he was living was costing him nearly £1,000,000 a year. Biarritz was his headquarters at this particular time, and from here he controlled a vast financial network of affairs which would have baffled the ingenuity of any ordinary brain. It was all more like a film than real life, and speed grew increasingly the demand of this super-man. Special trains, high-speed yachts, racing motor-cars! These carried him for a time



[Photo : *Oriental* Institute, University of Chicago.

MEMBERS OF A PERSIAN HAREM PAYING A VISIT TO CAPTAIN OLLEY'S MACHINE AT PERSEPOLIS.

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upon his dashes here and there, or brought to Biarritz those who came rushing to consult him when millions were at stake. But it was not long before surface transport, even at its fastest, became too slow for him. In his dashes from capital to capital, and country to country, he wanted something faster than ship, train, or car. And so he decided to take to the aeroplane, leaving slow-moving earth traffic for the speed of the air. He was now at financial war with many other powerful groups, and he reckoned that by flying everywhere he could get ahead of these rivals. With Lowenstein his mental processes were so rapid that to think was to act, and when he decided to use the aircraft as his vehicle he took decisions on a scale which almost took one's breath away. Coming to Imperial Airways, he discussed the whole matter with them, and it was not long before he had at his personal and immediate disposal a fleet of as many as eight aeroplanes and one amphibious craft; while it was agreed that I should have the task of managing and operating this new air aspect of his affairs. So, accompanied by my wife, I travelled through to Biarritz, and here I was met by a polite young man who introduced himself as one of Captain Lowenstein's many secretaries. "Captain Lowenstein presents his compliments," said this young man, "and he offers you for your accommodation the choice of one of his many villas here." And it was now that I began to realise the scale upon which Lowenstein's operations were being conducted. For it appeared that

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he had hired in Biarritz, for the accommodation of his immense staff, nearly forty villas of various sizes. The one allocated to me was superbly furnished, and I had a valet, a car, and a chauffeur, and three servants attached to my personal service; the cost of all this being borne on Lowenstein's accounts. Then I remember having a chat over things with this astonishing person himself. "I shall appoint you my Director of Aviation," he said, and then, with typical rapidity, he asked me to go at once to the neighbouring aerodrome, which was to be used by his air-fleet, and see whether I considered it well suited for its purpose. This request I complied with promptly, discovering that the surface of the aerodrome was not as smooth as one might have wished. This fact I mentioned to Captain Lowenstein; whereupon he told me to go ahead with any and every alteration which I might consider necessary. "I want you," he said, "to make this aerodrome the finest in Europe. Spend all that you consider necessary. I will open a special account in your name at my bank here."

No sooner said than done. I called at that bank next morning, and found that I had a credit there of thousands of francs, and that there was plenty more where that came from. And so I went enthusiastically to work. I hired labourers, obtained the use of several large steam-rollers, and ordered tons of materials of various kinds. We built roads, and levelled the surface of that flying field till it was as smooth as a tennis court.

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We also arranged for the erection of a large hangar, and installed flying beacons as well as a supply of electric light, to say nothing of repair sheds, petrol stores, and all the other equipment of a well-run modern 'drome.

Each morning it was my duty, as his Director of Aviation, to discuss with Lowenstein the flying programme for the day; and it usually happened that, even in cases when he did not want me to fly him personally anywhere, there would be some urgent trip to arrange in which it would be necessary to send a 'plane somewhere to pick up some magnate with whom Lowenstein wanted an urgent talk. This, in fact, was one of the most interesting uses which he made of the aeroplane. For he instituted a sort of special courier service by air over the whole of Europe. He would cable or telephone to someone he wanted to see, perhaps hundreds of miles away in some city on the continent, telling them he was sending an aeroplane at once to pick them up and bring them to Biarritz, and in this way he often fixed up, in a few hours, some big bit of business which might otherwise have been hanging fire for days. Actual results, in fact, soon led him to be even more enthusiastic about the use of the aeroplane than he had been at first. Our machines became busier and busier. The speed and tempo of Lowenstein's affairs seemed constantly on the increase. Often we rushed over by air to England, where he had a fine estate near Melton Mowbray. Here he kept a stud of horses, being an enthusiastic rider.

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Other palatial houses, also, this amazing man owned in various parts of Europe. At Biarritz, sometimes, he found himself ruling like a monarch over a sort of private court of nearly two hundred people; and always his hospitality was on the same lavish scale. A few of those at Biarritz were permanent guests. Others were always coming and going, visitors of every type and nationality; and it was here that his private air service played so important a part, because his business friends and associates were constantly dropping in by air to have a few hours' chat with him, and then speeding off again to carry out some plan of campaign which had been decided upon. For a time, in fact, Lowenstein spread what one might call an aerial network over the whole of Europe, and he told me that the speed of the system of aerial communication which he had established was helping him materially in maintaining a close and personal supervision over the vast interests he was controlling. Indeed, had it not been for his fleet of aeroplanes, constantly at his disposal, it would have been literally impossible for him to have had so many irons in the fire at the same time.

I shall certainly never forget that hectic period during which I ran Lowenstein's air service for him. He was a man who had a passion for method and for system in everything he did. Everything had to be worked out to a schedule. Each one of his innumerable daily activities was catered for by one or another of his trained, well-drilled army

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of subordinates. And what an army of helpers this Napoleon of finance had at his service ! Apart from my personal work as the chief of his air staff, there were secretaries, typists, valets, chauffeurs, gymnastic instructors, fencing instructors, and tennis, boxing and billiard professionals. There was one man always available to cut his hair, and another to shave him and, so far as I could see, neither of them did anything else, being ready at any moment, day or night, to rush to carry out the millionaire's wishes. And in regard to his several personal valets, one of these officials was so important a person, I was told, that he himself had a valet to attend to his needs. It was all like some fantastic dream, and yet there was a very definite method in all this madness. Lowenstein, in fact, was most methodical in all his operations, and he told me more than once that he was obliged to keep an immense staff going, because what he needed was an immediate service both night and day. Every time he pressed the button, whether it was in the middle of the day or the middle of the night, something had to happen at once. He was so impetuous, so full of ideas, that he could not tolerate being kept waiting for a moment. And the bigger his affairs grew, the more impatient he became, keeping even his huge staff on the go from morning to night. I used to notice that when he was on the aerodrome with me, or when he was out riding or learning the latest billiard stroke, a secretary was always hovering just in the background, ready to spring forward at a moment's

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notice and jot down in his book some note or order which the millionaire might rap out suddenly. And while we were up in the air, flying from Biarritz to one or other of the European capitals, he used to be constantly at work with one or other of his secretaries, or reading the various reports that were handed to him. I have had an opportunity of studying a good many energetic men in my time, but Lowenstein was a veritable dynamo of human energy. He would tire out a whole retinue of secretaries and assistants and still show not the slightest sign of fatigue himself. He seemed to take rest in snatches, dropping off to sleep at all sorts of odd moments. I have even seen him stop, wave some secretary aside, and drop off to sleep in the middle of dictating a letter. For perhaps a couple of hours he would sleep soundly, and then he would spring up again, completely refreshed and ready for the fray. Always, at night time, there was a secretary on duty in a room adjoining Lowenstein's bedroom, ready to dash in at the ring of the bell and take down some urgent letter or instruction.

The day's programme of this leviathan of modern finance, as I used to watch it from my view-point as his air manager, was something I am never likely to forget. As he sprang from bed there would be a valet ready to help him with his dressing. Then he would go to a chair, where other satellites were waiting to shave him and trim his hair. And even while these operations were in progress, his room would begin to get full of

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secretaries and privileged visitors, and he would be settling problems upon which big issues depended. Then a move would be made for his gymnasium, where his masseur would be waiting to attend to him ; and all the time he would be dictating letters and memoranda, or giving instructions as to the various main operations of the coming day. And so on he might go to his fencing-room or swimming pool, or to the underground tennis court ; while also available, whenever required, were such things as rowing machines, sunbaths, or ultra-violet ray clinics. And all this, very likely, would be going on in the early hours of the morning. Often, in fact, before ordinary folk would be stirring out of bed, Lowenstein would have done what most people would reckon a big day's work. And yet that was only the beginning with him, for as likely as not he would come tearing out to the aerodrome in a fast car and call upon me to whisk him off at a moment's notice upon a pell-mell air dash upon which some deal spelling hundreds of thousands of pounds might depend. Frequently I would have a call as early as four o'clock in the morning to come hurrying over to him and discuss some air trip which was aimed, perhaps, at bringing half-a-dozen financiers together to discuss some problem which might be holding up his operations. Often, too, I would be asked to come across and dine with him. At these dinners it was no uncommon thing to find him entertaining as many as fifty people ; and among these guests would be great financiers and

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the heads of big businesses, and often the cabinet ministers of various countries. Lowenstein liked to have me sitting near him, for often the conversation turned to the subject of aviation, and he would then ask me for my opinion on any point that might be cropping up. And to those dinners of his he devoted just as much thought as he did to every other detail of his vast affairs. No delicacy was beyond the reach of this wizard with his fleet of aeroplanes; for when anything could not be procured locally, it was up to me to send off a fast aeroplane, and obtain it from some distant source of supply. I remember sending aeroplanes to Paris for a special consignment of quail, and to Strasbourg to fetch some foisgras. Nothing was too big, and nothing too small, for the brain of this remarkable man to grapple with. In fact, he employed his aeroplanes just like anybody else might use the services of a staff of messengers; and I remember once that he sent for me in great haste in order to ask me to fly from Biarritz to Berlin in order to deliver, verbally, a message to which he attached great importance at the moment.

There was another occasion, I recollect, when I was called upon in a great hurry early one morning to send a big 14-seater saloon-plane from Biarritz to Geneva. The load that the 'plane carried took the form merely of an urgent letter from Lowenstein to the Duc de Vendôme, inviting the Duke to fly back in the machine and join Lowenstein at dinner that evening. As it happened, the Duke

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found himself unable to accept the invitation, and so the big machine had to return empty. But, when Lowenstein was informed, it meant so little to him that he acknowledged the information just with a nod of the head ; and yet, as I had to work out the details of the trip as his air manager, that fruitless expedition meant that the machine had flown roughly 1,200 miles, and that the total cost of the trip had been in the neighbourhood of £250. Still, that was just a drop in the ocean in the scale upon which Lowenstein was operating. Day after day our fleet of aeroplanes set out, flying here and there to bring in the ceaseless stream of visitors who played their part in the elaboration of the financier's hundred-and-one schemes and projects.

One of the most spectacular trips we ever made was, I think, our lightning dash by air from Biarritz to Barcelona. Lowenstein sent for me in a tearing hurry, as usual, and explained that he was engaged in an immense deal concerning all the traction enterprises in Barcelona, and that it had become vital that he and his entire staff should be transferred to Barcelona without delay, in order that he might grapple with the situation on the spot, and frustrate the efforts of a powerful group who were, apparently, doing their utmost to prevent his scheme going through. "Not a moment must be lost," he said. I must mobilise his entire air fleet ; while those of his staff who could not be accommodated in the aeroplanes must make their way to Barcelona by fast cars. But speed must be the essence of the whole operation. And I can

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tell you that it was. I have never seen such a spectacle before or since. Secretaries, valets, and servants of all kinds were rushing about in every direction. Out on the aerodrome we were toiling to get eight aeroplanes ready for flight. It was just pandemonium for a time. But Lowenstein's little army was really a very efficient organisation. He paid well, and he got good men. And so in an astonishingly short space of time this "circus" of his was on the move. I was piloting the big saloon-plane in which he flew with some of his personal assistants; while the other machines of our peacetime squadron contained his business associates, managers, accountants, and others. And on the ground, pursuing us at high speed in a fleet of cars, came the lesser lights of his entourage. An impressive business, if you like; and, as a matter of fact, Lowenstein was shrewd enough to realise the spectacular value of a big move like this. It had a stimulating effect on those who were working with him; and it had a demoralising effect upon those who were fighting against him. Therefore, though it might cost a lot of money, he reckoned it money well spent; as no doubt it was, seeing that it brought him tangible results. But that Barcelona rush was certainly an outstanding affair. We flew in formation like a squadron of war-planes, and roared over Barcelona in a fashion which brought crowds thronging out into the streets. It was a case of "see the conquering hero comes." Lowenstein meant to leave no stone unturned in his efforts to impress everyone with the importance

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of the occasion. He had booked, for the accommodation of himself and his staff, two complete floors of one of the biggest and finest hotels in Barcelona. Nor was that all ; for immediately he landed he invited all the notabilities of Barcelona to a magnificent picnic or alfresco reception on a lovely hill overlooking the city. Here an immense throng duly assembled. There were, I believe, more than five hundred guests, and the festivities went on for hours, the supply of champagne being apparently inexhaustible. Lowenstein himself was the mainspring of the whole affair, and his immense energy never flagged for an instant. That this lavish piece of entertaining cost him not far short of £8,000 was a matter of small concern to him so long as the desired result was being achieved ; and he declared afterwards that this spectacular dash had been made just in the nick of time, when affairs were hanging in the balance. Anyhow, it was not long before a fresh set of orders came through from head-quarters, and we folded our tents, so to say, and unfurled our wings, ascending again one morning in a flight back to Biarritz, where all the conversations and dinners went on just as before.

What Lowenstein was really engaged in, so far as I could see, was a titanic struggle with certain other groups in Europe for a financial control of many essential industries, and traction and other enterprises. From many of the rounds in this mighty conflict he undoubtedly emerged victorious. But in others he had some heavy setbacks. And

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of course the whole thing was an immense mental and physical strain for him. I rather think that his story in this respect was like that of the great military Napoleon. He taxed himself to such an extent that, when some of the final conflicts arose, he was hardly the man that he had been in his prime. That lightning brain faltered a little. That wonderful judgment became slightly impaired. He was not quite the financial giant that he had been! At any rate, that is the personal impression that I have formed. Actually, after a time, his affairs became more stabilised so far as transport arrangements were concerned. He settled down and fought his battles more in one place. And for this reason he no longer required such a big fleet of aeroplanes. Thus I found myself returning to England; while Lowenstein himself acquired a fast saloon-plane just for his own personal use, and engaged a regular pilot to fly it for him.

It was not long after this, as the world knows, that Lowenstein's life ended in the same dramatic fashion as he had been living it. He fell out from the door of his aeroplane while it was on a trip above mid-Channel; and the mystery of his death was a mystery then, and it still remains a mystery to-day. I know for a fact that he had not been well for some little time prior to his death. Things were not going too well with his enormous undertakings, and he had entered upon a period of grave anxiety and worry. As for what happened exactly, up there in the saloon of that aeroplane,

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I do not suppose anybody will ever know. But I think that perhaps he may have dropped off into one of those short but heavy sleeps that were characteristic of him. And then, perhaps, jumping up in rather a dazed fashion, owing to the heavy strain that he was imposing on his brain, he may have forgotten for the moment that he was in an aeroplane, and have gone impetuously to the door and flung it open, losing his balance and falling before there was any chance for him to recover himself. Of course that is only my own theory, knowing the man as I did. But, however it may be, he was certainly an astonishing figure in our post-war world, and it was an education to me in human nature to be able to study him as I did.

There was, incidentally, one thing about him that always impressed me favourably. In spite of all the lavish hospitality he was extending to those with whom he was doing business, and the cigars and wine which were always so much in evidence, Lowenstein himself never smoked, and hardly ever drank anything intoxicating—the most that he indulged in being a little white wine occasionally. He was, as a matter of fact, calling upon his brain and vitality to such an extent that he had to be in training like an athlete—which accounted for the masseurs and others whom he retained to help him keep himself at the highest pitch of physical fitness. Being a “money king” in these modern days is no easy matter, truly. You have to train for it like you would to run in a race or ride a

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horse in the Grand National, and when Lowenstein entered the financial ring, for one of his big contests, he was trained to the hour like any pugilistic hero of the ring.

Another astonishing man to study—and I had plenty of opportunities of doing so—was Francis Lorang. He was a millionaire of a type very different from Lowenstein. He was not such a human dynamo. He did not possess Lowenstein's almost terrifying power of personality. He did not dominate by sheer vitality and determination. He was less domineering. He did not rush at things like a bull at a gate. He was more dexterous—more elusive; a man with a subtle brain that was always working and weaving away at its problems. He got his results by finesse rather than by force. And, in his way, he was certainly an exceptional man.

I first came into touch with him, through my flying work, when his affairs were just beginning to go on the up-grade, and his income was rising rapidly from hundreds to thousands. At first we used to see Lorang as a passenger in the big machines flying on the scheduled services between London and the Continent, and often I piloted him in this way. But as his affairs prospered, and time became of more and more value to him, he found that he wanted to dash off to the Continent at a moment's notice. So he began to charter special taxiplanes. And here again I found myself acting as his pilot. Sometimes he would start off from London in the morning and be away for a week,

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during which I flew him here and there about Europe, in order that he might accelerate the operations in the petrol market in which he was then engaged.

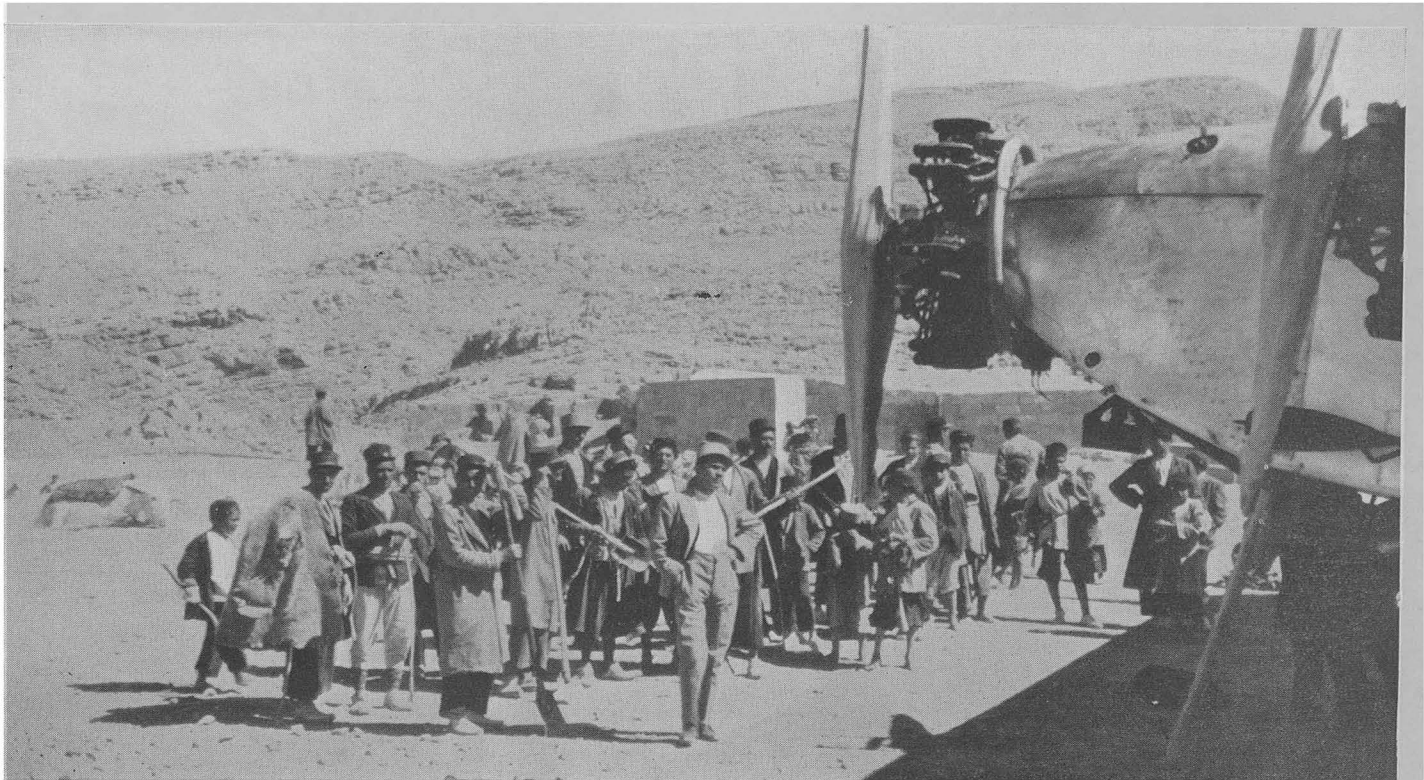
He was a man who was always doing unexpected things. He would sit quite silent for a time, thinking out some problem. Presently he would jump up with a view to taking some particular action; and then, with a change as quick as a conjuring trick, he would alter his mind completely and arrive at some quite different decision. It was just the way in which his agile brain worked. He was not one of those who make up their minds once and for all, and let nothing change them. He was like a weather-cock, always changing his movements and operations according to the way in which the financial wind was blowing. And that this plan worked was shown by the amazing success with which, for a time, his operations were crowned.

But it was rather trying for me as the pilot of his specially-chartered 'plane. One would never know where one was going next; and often he would change his mind while he was up in the air. Suppose we had started off with the intention of flying to Vienna. Very well. I might be well on the way when, after sitting plunged in thought in the saloon of the machine, he would suddenly spring to life with some rapidly-formed resolve, and I would receive a hastily-scribbled note bearing the words: "Not Vienna—fly to Berlin!" Well, it was his business, not mine, and so I would

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alter my course accordingly; but it would be quite on the cards that, after we had been flying for some time in our new direction, another note would come through to me, altering our destination from Berlin say to Zurich. He would laugh at my perplexity, and assure me that it was this extreme mobility of the aeroplane, and the chance it offered him of making eleventh-hour decisions and changes, which made him spend so much money on aerial hire. And that he did pay a good bit for his flying I knew well enough, seeing that sometimes his special-charter bill would come to as much as £300 a week.

Once, I remember, Lorang decided to arrange a flying pageant, in aid of charity, at a large and beautiful estate which he had on the Continent. There was an open stretch of grass-land near the mansion, and he had chartered a big luxurious aeroplane, of which I was the pilot, to take his friends up on pleasure trips over the surrounding country. I flew over from London a short time before the party was due to assemble. Not having visited this particular spot before, I circled round once or twice with a view to discovering whether the proposed open space would, or would not, make a suitable temporary aerodrome. Certainly it was big enough, but as I looked down again I saw that an old farm-house and some out-buildings on the fringe of the field might—in view of the direction of the prevailing wind—prove an obstacle in taking off and alighting with such a big machine as I was flying.



[Photo: *Oriental Institute University of Chicago.*

NATIVES OF PERSEPOLIS VIEWING AN AEROPLANE FOR THE FIRST TIME.

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I mentioned this to Lorang after I had landed in a neighbouring field, and had walked over to his mansion to talk things over with him.

"Come out with me at once," he said, "and show me this obstruction."

I promptly did so.

"And if those buildings were not there the ground would be suitable—is that so?" he questioned.

"Certainly," I assured him.

"Well," he observed with a smile, as though enjoying the situation, "a little thing like that must not stand in our way. It is true that I do not own those buildings—yet. But what I shall do now is to buy them instantly, and my agent will be instructed to obtain the necessary labour, working in day and night shifts, so that they can be pulled down before the time comes for our little party."

And, that point settled, he hurried off indoors again to grapple with business problems which, from his point of view, were no doubt much more important: the buying and pulling down of a farm-house, just to facilitate an afternoon's flying for his guests, being merely a detail on the scale on which he was doing things at that time. I may add that the farm-house *was* purchased immediately, price being no object; after which gangs of labourers appeared from all directions, and those buildings vanished in clouds of dust, almost like pieces of stage scenery.

It is a curious thing, with men of the Lowenstein

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or Lorang type, that they seem to go on and on and reach a sort of pinnacle of their schemes, and that then the whole thing appears to become too much for them. It seems as though they have built up a mechanism so vast, so complicated, that it becomes impossible for them to maintain an effective control over it. They lose their grip. From being positive and aggressive they become hesitating and furtive. They feel no longer that they are directing the course of Fate. It seems to them—so far as one can judge—that Nemesis is now on their track; and from that moment they seem just driven from pillar to post, without knowing really what they are doing at all. I observed a slow change in Lorang. For a time, while he was firmly in the saddle, and everything was going according to plan, his energy was tireless in watching over the course of his various operations. But then clouds began to darken the sky. The look on his face changed; and instead of using his aeroplanes for rapid business dashes, as had been the case formerly, he began to slack off in the serious side of his operations, and devoted more and more time to aimless flights to one or other of the fashionable Continental resorts—Le Touquet, Nice, Cannes, Monte Carlo, and the Venice Lido. And soon he began gambling heavily at these various casinos, while his associates ceased to be his former business colleagues and became the gamblers and others who haunt these big resorts. One day, I remember, we were at Biarritz, and Lorang seemed very depressed. The

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tide had begun to turn strongly against him. Suddenly he roused himself.

"Let's fly to Lourdes, Olley," he said.

I was surprised at that. I knew that one of the famous pilgrimages to Lourdes was then at its height; but I could not follow Lorang's idea in flying there. I soon had our machine out, however, and we duly flew to Lourdes. Whereupon Lorang showed me another side of his character when he went among the cripples who were assembled at Lourdes—talking to them cheerfully, consoling some of the most terrible sufferers, and doing everything he could to encourage them in their great ordeal. It was a revelation to me; more particularly when, soon afterwards, he asked me to come for a long walk with him and told me the story of his meteoric career—of his humble beginnings; of his rise to power; and of how he had now begun to fear that there was a growing lack of confidence in the stability of the concerns with which he was associated. And he told me, also, how worry and uncertainty were driving him to a wild life, whereas in reality he ought to be pulling himself together and facing what promised to be the crisis of his career. I believe that talk did him good; but I am afraid the beneficial effects were far from lasting. When, at any rate, I saw him on the following morning, he instructed me to fly back at once to Biarritz, and soon he seemed to slip back again into the old groove of his restless fittings from one to other of the casinos of Europe. And it was now that his

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affairs began to go rapidly downhill. Confidence in his companies became seriously impaired. Adverse rumours grew and multiplied. Lorang himself seemed to throw off all restraint, and became more and more reckless in his gambling. One day, I recollect, I flew him to Paris, and then soon afterwards a warrant was issued for his arrest. But he had vanished; and it was not until several months later that he was seen in a Paris café and brought over to England to stand his trial, which resulted in a long sentence of imprisonment for him.

III—A FAMOUS SHIPBUILDER TAKES TO THE AIR

ONE of the most remarkable passengers I ever piloted was the late Sir Alfred Yarrow—that world-famed shipbuilder who was referred to sometimes as “the gunboat millionaire.” The vitality of this wonderful old man was simply amazing. One day we had a telephone message from him to say that, “although he was getting on in years,” he thought it would be a good idea if he tried this flying business. And getting on in years he certainly was, according to any ordinary standard, seeing that his telephone message was sent through to us on his ninetieth birthday! But what would have been a great and crippling age to many people appeared a very light burden to him. He was one of those people who are so interested in life that they seem literally to defy the effects of the passing years. He motored down to Croydon, accompanied by two nurses who were always with him in his last few years, and I took him for a flight over London so that he could get an idea of what this new mode of transport was really like. Luckily it was a lovely summer’s afternoon, with wonderful visibility and perfectly calm air. Sir Alfred was as delighted as a schoolboy, and he said to me before he left Croydon :

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"I've not finished with this air business, my boy—not by any means. You will be hearing from me again."

And he was as good as his word, for it was not long before I had a call to go to see him at his hotel. He told me that his short flight over London had been a revelation to him of the speed and comfort of air travel. What seemed to impress him more than anything else was the ability to motor down to Croydon, step straight from a car into a 'plane, and in a few hours, without the slightest fatigue or bother, fly across the Channel and far on over Europe.

"Talk about a 'magic carpet,' my boy!" he declared. "Why, here it is, ready to one's hand whenever one wants it."

And so he decided to fly to Paris, and I piloted him over to the French capital on another splendid day from an air point of view, with conditions up above just as they should be. This trip, too, delighted him, and he said he did not feel a scrap tired. Our Paris trip was followed, soon afterwards, by another to Brussels; after which Sir Alfred Yarrow, despite his great age, became one of the most ardent converts to flying I have ever seen. He appeared to grow young again in those trips across the Continent. The years seemed to roll back. He enjoyed everything he saw from the air with the zest of youth. Air travel, one might say, gave him a new lease of life. And he began to interest himself in flying not only as a passenger, but also from the engineering and

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structural point of view. He used to ask me to come and dine with him at his hotel, and often we sat until after midnight talking about the development of aviation on its commercial side. He was greatly interested in the possibility of building some small type of aircraft for popular use—a machine which should be the aerial equivalent of the baby car. The engineering side of his brain became keenly active again. He bombarded me with questions. He wanted to get down to the bedrock of the whole business. He had found a new interest in life. He told me that if only he had been twenty years younger he would have gone immediately into the aeroplane business, his aim being to produce a machine which would be "the Ford of flying."

So as to acquaint himself more thoroughly with the whole business, he sat down and planned a tour of Europe by air. We set off from the West End of London one foggy November morning. The visibility was only a few yards. His car had to crawl down to Croydon, and I could see that he was growing dubious as to the possibility of our starting that day. It was his first experience of bad-weather flying; but it was not mine. I got off quite all right, and was immediately in touch with the control-tower by wireless, groping my way upwards through the fog until it was not long before we burst through out of the murk into brilliant sunshine. And that pleased the old man more than anything else. He came and sat with me in the cockpit, looking here and there

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in the clear sunlit air, and then down at the pall of clouds lying just beneath us.

"It's marvellous, my boy," he said. "Simply marvellous."

Throughout all that tour he seemed to grow younger every day; and during the whole of our trip back to London he was talking of designing and building an aeroplane of a popular type to embody the theories he had now worked out in his mind. But though the spirit of this wonderful old man was so youthful, and his mental grasp of everything so clear and strong, his body could not escape the toll of the years. It was not long after our return from the European tour that he caught a bad chill. Fighting to the last, he put up a brave struggle against this illness; but eventually it proved too much for him, and I was very saddened one day to hear of his death. If he had not caught that chill, or if he had only come into direct touch with aviation earlier in his career, I feel certain that Sir Alfred Yarrow would have written his name on aerial history, just as he did upon the history of marine construction.

IV—THE TEMPERAMENTAL “ STAR ”

A CHARTER-PILOT'S 'phone calls come from all sorts of quarters. But, from whatever source they may originate, one may generally reckon that there is something urgent afoot, and that one is expected to get busy without delay. One morning there came the familiar ring at my bell, and when I picked up the receiver it was to hear the voice of the manager of a West End theatre. It appeared that there was a big performance for charity at his house that night, and that one of the artistes who had promised to take part in the programme was Miss Josephine Baker, the famous coloured actress. But, though she was billed to appear, no word had come from her, and the latest information they had was that she was in Paris, and unlikely to be able to fulfil this engagement unless some pretty drastic step was taken at once. Would I fly over and bring her across to London in time for this performance? If so, they would send me down, by hand, a special letter which I could take across to Paris with me, and which would not only introduce me to this well-known actress, but which would also impress upon her the importance of not disappointing her audience in London.

Things were arranged quickly, and I slipped along to the aerodrome in my car, picked up the

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letter which had been sent down to me from the West End, and was in the air *en route* for Paris shortly before noon. Arrived at Le Bourget, I obtained a car and drove post-haste to Miss Baker's flat in Paris, arriving there at about two o'clock. I presented my letter of introduction, and Miss Baker's maid, having been made aware of the urgency of the matter, took me immediately into the actress's room. It appears that, while dancing the previous night, Miss Baker had sprained an ankle, and there appeared little hope of her being able to accompany me back to London. This was bad news, as I had promised the manager on the 'phone that, come what might, I would bring this "star" across in time for his performance that evening.

Miss Baker took the letter I had brought with me, and read it quickly. Then she said she really could not think of coming. Her ankle was so painful, in fact, that it was practically impossible for her to put her foot to the ground. It was rather an awkward situation for me, standing there with the maid and doing my best to make this dusky "star" alter her mind. I told her we could manage things so that she would hardly need to put her foot to the ground at all. If necessary she could be carried to the car waiting outside her flat, and then be driven right up alongside the aeroplane at Le Bourget; and then, after her flight to Croydon, another car could take her straight up to the West End. Once she was on the stage, even if she could not dance, at

THE TEMPERAMENTAL "STAR"

least she could sing ; and in any case it would mean that she would not be disappointing her hosts of admirers in London. Besides, there was the charitable nature of the performance to remember, and if she did not appear, perhaps the whole thing might be a "flop." My pleadings began to bear fruit. That idea of disappointing her admirers seemed to have the desired effect. She said she would try. She would see how she felt when she got up. I emphasised the need for haste, and then went to put a 'phone call through to London, while the actress's maid helped her mistress to dress. Time passed. I began to look at my watch. It was beginning to be a bit of a problem as to whether we should get there in time. But presently the actress appeared. We helped her down to the car, and drove at high speed to Le Bourget. Once in the air I wasted no time in flying through to Croydon. Miss Baker now seemed to be entering into the spirit of the thing, and made light of her sprained ankle—although I could see that it was really paining her a good deal. At any rate, we got up to the West End all right, with some little time in hand ; and she duly appeared on the stage at that charity performance. After singing some songs, she even attempted to do a few steps of one of her famous dances. The audience knew about her air dash from Paris, and also about her injured ankle, and her pluck had its reward, seeing that she was applauded to the echo.

V—LINDBERGH: A PERSONAL IMPRESSION

LONDON's famous airport at Croydon has been the scene of many a history-making event in our flying world, and I have been familiar with every phase of its progress since it developed from a rough "Wild West" sort of collection of army huts to the present fine buildings which fringe Purley Way. Many excitements we have had at Croydon—many thrilling happenings; but I never remember a more wonderful scene than that which we witnessed on the famous day when Colonel Charles Lindbergh flew to Croydon after his amazing solo flight over the Atlantic from America to France.

I have had a good many opportunities of studying this wonderful man—and a wonderful man he is, truly! In America, before he electrified the world by setting off across the Atlantic, to sit alone in that monoplane of his for thirty-six hours before gliding down at Paris, he was referred to often as the "Flying Fool." But never was a nickname worse applied. Lindbergh certainly gave an impression that he was casual and rather careless in what he did—that he simply got into a machine and dashed off anywhere at a moment's notice. But that superficial impression was, as a matter of fact, completely misleading. It must be

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understood that Lindbergh is an utterly unassuming person. He has no mannerisms. He makes no pretence whatever at pose. He attempts nothing in the way of theatrical effect. What he does is to make up his mind to do something. Then he just does it. And that is all there is to it. This abruptness, this absence of all hesitation, gives an impression that he may be acting more or less on impulse. But though Lindbergh says little, he thinks a lot. He works out every detail of a plan in his mind, without fuss or bother, before he makes the slightest move to carry it out. Then, while other people may still be talking, he just jumps in and acts swiftly, having done all the preliminary "staff" work in his brain already. And that is how he accomplished his astonishing Atlantic flight.

He was disarmingly casual about the whole business. But that careless manner conceals a cool, accurate brain which sees everything and forgets nothing. Lindbergh, without the slightest effort, seems to have the knack of putting his finger exactly on the point that matters. He does not waste a moment on anything that may be superficial. When you talk to him, his remarks are as direct and as swift as the machines he flies. And so it was with this great flight that made him famous. To onlookers it seemed as though he said one day, "Well, here goes for the Atlantic," and then just shot off and vanished over the ocean. But Lindbergh had been working that flight out in his mind beforehand, with an intimate grasp

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of every essential detail. He knew his own capacity. He knew exactly what he might expect from his machine. He made up his mind promptly about the weather conditions, and wasted not a second when he thought the crucial moment had come. Think—then act, and act swiftly! That, one might say, is Lindbergh's motto, and in flying it has certainly served him well. All through that gruelling Atlantic crossing, alone up there in his machine, he was guilty of no mistake or error of judgment. And he was called upon constantly for swift decisions. He had to meet emergencies in which a faulty piece of thinking, or of navigation, might have cost him dear. But his cool, unflurried brain responded to every call that was made upon it—even when bodily fatigue began to weigh heavily upon him. A magnificent triumph for the aeroplane, that flight was; but it was an even greater triumph for the skill and courage of the man sitting up there at the controls.

> I shall never forget that week-end of Lindbergh's flight. At Croydon we heard that he had left New York, and no aeroplane pilot needed to be told of what it meant to start off like that, alone in one's machine, to brave all the perils of an ocean crossing. Then reports began to come in from ships out on the Atlantic. The "Flying Fool" was making that nickname of his look pretty foolish! On he flew, steering a wonderful course. Then we heard that he was only a few hundred miles off the Irish coast. The lights of the Paris airport were switched on in readiness for a night landing.

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Paris itself went wild with excitement. There was a stampede out to Le Bourget. And then presently that amazing man came gliding down out of the night sky, being more perturbed by all the fuss that was made of him when he reached earth than he had been by any of the perils of that lonely ocean flight.

From Paris Lindbergh flew across to Croydon, and that gave us our hectic day. As he neared Croydon I went up with several other pilots to act as an aerial escort for him as he came in over the 'drome. But we had not reckoned sufficiently with the immense public enthusiasm which this feat of Lindbergh's had aroused. I do not suppose that any other flight in the history of aviation has so touched the imagination of the man in the street. When it became known that Lindbergh was flying to Croydon, people simply flocked out there in a vast and ever-growing throng, determined to pay their personal tribute to this hero of the air. The crowd grew so huge, in fact, that it became utterly impossible to control it. People poured out on the aerodrome. They covered the entire landing space. The local officials could not cope with the situation. And when we flew in over the 'drome, escorting Lindbergh, it was an amazing sight that we saw, for the whole place was literally black with people. There was not a clear space anywhere on which one could have put a machine down. To try and land under such conditions would simply have meant a massacre.

What was to be done? Well, we remembered

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some of the old hair-raising tricks of the war days, and we began to make steep dives in over the aerodrome, coming down to within a few feet above the crowd and then flattening out again and repeating the manœuvre. It all looked very alarming, but there was no risk about it really—and, in any case, it was the only possible thing to do. For those dives of ours made the people begin to move in a way nothing else would. They drew back on either side as we dipped over them, and in this way eventually an avenue was cleared in that mass of spectators, and Lindbergh, quick to seize a suitable moment, was able to make his landing without mishap. But that was not the end of it, because a huge wave of spectators came surging after him as soon as he had left his machine, and for a time, I remember, he was marooned on the top of the old control tower at Croydon, unable to reach the car which was to drive him up to the West End of London. Finally his friends managed to get him away; but I believe that experience at Croydon was more of an ordeal for Lindbergh than his entire Atlantic flight had been.

Lindbergh, like others, paid the penalty of being a popular hero. But it was particularly hard for him, because he was one of those who genuinely hated the limelight. Yet from the day of his great flight he could hardly ever escape it. Notoriety dogged him everywhere, and at times it made his life a nightmare. Whenever he did anything in the least unusual the newspapers made a mystery of it. If he was a few hours overdue in completing



[Photo : Oriental Institute, University of Chicago.]

BEDOUINS INTERESTED IN THE MOST MODERN MEANS OF DESERT TRAVEL, PERSEPOLIS.

LINDBERGH : A PERSONAL IMPRESSION

some flight, there were scare head-lines of "Lindbergh Missing." If he went on some mission and declined to talk about it beforehand, all sorts of ludicrous ideas were set on foot. I remember on a subsequent occasion when he came over to Europe he had been entrusted with the task of making an aerial survey for a possible Atlantic air-mail route. There were certain aspects of this scheme which were confidential, and so Lindbergh said he could not give any information to the press. At which the newspapers were all agog. What was it all about? What did it really mean? Why all this secrecy? Lindbergh was bombarded with questions everywhere he went, but he preserved throughout the same unbroken silence. When he landed in this country on what the papers called his "hush-hush" visit, I went down with an aeroplane to Southampton in order to give him a lift up to Croydon, should he happen to want one. But I found that he did not wish to come to London just then, it being part of his plan to pay a quite private visit to some friends down in the West Country. But he was not going to escape the attentions of the press in that fashion, and for several days a story was kept going about Lindbergh's mysterious "disappearance." Of course the whole thing was very irritating to him, but he made the best of a bad job and never lost that quiet, unfurried calm which is so characteristic of him.

Turning from those Lindbergh entries to some of the other pages of my log-books, I find that a

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pathetic interest attaches to some notes I made concerning the late Lord Dudley. He and Lady Dudley had often flown with me on business and pleasure trips, and he was always keenly interested in everything to do with aviation. He had built himself a beautiful villa at Le Touquet, and it was here that he fell a victim to an illness which soon became extremely serious. There seemed, in fact, after a time, no hope of his recovery, and all that the patient appeared to wish was that he might be brought back to this country, so as to end his days in his London home. It was at this juncture that his son, Lord Ednam, got into touch with me, asking me to arrange to bring his father back to London in a specially equipped ambulance 'plane. This task I undertook at once, and we carried it out without a hitch, flying the patient from Le Touquet to Heston, the Heston airport being nearest to his London home. Lord Dudley, although so ill, was extremely comfortable during this flight, and when we got to Heston, and before he was lifted into a waiting car, he chatted with me for some time about my flying experiences and about the previous flights on which I had acted as his pilot. I remember that he lit a cigarette as he sat in the aeroplane saloon, and I could see him looking round at all the activities of the busy 'drome. Then at last he shook hands with me and was driven away to his home, where, I was very sorry indeed to hear, he died only a few days later.

VI—THE PASSENGER'S POINT OF VIEW

APART from my own personal impressions when flying, I have always found it amusing—and often instructive—to listen to what passengers have to say after they have made a flight ; and in addition to what they tell you in actual conversation, many air travellers—particularly those who make flights over the long-distance Empire routes—now jot down their chief impressions in writing. And very interesting such pen-pictures can be. I have collected, from time to time, a good many of those which have appealed to me particularly. Here, for example, is one passenger's brief but vivid description of an ascent from Croydon :

"The door of the 'plane closes. The engines spring to life. The great machine speeds along the concrete and out on to the grass. Now we feel a gentle floating sensation in the saloon. We have left mother-earth and are soaring skyward. In one prodigious sweep our air-liner circles—like some gigantic pigeon which is taking its bearings. Then it settles on its course seaward, the towers of the Crystal Palace glittering in the sun."

Here is a pen-picture by a traveller of his fellow-passengers in the air saloon during a flight to the Continent :

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"Some, I see, sit reading the morning papers, just as they would if they were in a train. Others are immersed in the latest novel, or in an illustrated magazine. One or two are sleeping. Others gaze down through the saloon windows, fascinated by the passing of the fleeting landscape."

"England," writes a voyager on a flight from Croydon to Paris, "stretches like a huge jig-saw puzzle below. The hills of Kent look like the waves of an ocean. Roads, streams, and fields weave themselves into a pattern. The Channel is a sheet of quicksilver, the sky an azure canopy. Now we are over France, its sands glistening like gold. Casinos, hotels, golf courses catch the eye. Past the historic forest of Crécy we fly, and then on mile after mile over the broad, flat breast of France. Cars small as beetles crawl along the straight roads far beneath. Then the red roofs of the suburbs of Paris come out to meet us. The Eiffel Tower points its long, skeleton finger to the sky. We glide down at Le Bourget."

Passengers are often fascinated by the queer cloud-shapes which a machine may fly through. Describing what he saw on a trip to Basle, a passenger writes :

"Some clouds take on the semblance of monster mushrooms. Others have the appearance of a thousand tents in a military encampment. There are clouds like horse-shoes. Others are like snow-laden trees. Soon the world is entirely hidden, and streamers of vapour glide like ghosts past our windows."

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Passengers by the Empire routes find impressions crowding thick and fast upon their minds ; but no thrills are greater than those they enjoy when making their passage above the Mediterranean in one of the big flying-boats. Here is an extract from what one traveller wrote after his trans-Mediterranean trip :

" Away in the blue Crete is sighted. Cape Sidero is now beneath us. How beautiful these islands off the coast appear ! Brown rocks ; a white circle of foam ; water that is emerald-green near shore, changing to peacock-blue in deep water. Every rock on the sea-bed clearly visible—a magnificent sight ! We roar over the islands of the Cyclades, with their pretty little sandy coves and their farm-houses built of stone. How delightful is the aerial view ! "

While they are on the ground, as well as when they are up in the air, Empire passengers see picturesque sights. Here is what one of them wrote after seeing a camel caravan during a halt at Sharjah on the Arabian side of the Persian Gulf :

" There fell upon our ears a tinkling of bells. We listened. There was no sound of feet, but the bells came nearer and nearer. At last from the darkness emerged a camel, and behind him more camels, and more, marching on with noiseless padded tread, with impassive faces and out-stretched necks, round which the rows of tiny bells swung backwards and forwards with every step. That long caravan passed in ghostly silence."

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Watching wild life from the air forms one of the fascinations of a flight across Africa. Here are one or two extracts which I have collected from passengers' impressions :

"The sun is up. The desert is behind. Already game is appearing. The passengers become excited. Just beneath us the veld seems alive. Herds of buck scamper in all directions. One spies ostriches, foxes, hyenas, and innumerable small animals. Swarms of bustards are disturbed by the noise of the machine above. Scarcely a minute passes without game appearing on one side or the other.

"'Rhinos!' shouts a voice suddenly. I look down. There are three of the monsters charging through the bush. At the same moment three others appear on the other side of our machine, while it seems that herds of giraffe are everywhere."

"Occasionally, if you are lucky, and in addition to elephants and other big game, you glimpse lions. One pilot told me of a magnificent view he had of as many as twelve lions, young and old, standing about in the sunshine. The aircraft was flying low and the lions, as they watched it, could be seen to lift their heads and snarl angrily."

Sometimes, on Empire flights, travellers have the experience, which they find specially interesting, of beginning a flight during the hours of darkness, or of making a landing after night has fallen. This is how one passenger describes a night ascent from Cairo :

THE PASSENGER'S POINT OF VIEW

"Stretching across the aerodrome are paraffin flares. For the rest, the world is dark save for the navigation lights on our wing-tips. We dash along the line of flares and leave the ground as gracefully as a bird. As the moon appears we are able to distinguish a number of things. Immediately outside the windows are the ghostly wings and engines, partly illuminated by the moon, and partly by a bluish glow of fiery vapour from the exhausts. Twinkling lights appear now and then from towns and villages. Ancient Egypt is asleep."

Here is a pen-picture of a night landing :

"Below lies the eternal jungle. The light is fading. Soon one can see nothing outside but a black void. Forty-five minutes later a number of small specks of light appear below. We are losing height. I wait, wait, wait. There is still nothing to see. Then suddenly the wheels touch ground. Along the line of petrol flares the machine swoops and comes to a halt. It is a perfect landing."

And here is a vivid impression of the speed of modern flight, as recorded by a passenger after a trip from Africa :

"Roaring through space at more than 100 miles an hour! An arm-chair seat and limitless horizons during the day. A comfortable hotel each night. One evening chatting to excited gold-diggers in the back o' beyond at Mbeya. A few days later watching the sun rise like a flame in the heart of the desert. Above the clouds.

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Landing on the edge of primeval forests. Over the ancient Nile. Breakfast in Egypt, lunch in Greece, dinner in Italy. Talk about 'magic carpets.' Why, here you have one in actual fact."

VII—THE WORLD ABOVE THE CLOUDS

THE extracts which I have just been giving, of how flying appeals to passengers, have led me to go back in my mind's eye over the 1,000,000 and more miles which I myself have flown at the controls of aeroplanes of various types, and to recapture some of the thrills which the pilot experiences as he looks down on the world from a bird's-eye point of view. Pyramids and temples amid gleaming sands! Vistas of mountains, forests, lakes, and rivers! Glittering airscapes, high in the sky, formed by majestic banks of cloud! It is a wonderful world which you see, not from motor-cars or trains, or from the decks of liners, but from the cockpit of an aeroplane flying thousands of feet above land and sea.

Flying across the Channel above the clouds is a revelation in scenic beauty. Though conditions may be dull and gloomy beneath the clouds, up there in the higher air the sun is shining, and all is bright and glittering to the eye. It seems, in fact, as it is often called, "a world above the clouds"—more particularly as the cloud-tops often take the shape of vast mountain ranges, and sometimes what appears just like a broad road can be seen running up among these queer, elusive cloud-slopes. It looks almost, indeed, like some strange

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kind of Alpine scenery on a very large scale, and I remember one of my passengers declaring that all this above-the-clouds scenery looked so substantial that he felt he could jump from the 'plane and just wander about among the dazzling peaks below. Just as well that he did not do so, though, or he would have found those cloud mountains of a very will-o'-the-wisp character!

As a contrast to such an above-the-clouds crossing of the Channel, one often pilots a 'plane between the two coasts through a clear and cloudless sky. Then, far below, you see tiny black specks which you recognise only as ships by the smoke from their funnels and the white wake which stretches behind them. They look more like toy boats on a pond than anything else. Sometimes, if the wind happens to be high during your crossing, there are white caps to be seen on the waves; but often the sea appears like a floor of glass beneath, with scarcely a ripple on it. After which, assuming that you are flying to Paris, and the French coast appears below, you are reminded as you glance down across the country-side of the difference between the appearance of France and England, as an aeroplane pilot sees them from his cockpit. One notes, for example, that the French fields are as a rule larger than ours. You observe that there are fewer hedges and that most of the roads are straight; while the French towns and villages are seen to be less straggling than those of England. It was a shrewd American—one of my many passengers—who declared: "You can

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see more of a country in a day from up in the air than you can in a year from a train or a car."

The delights of flying are indeed many; but there are assuredly none greater than to sit comfortably at one's controls and, from one's position thousands of feet aloft, watch the passage below you of an ever-changing panorama of land and sea. You have a wonderful feeling of detachment. There is nothing to distract you. No objects near at hand flash past, as is the case when you are in a train. There is none of the dust or turmoil of present-day road traffic. You can sit up there in your cockpit, serene and watchful, studying the world below as you could never study it from earth level. There is an old Chinese proverb which says that "one seeing is worth a thousand hearings," and it is a proverb that you are reminded of constantly when you are piloting an aeroplane. The world is at our threshold in this age of air travel, and it is a world of vivid contrasts that you look down on from above.

There are certain glimpses one obtains which seem to linger longest in one's mind. You remember them instinctively when you think of any given route or flight. Delightful, for example, is that glimpse one obtains of the Royal Palace, in its lovely grounds, when reaching Brussels on a flight from London. Magnificent, too, as one approaches it from the air, appears the famous cathedral of Cologne. Nothing could surpass the beauty of the scene one looks down on as, during a flight to Switzerland, one's aircraft heads up the

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valley of the Rhine, with the mountains of Germany on one hand and the Jura Mountains of Switzerland on the other. On the mountain-slopes villas and farms are dotted picturesquely. Away on one's right, snow-capped and majestic, lie the Bernese and Engadine Alps. These views from aloft are superb. Nothing mars their grandeur.

As for the scenes which flash through a pilot's mind, as he thinks of his flights over Empire air routes, it is hard to choose from such a feast of colour. Rutbah Wells, fascinating desert station; Bagdad, with glimpses from above of mosques, date gardens, and narrow streets; and on from Bagdad that marvellous Arch of Ctesiphon, relic of the Palace of the Parthian Kings. These linger in the minds of pilots flying on the India route; while it is a memory-haunting moment, at the start of a flight across Africa, when you soar up from Cairo, with the Pyramids below. On you fly above the Nile. Temples and ruins are beneath. Then lakes and forests lie below. That mighty mountain, Kilimanjaro, looms in the distance. On over rolling plains. The clearness of the air enables a pilot to see vast distances. And then, presently, Cape Town appears ahead, lying superbly between Table Mountain and Table Bay.

It is a romance of reality, all this! It is the coming true of a dream which was in the minds of men when, away back in the dim past, they strapped wings to their shoulders and sprang from hill-tops in an emulation of the birds. To-day, could some of those "bird-men" return to our modern world,

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they would gaze amazed upon airway arrival and departure platforms from which our travel of the skies is now conducted with all the precision of science—great winged machines passing swiftly along their ordered routes, and the airway controller annihilating distance by wireless telephone between his lofty tower and the liners of the air in flight.

It is a romance, all this, such as the world has never known before—a romance of speed, of human ingenuity, of immense technical achievement; a romance also of tremendous courage and personal skill. In the short space of just over thirty years we have seen men achieve the apparently impossible. We have seen them take a frail, low-powered air-machine such as that which the Wright brothers first used, and develop it into a great multi-engined carrier of passengers, mails, and merchandise, weighing many tons and built throughout of metal. We have seen all the gloomy predictions of the sceptics amply confounded. We have seen the apathy of Governments overcome. We have seen this great movement of the air go forward irresistibly. Nothing has been able to stop it. And to-day it has a future before it which will bring benefits and advantages to the entire world.

It would be pathetic, if it were not so ridiculous, to see the futile efforts of a few reactionaries who would endeavour, just because they want to check the march of progress, to stultify flying development and rob mankind of this great new power of

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moving through the air. Not long ago, I remember, we had the case of one very irritable individual who had his house and grounds near a local flying club's aerodrome. He objected violently to the passage of the club's light 'planes over his property, and even went so far as to erect a tall flag-pole in his garden, thereby imperilling the lives of pilots who came gliding in, and who might have collided with it. Being remonstrated with, he even went farther and threatened, with the assistance of some equally stupid neighbour, to erect a big net which should prevent aeroplanes from flying over this particular spot. This got a little too much for the air authorities in London, and a special visit was paid to this extraordinary person, the result being that his attitude was very considerably modified, and after a time nothing much more was heard of him.

This tale reminds me of an investigation which we made in the early days of our London-Paris air service. It was thought interesting to go back into the old records and see the sort of problems and difficulties which had confronted those who wished to establish the first railways in this country. And a very intriguing business we found it to delve into those pages of the past. It is certainly difficult for us, to-day, to visualise the frame of mind of those who came together in meetings and committees and protested vehemently against the idea of engineers laying down railway lines. Yet those same engineers, preparing to confer an immense boon upon their fellow-men, were in many cases

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abused and threatened, and their whole scheme denounced as "an invention of the devil."

One has little patience with those who dread the final triumphs of human invention. If any great movement that one sees developing is in the interests of humanity as a whole, what right have we, as individuals, to attempt to stem this flowing tide? Every day the flying-machine assumes a greater significance. Why dread the air age? Why adopt the attitude of certain people living near air-stations who have complained of the noise made by aircraft entering or leaving these stations? If one lives near a railway station one knows that it is useless to go to the authorities and complain about the noise made by trains. The railway is a convenience established in the public interest, and any noise which trains make is accepted as part of the price we must pay in order to enjoy the facilities which railways provide. And the airway is becoming just as much a benefit to the community as is the railway. Therefore the few cannot resist what is a boon to the many. Besides, it is only reasonable to ask people to be a little patient in regard to this new business of aerial transport. Scientists and engineers are working hard to lessen the noise which a flying-machine makes while it is passing through the air, and there is every prospect, now, that these researches will meet with substantial success. In every direction, as a matter of fact, the flying authorities, and those actually operating air organisations, are doing all they possibly can to

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ensure that, while the facilities of high-speed air transport are enjoyed on a constantly-widening scale, this growing traffic of the skies is effected with a minimum of inconvenience to those who move about on the earth. But the rights of the individual must be judged, not solely from any particular individual's point of view, but from the point of view of the community as a whole. Law is merely organised common sense, and should some landowner who has a stretch of ground on an important air route demand that no aeroplane shall fly above his property, invoking that ancient law which says that a man owns the air above his land, he will find that modern law has already adapted itself to the new conditions imposed by aerial navigation. If any reactionary person could prevent air traffic passing over his land, then insuperable difficulties would be placed in the way of that very air movement which the State is encouraging by subsidies and grants; and this, of course, would create an impossible situation. So what has been done is to modify the law to the extent that no individual shall be able to bring an action against any aviator crossing above his land, provided that this pilot is navigating his machine in a reasonable way, and is not endangering life or property, or making himself an obvious nuisance. If he does "aerobatics" or "stunts" just over your back garden, and at a low altitude, you can set the law upon his trail. In fact, as the law stands to-day, and as it has been modified and adapted to meet the exigencies of aerial transport,



{Photo: Planet News, Ltd

**WITH AMY MOLLISON BEFORE LEAVING CROYDON TO MEET HER HUSBAND
AT CHERBOURG AFTER HIS ATLANTIC FLIGHT.**

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there is no need whatever for even a timorous person to dread the coming era of universal flight. The authorities, as represented by the Air Ministry, ensure that every craft which flies shall be thoroughly "airworthy," and that every pilot who handles a machine shall be competent to do so. There are stringent rules as to flying over cities or densely populated areas. And one must remember that aircraft are constantly growing more reliable, and that those who fly them are becoming daily more familiar with their machines, and more able to cope with any emergency. And, as flying continues to develop, it is certain that machines will become far less noisy than they are to-day. By the time, in fact, that there is anything like a large volume of traffic through the air, this traffic will probably be conducted at such a height, and with such an absence of noise, that we shall grow so accustomed to it we shall hardly notice it at all.

Many of those who talk to-day about "these wretched, noisy aeroplanes" will be going to-morrow to buy some small, swift, simplified machine in which they will wing their way with great enjoyment through the air, wondering why it was that they had not taken sooner to this perfectly delightful way of getting from place to place.

PART FIVE

IN THE PILOTS' ROOM AT CROYDON

I—THE COMRADESHIP OF THE AIR

THAT safety system which has won for British civil aviation its magnificent reputation throughout the world applies with particular force to the selection, training, and medical and technical supervision of the pilots who fly our big multi-engined aircraft between London and the Continent, and along the Empire air routes to Africa, India, and the East. No airmen have gained greater admiration than our British air-line pilots. In expert knowledge of every aspect of their work they are picked men, as adept in flying in bad weather as in fine.

Come with me into our pilots' room at the London airport and meet some of these men of the new age—the age of the air. But if you expect strange or picturesque stories from them you are apt to be disappointed. For they are all extremely matter-of-fact. Flying is their job, and they thoroughly enjoy it. But they object to be regarded as heroes.

Each of our British airway pilots is a master of his craft. Not only have all these air-line pilots brilliant records and long flying experience, but they are licensed only after rigid medical, flying, and technical tests, as carried out by the Air

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Ministry ; while they are re-examined, officially, at regular intervals.

Many boys to-day, instead of dreaming of becoming engine-drivers when they grow up, as they used to do, or of going to sea, now picture themselves as commanders of big multi-engined airliners, with gold bands on their sleeves. And obviously the work of the air-line pilot has great attractions. Under existing conditions, the main avenue of entry to the ranks of the Imperial Airways pilots is through the Royal Air Force. Regularly, each year, flying officers of great experience, who have long spells in the air to their credit, are leaving the Government service ; and carefully-selected officers from this category—men with exceptional qualifications—provide material which is ideal for air-line pilots. This being so, it is safe to say that the most satisfactory way of becoming a pilot on the commercial airways is by undertaking a first period of service in the Royal Air Force.

One of the striking features of our more intensive phase of civil aviation nowadays is the cosmopolitan nature of the aerial traffic in and out of London. The air-liners of five nations—British, French, German, Belgian, and Dutch—now make a regular use of the Croydon airport, and there is a comradeship and good-fellowship among air-line pilots which, one can see, is beginning to break down national prejudices. Whatever their nationality, they have this bond of unity. They long, each and every one of them, for a world-wide

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development of air transport. It is very impressive, this ; particularly when some pilot speaks impatiently of the—to him—narrow-mindedness and stupidity of earth-bound politicians which is hindering the progress of aviation. And the really striking thing in such a case is that the pilot belonging to the country criticised—whichever it may be—does not hesitate as a rule to join in the general condemnation. If anyone had spoken slightly of any other of his country's institutions he would no doubt have been up in arms ; but remind him of the shortcomings of his Government, so far as air transport is concerned, and his criticism is as outspoken as that of any of those representing other nations.

Many of the well-known figures in our pilots' room at Croydon are veterans of the air who have wonderful records. Take the case of Captain F. Dismore. He gained his official certificate as a pilot as far back as 1913, and has been flying ever since. Then there is Captain A. B. H. Youell. Keen upon flying from boyhood, Captain Youell was apprenticed when he was fifteen to one of the early flying schools, beginning his air career with the very humble task of mending punctures in the tyres of aeroplane wheels. Captain Youell learned to handle a biplane when he was sixteen. Then the war claimed him ; after which he threw himself enthusiastically into civil aviation. And now, having worked his way right up from being an apprentice to the Commander of a modern 2,200 horse-power air-liner, he can look back over many

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thousands of hours spent in the air. Just such a romance, this, as those of the sea, with boys rising from humble beginnings to be captains of their craft.

Another popular figure in our pilots' room is Captain O. P. Jones, who, bearded and imperturbable, with a cigar in the corner of his mouth, and with his peaked cap at a rakish angle, is sometimes called "the Captain Kettle of the air." Captain Jones began flying in 1917, and was an air-line pilot on the Continental routes prior to the inception of Imperial Airways in 1924. During one busy spell, while on a demonstration tour in Scotland, Captain Jones carried more than 3,000 passengers for short flights during a period of three days. Others of our veterans in the pilots' room are Captain W. Rogers, known to his friends as "Rodge"; Captain A. S. Wilcockson, a genial and stalwart figure, who is as famous as a test-pilot as he is as the commander of an air-liner; and others such as Captains Walters, Horsey, and Drew. Airmen such as these just laugh at the idea that there is any danger in the life of an air-line pilot nowadays. Indeed it was Captain Horsey who, not long ago, on being asked on completing a flight whether he had met with any adventures up in the air, replied:

"Do you ask an express train driver whether anything exciting has happened to him on one of his routine runs? Of course you don't. Why, therefore, imagine that a modern air-line pilot,

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making his daily trips over routes he knows like the palm of his hand, is likely to be confronted by a succession of thrills ? ”

Of course the whole thing is a question of psychology. People take for granted the general safety of travel by land or sea ; and there is no longer any need for air transport to lay stress upon its safety, seeing that modern airways have proved, over and over again, that they can be operated with high and consistent factors of security. In the early days of flying there were, of course, very definite elements of risk. For one thing men had not accustomed themselves to navigating in this new element. They were guilty of errors of judgment, and these sometimes cost them their lives. Early machines, also, were crude and unreliable, and were sometimes of such flimsy construction—owing to the inexperience of their builders—that they broke to pieces in mid-air ; while the first aero-engines were so prone to failure that one great pioneer, Henry Farman, used to say he considered it quite an achievement to get one of them to run for five consecutive minutes without developing trouble. But even in its early days flying was nowhere near so dangerous as was supposed, as is proved by the number of pioneers who, in spite of the fact that they constantly ran risks no airman need contemplate to-day, have survived to tell the tale. Actually there is not, and never has been, anything fundamentally or irremediably dangerous about flying ; and the present high factors of safety, not only on our airways, but also in club

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and private flying, simply mean that such risks as do arise have been overcome by an accumulation of knowledge, experience, and piloting skill.

II—ROMANCE AND ADVENTURE

THOUGH the life of an air-line pilot has become as regular, nowadays, as that of the commander of an ocean liner, and the mishaps of early days are replaced by the almost 100 per cent. reliability of present airway flying, the thrill of pioneering still exists in many of those air enterprises which continue to take pilots away from the beaten track. And a good indication of this is provided by the case of one of the occupants of our pilots' room at Croydon, Captain G. L. Thomson. Fate brought a very strange adventure in his way, as it has the habit of doing in the path of other flying men.

For the scene of this adventure one has to go a long way off—as far, in fact, as the island of New Guinea, an island which, even to-day, is a land of mystery, being still largely unexplored. But there is a lure which has brought white men to this island of dark forests, with their strange little pygmy dwellers, and the fierce head-hunters who show no mercy in the collection of their grim emblems of victory. There is gold in New Guinea—gold in plenty. But one of the problems for the white man is to transport it from the inland mines to the coastal bases. Some of the most lucrative mines are some distance in the interior,

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and to reach them from the coast there are not only dense forests to be traversed, but the obstacles which Nature has interposed also take the form of precipitous mountains, up the sides of which there are nothing but winding native trails. Add to this the peril from lurking savages, and the danger from large and venomous snakes, and it is seen that the prospector is faced by a problem which, at first sight, appears almost insoluble. So it would have been, probably, had it not been for the aeroplane. Native bearers, carrying loads to and from the sea-coast and the mines, need something like a fortnight to make the journey; but an aeroplane, leaving its aerodrome near the coast, and flying to a clearing in the forest close beside the mines, can make the trip in not much more than half an hour! No wonder, then, that air transport between these inland mines in New Guinea, and the nearest coastal centres of supply, has become an established and successful method of communication, more particularly as it is now possible to obtain big multi-engined 'planes which will soar up over the mountains and forests, carrying loads of a considerable size and weight. It might seem hardly credible, but it is actually the case, that a small hotel, divided into sections, has been flown up from the coast for erection at a point near the mines. Such things as pianos and billiard tables, for the amusement of the miners in their leisure hours, have also been air-borne from the coast to the mines, while it is no uncommon thing, nowadays, for quite large pieces of mining

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machinery to be installed in the holds of specially-equipped aircraft, and to complete their journey through the air after being unloaded from the ships which have brought them from Europe.

Most of the early flying between the coast and the mines was done with comparatively small machines. But soon those operating the mines felt that they needed bigger craft. So they came to England and bought a three-motored commercial biplane of considerable size, and it was to pilot this machine on its gold-bearing flights in New Guinea that Captain Thomson was selected. And so, for a time, he left his normal flying along well-organised airways, and went out into the wild to find himself passing to and fro above primeval forests, carrying stores from the coast to the miners, and flying down again to the coast with the precious ore which is the key-note of all this activity.

For a time all went well. Up over the mountains, and down again, flew that big biplane with Captain Thomson at its controls. But then one day Nature, as though to revenge herself for the way in which these flying machines were making light of her hitherto impenetrable mountains and forests, staged a storm of such violence as had not been known in those parts for many a day. And, as luck would have it, Captain Thomson was making one of his air trips just at the moment when this storm reached its most tropical severity. Over the mountain-sides, and down the ravines, the wind was blowing with a phenomenal strength. Great sheets of rain blotted out the view, turning

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day into night. In fact the conditions grew so terrible that the big machine Captain Thomson was flying became utterly unmanageable, and he crashed down into the side of a mountain far from both the mines and his sea-coast base—he himself being uninjured, but his 'plane being wrecked. A predicament that, on that far-off mountain-side, to try the stoutest nerves. But Captain Thomson has a temperament which is ideal for such emergencies. He manages to keep calm and unmoved, no matter what may happen. He simply refuses to become "rattled," or to lose his cool power of judgment, and, though the odds were heavily against him on this occasion, and he had lurking perils on every hand, he succeeded in struggling back on foot to his sea-coast base. But it was ten days after he had abandoned his wrecked machine before he appeared suddenly before the overjoyed eyes of those who had been so anxiously awaiting him. Through forests he had groped his way in which the vegetation is so dense that it is twilight even at midday; and up mountain-sides, and down ravines, where a false step might mean a plunge to instant death. Eager questions were asked when he appeared again at his sea-coast base. But in his attitude in such matters he reminds one of that famous air pioneer, Wilbur Wright, who when he was asked why he was so reticent, replied briefly:

"The only bird that talks is the parrot, and it is not a bird of high flight."

A man of action, not of words—such was Wilbur

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Wright, and the same attitude marks those airmen of to-day who steadfastly refuse to be made heroes of, and to whom an escape on foot from a trackless jungle is just part of the ordinary luck of things, to be enjoyed or endured as the case may be. And so Captain Thomson could not be persuaded to talk, either by his friends or by the newspaper correspondents who subsequently had a try at him. But he was very nice about it all. He was not in the least brusque. He simply disarmed all inquirers by taking up the attitude that there was really nothing in it at all, and that after leaving his abandoned machine it had simply been a matter of plodding along, and preserving a good look-out, and of just keeping on going until he had cleared the forests and struck the sea-coast. A bit of a nuisance, but there you are! Well, there is little to be done in the case of anyone who, after some amazing exploit which astonishes other folk, insists that this sort of thing is taking place every day. And so Captain Thomson managed very adroitly to dodge the limelight, as others of his kind do, and went quietly on again, doing each job of work that comes along, and making even the most romantic exploit seem quite ordinary, just by his quiet, placid way of looking at it.

In addition to operating airways to and from gold-mines, we are now on the eve of other significant developments in the exploitation of mineral and other wealth by aerial means. Explorers of a new type are beginning to appear on the world's stage—explorers who embark in some

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big "ship of the air," eating, sleeping, and living on board with as much comfort as though they were in a liner or yacht at sea. And from the point of view of seeking out hidden wealth, these aerial searchers are obstructed by no earthly barriers. Mountains, forests, deserts—none of these checks to adventure by land will stay the progress of the explorers of the air.

Many a tale to stir one's imagination we hear, nowadays. Here is one of them. Years ago, it seems an exhausted traveller struggled out from the fringes of the great Kalahari desert in Africa. He was on the point of death and, indeed, soon died. But before he collapsed he gasped out a tale of having come across a veritable "mountain" of platinum deep in the grim heart of the desert. With him, to corroborate his statement, he brought a sample of what was undoubtedly the real thing. From that day to this the tale has survived, though weary and dangerous search has revealed nothing. But now explorers of the air may seek for this treasure mountain, and also for riches which deserts and other barriers have so far kept from the hands of men.

Here is another scheme of a similar kind. Out in a certain ocean—its precise locality and position being a question which those concerned are not prepared to discuss—lies a small and rocky island, surf-beaten and desolate, on which one of the gangs of pirates of old, after rifling a rich vessel homeward bound, had to bury in haste an unusually large amount of their ill-gotten gains—



MR. DOUGLAS FAIRBANKS, THE WELL-KNOWN FILM ARTIST, AND FRIENDS WITH THEIR PILOT, CAPTAIN OLLEY, AFTER A FLIGHT TO PARIS.

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they themselves being hard pressed at the time by an avenging ship of war. Such tales, of course, are not uncommon; but the point about this particular island is said to be that the treasure to be recovered is of an exceptionally valuable kind. And that it is still there is indicated by the fact that the pirates who hid it, failing to elude capture, were prevented from returning to their booty for the grim reason that they were all of them hanged. Attempts to recover this particular treasure are rendered unusually difficult because the island is so wave-beaten, and landings are fraught with such peril, that after comparatively brief spells of searching hunters are obliged to abandon their quest rather than be marooned on the island with a risk of starvation. Some time ago "hush-hush" inquiries were on foot as to the possibility of chartering an airship to drop searchers from aloft on this inaccessible island, and provide them afterwards with food and other supplies from the air. Then, later on, it was understood that a plan was being worked on to maintain communication between the island and the nearest mainland by the use of a big multi-engined flying-boat, stores being dropped by means of parachutes, quite irrespective of how high a sea might be breaking upon the island's rocky shores. Of course many such schemes are far-fetched and "fizzle out" for one reason or another; but the fact which does remain is that the aircraft, and particularly the large long-range aircraft, is putting in man's hands a new instrument in seeking out treasures which have hitherto eluded

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all attempts to reach them. The other day I was told of a big project for air-won wealth which concerns the gold, copper, and other vast wealth which has lain so far untapped in the mountains of Peru. It is proposed—and one believes important interests are behind this scheme—that such inaccessible mountain mines, with the fortunes they contain, shall be exploited systematically by air. And the success of the operations in New Guinea, which I have already described, lends a new point to such projects.

III—BLAZING THE AERIAL TRAILS

THE talk of airmen, when they gather in their pilot's room nowadays, covers not one country or continent, but reaches throughout the entire world. When we first began flying between London and the Continent, some fifteen years ago, the entire mileage of the world's air routes was not more than about 3,000. To-day that total has reached, and slightly exceeds, 200,000 miles. An up-to-date air map shows one that, starting off from London by air, one can fly to more than 150 cities throughout Europe; while throughout the world the air-mail routes are now in a process of constant development and expansion. Romantic enough are some of these air lines which, when one looks at a big air map, one now sees making their way across remote or undeveloped territory. There is one, for example, in Canada which goes on and on northward till it reaches the Arctic wastes, bringing in not more than a day or so, to settlers and prospectors in these far-off territories, letters which they would have had to wait months for had they come by dog-team or canoe. And in other parts of the world, high over mountains and forests, these air-mail pilots fly; and often an aeroplane can accomplish, in a matter of hours, journeys which might otherwise take months

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by weary and perilous earth transport. And not only on the regular air lines, but also in many other ways, are pilots blazing their aerial trails. In Canada the air patrols which watch for forest fires, and report any sign of an outbreak by means of a wireless message from the air to the nearest fire-fighting point, have proved their value over and over again. Air scouts have been found to be valuable also in going out ahead of whaling fleets and spotting the movement of whales, their reports being flashed back by wireless to the surface craft. I have mentioned previously how locust plagues are being fought by a chemical attack on the insects from the air; and another way in which the aeroplane can help nowadays is by spraying crops and valuable timber with chemicals to check the spread of insect pests. Aeroplanes have found a use, too, in feeding from the air game which has been starving in remote areas at the end of a hard winter.

There are adventurers of the air now working in many lands, and their stories show that the age of romance has not yet left us. Grim tales some of them are, with pilots making compulsory descents in trackless deserts and suffering terrible privations or even death, or crashing on mountain slopes and braving a thousand perils before struggling through to some place of shelter. One airman, being obliged to make a landing in a clearing in a forest, spent the night in his cockpit with lions prowling round his machine. Another had the misfortune to land in a crocodile-infested

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swamp. His stranded machine began to sink slowly, with the crocodiles watching it expectantly ; and it had actually sunk down with nothing but the top plane showing above the swamp, and with the pilot perched precariously on this last point of shelter, when help arrived just in the nick of time. One of the most unpleasant experiences I have heard of—and it befell a pilot flying in the tropics—was in connection with a flight in which, not long after he had left the ground, the airman looked down into his cockpit to make the discovery that he had an uninvited passenger on board in the form of a large and angry-looking snake. That pilot, as one might imagine, lost no time in getting down to the ground again, managing to effect a safe landing and ridding himself as quickly as possible of this very unwelcome companion. Which reminds one of the tale of the pilot and mechanic of a cargo-plane who had a large number of live bees as a part of their load one day. All went well until for some reason the bees began to escape from their quarters, whereupon the crew of that 'plane had to make the best sort of landing they could, much impeded by the attentions of their small but infuriated passengers.

It is not until one studies world aviation and sees what flying can now accomplish in all the far corners of the globe that one realises the vast potentialities of the aeroplane as a civilising and time-saving machine. Centuries ago, if men wanted to move from point to point, they simply walked. There was nothing else to do. Then

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they hollowed themselves out rough canoes from the trunks of trees and floated down rivers. Then animals were domesticated, such as the horse, camel, and elephant, and trained to carry human beings and loads of merchandise. After which men devised horse-drawn wheeled vehicles, such as the chariot. For centuries men journeyed no faster than a horse could trot or gallop. Then, however, there was the coming of the engine—the power plant of steam and electricity; and after this the petrol engine, with its application to vehicles not only of the earth, but of the air. But from away back in the distant past, and up to the nineteenth century, transport was a tedious business. For many, many years travellers moved at not more than about twelve miles an hour. Then, with the advent of steam, initiating the marvellous industrial development of the nineteenth century, land speed went up to forty miles an hour, and that of the sea to about twenty miles an hour. And so we entered that great phase of surface travel which, at the present time, gives us the twenty-seven miles an hour of fast liners, and the fifty-five miles an hour average of modern express trains. Just over thirty years ago, when, following the advent of the petrol engine, the flying machine appeared in a practical form, its speed was not more than about thirty-five miles an hour. But now to-day we have passenger planes flying at 200 miles an hour; while technical improvements are adding constantly to the speed at which it is possible to fly safely and reliably, and

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on a definitely commercial scale. Which reminds me of some words of the Prime Minister, Mr. Ramsay MacDonald, as uttered not long ago :

“ Friends of mine,” he said, “ have objected to my travelling by air. They think I am running a great risk. But it is as safe to fly in these days as it is to travel on railways or in motor-cars.”

And I might add that many of those who fly regularly nowadays, and who also motor on our congested roads, feel considerably safer when they are up in the freedom of the air than they do when they are threading their way through a mass of traffic on our overburdened earth-level highways.

To-day we have a great driving force behind world aviation, and this is the growing belief of business men, as well as of Governments, in the benefits which efficient, well-organised air transport can now provide ; and it is for this reason, in spite of all difficulties, that plans for further progress are being developed so vigorously. There is no story more fascinating or more important than man's ceaseless efforts to quicken his means of communication. For in transport lies the key to progress. The Romans built their empire on it, thrusting roads in all directions ; while the British Empire grew on its sea routes. And now to-day we are knitting that Empire still more closely together by our latest triumph, air transport. Our great pioneers have gone steadily ahead in the face of all the opposition and ridicule of those whose policy is expressed in the stultifying words “ let

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well alone." When he started to build locomotives, Stephenson was told that his boilers would burst and blow passengers to pieces. In one journal railways were condemned as "disfiguring abominations." In another the railway engine was referred to as an "infernal nuisance"; while the first train between London and Manchester had stones thrown at it as it passed. Even Gottlieb Daimler, when he was busy with those researches which gave us the motor-car engine, was told that if he attempted to speed up power plants in the way he proposed they would do nothing but just fly to pieces. And in its infancy the aeroplane met with the same tribulations as affected other great inventions. Just over three decades it is now since a journalist from a New York paper, who had hidden himself behind a hedge, saw something which sent him running to the nearest telegraph office to write a vividly-worded cable; but in New York, when that cable reached them, they dropped it into the waste-paper basket and suspended the journalist for having put what they considered to be such fantastic stuff on the wire. That was what was thought of flying then, because what that writer had seen, hidden behind those bushes, were some of the early flights of the Wright brothers in the aeroplane which—as I have already described—was the first in the world to achieve a fully controlled, engine-driven movement through the air. Nobody, in fact, believed that those two brothers had really solved the aerial problem. And yet the farmer whose field they circled over grew so

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accustomed to seeing the aeroplane that he merely looked up and observed :

“ The boys are at it again ! ”

And the Wrights kept at it until proof was forthcoming that they had flown for twenty-five miles without alighting, at which ridicule gave place to wonder, and they were hailed as the pioneers of a new era.

IV—HUMOUR OF THE AIR

FLYING men, when they tell each other tales in their pilots' rooms, or in the lounges of our air clubs, have developed a sense of humour which has a tang and crispness all its own. It is a humour, as one writer has put it, "which is inspired by the zest of wind-swept 'dromes and the clear, cold spaces of the sky. It is keen, biting, laconic; the wit of men who think and act quickly."

Be that as it may, here is a typical tale they tell in the Croydon pilots' room. It is a tale which dates back to the early days of the Continental airways, when the rates for air-borne luggage were much higher than they are to-day. When alighting at Basle on a flight to Zurich on a warm day, a pilot noticed that one of his passengers, a Scotsman, showed more signs of suffering from the heat than anybody else. So profusely did this traveller perspire, and so unusual did his symptoms appear, in view of the fact that the day was not abnormally hot, that the pilot went up to him and said :

"I'm sorry you feel the heat so much. I hope you're not unwell."

"Oh, I'm all right, really," answered the Scotsman; "but"—confidentially—"the fact of the matter is this. When I reached the air station

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just before getting into the aeroplane they took me by surprise by saying that passengers had to pay a shilling a pound extra if the baggage they took with them into the machine weighed more than thirty pounds. As I felt sure that what I had with me would turn the scale at more than this, I dodged back into an empty waiting-room and managed, before we were due to start, to slip on, in addition to what I was wearing already, a good few of the things out of my luggage. And as there is no excess for bulky passengers, and as my lightened suit-case came just under thirty pounds, I reckon I've saved a good few shillings. But you're right, man. *I am hot!*"

The pilot who told the tale added that as this canny Scot pulled out a handkerchief to mop his brow once more, a box of soap and a shaving-brush, and several other articles, fell from his pocket in a cascade.

Another pilot's tale concerns the airman who, while carrying a passenger on a cross-country flight, heard an ominous splutter from his engine. After which, without any further warning, the motor ceased abruptly, and there was nothing for it but an immediate descent. The airman peered down to find a likely spot, but so bad from the view point of landing was the country immediately below that no chance presented itself save a descent, pell-mell, into a big orchard. Whereupon, as he dipped downward, hoping for the best, that pilot turned with a grim smile to his passenger and said :

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" I hope you're fond of apples."

There is also a capital story of a pioneer pilot, with a drawl and stammer, who, after a bad landing in which he became mixed up with a tree, was asked by a spectator :

" Have you had an accident ? "

" N-no," was the reply. " I—I—I always l-land l-like this ! "

Another pilot not long ago, flying in extremely bad weather, had to cope with mist, cloud, and heavy rain. After a time, completely lost, he had to come down low to gain some idea of his whereabouts. Suddenly a tall clock-tower, with an illuminated face, loomed up through the gloom ahead and the pilot averted a collision, at the last moment, only by a manœuvre executed with lightning speed. The mechanic sitting beside him in the cockpit registered no particular emotion, even at such a trying moment as this, but merely observed :

" Well, we know the time now, at any rate."

A classic among air stories is that of the nervous passenger who had never been up before. After an erratic ascent the machine in which he was flying, and in which he was sitting beside the pilot, got off the ground and began some decidedly peculiar movements.

" My first flight, this," confided the passenger apprehensively.

" And mine, too," was the pilot's amazing answer, accompanied by a wild and far from reassuring grin.

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Often pilots and officials get a hearty laugh nowadays out of something that may happen at our busy London airport. The other day, for example, a porter went to one of the luggage compartments of an incoming air-liner and threw open the door. Instantly something brown and furry leapt out from the dark recesses and sprang at him with chattering cries, throwing its arms round his neck. Staggering back, the porter grappled with this apparition, and there was a roar of laughter when those who hurried to his rescue saw that it was a little brown monkey which had leapt on him. The animal had been travelling in a cage in the luggage compartment, and somehow or other, during the course of a flight from the Continent, it had made its escape, being ready to spring out directly the door was opened.

Before the advent of the modern, almost silent air-liner, noise was a factor to be reckoned with seriously in travel by air, and the method of communication between the pilot who sat out in front of the machine and his passengers in the cabin behind was (as I have mentioned on a previous occasion) by means of notes passed through a small hatchway. While on a flight to Paris a pilot, glancing back through this hatchway, noticed an old lady sitting very bolt upright and taking no notice whatever of her neighbour, who was shouting to her in an endeavour to make himself heard above the roar of the engine. Promptly the pilot passed the following note back to her :

“ If you will hold your nose, and blow, it will

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clear your ears of air pressure, and enable you to hear all right."

Back came the reply from the old lady on another slip of paper :

" Thank you, dear pilot, for your kind advice, but, as it happens, I've been stone deaf for twenty years."

The pilots of joy-riding concerns which tour the country often have amusing stories to tell. At one pleasure resort during the summer a gentleman of decidedly convivial appearance arrived punctually each morning and paid for a flight of about five minutes. This went on morning after morning with monotonous regularity, and at length the pilot observed :

" You must be very fond of flying."

" Well," was the answer in somewhat confidential tones, " the fact is, old boy, we're leading a gay and hectic life down there at the big hotel, and, of course, the pace tells. Each morning I wake up feeling like nothing on earth, and none of the usual pick-me-ups seemed to meet the case at all until I suddenly thought of an aeroplane flight. So I come out here in a taxi and just whizz through the air with you for a few minutes. And, man, it's the best notion you ever struck for a really obstinate attack of that morning-after-the-night-before ! Book me another flip to-morrow, will you ?—same time and place."

There is a capital story which concerns a series of experiments which were carried out to determine how air " circulates " round a wing when an aero-

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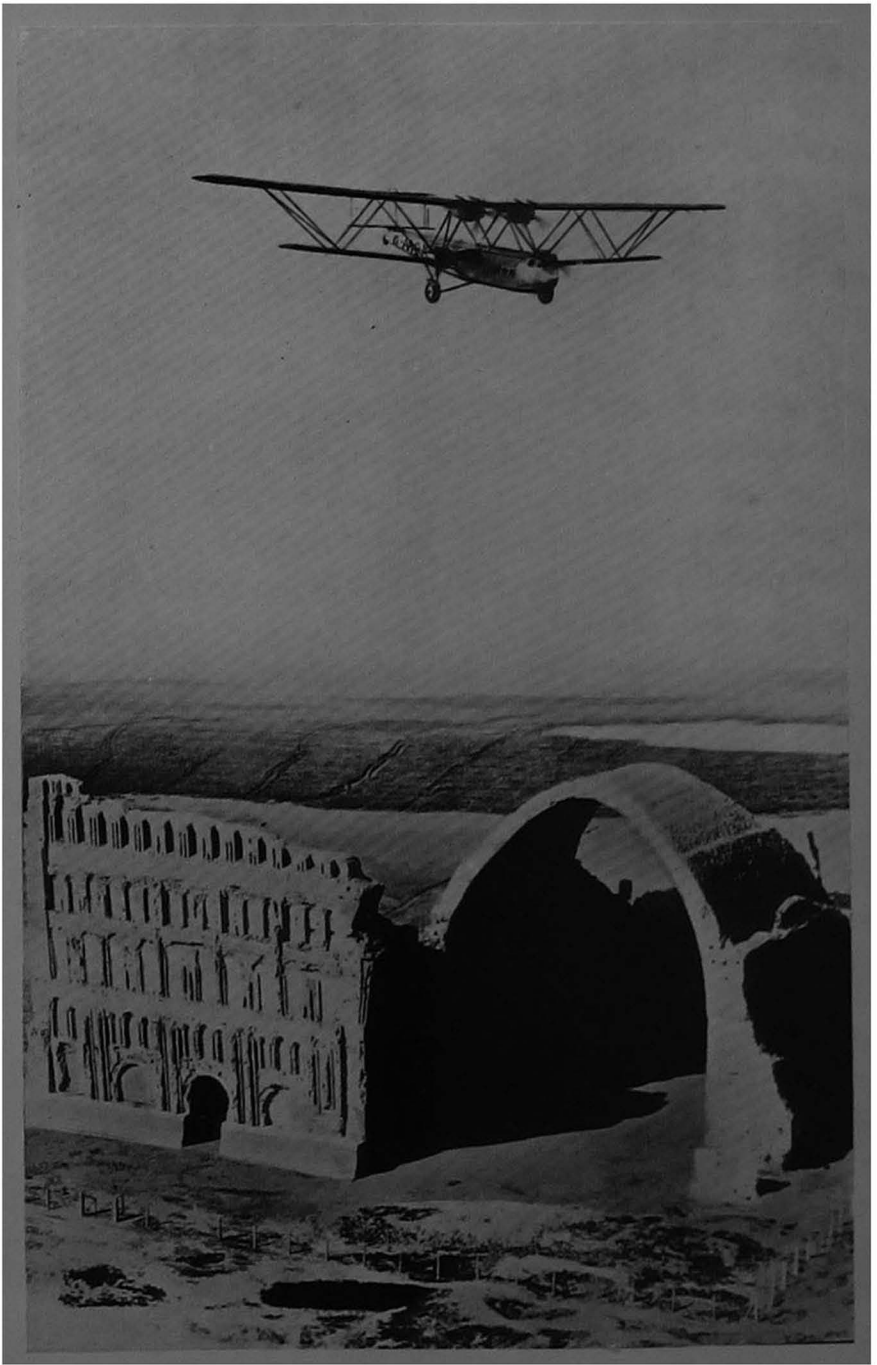
plane is in flight. This hardly suggests humour, but just wait a moment. One very learned professor and his assistants decided they would make observations of the flight of golf balls, each ball being struck by a professional in such a way that a certain spin was imparted to it. To carry out the tests, the scientist and the professional repaired to a large underground chamber below a big laboratory. Here the professional, while the professor and his assistants took notes, drove ball after ball through a screen into a net. One ball—and this is the point of the tale—was struck by the professional with such force that it missed the screen and also the net. Whizzing across the big, gaunt chamber, the ball hit the wall at the other end with tremendous force. Whereupon, ricocheting swiftly, it flashed back to another wall, only a second later to shoot off again to hit and rebound from some other wall. And so it kept on, for an apparently interminable period; and all the time it was doing so there was the spectacle of that dignified professor, and his none-too-nimble assistants, springing and hopping as they strove to avoid being hit by the flying ball.

The possibilities of the air, American pilots tell us, are now just beginning to appeal to gentlemen of the "Jeff Peters" type, described so humorously by O. Henry. The horsed-wagons or motor-vans, in which it has been their habit to tour the rural parts of America, selling the rustics showy articles which are not really what they seem, are tending to give place to aeroplane caravans. Piloting such

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a winged wagon, and heralded by a healthy roar of engines, an ultra-modern "Jeff Peters" will arrive above some little township and startle its inhabitants by showering upon them from the air a cloud of fluttering hand-bills. Then, alighting in some suitable field, he lowers a flap in the side of his machine, revealing all his glittering goods within, and is ready for his victims as they come streaming up to buy; and apart from its value in dazzling the rustics, and rendering them easy to outwit, an "air-waggon" has, our astute "Jeff Peters" realises, the added advantage that, should trouble show signs of brewing, it affords a prompt and effective "get-away."

Another ingenious scheme which has been described to me is in operation by crooks in America. Dressed magnificently, and acting as though money meant nothing to them, these rogues alight from a long-distance train at some small, unsophisticated township. After booking the most expensive rooms at the local hotel, they call in an imposing deputation upon the Mayor and the chief men of the town. It is good news they say they bring, with expansive smiles. The town, they declare, will lie directly on the route of one of the new American air-lines. The chance is unique! It will lift the town, hiding its light under a bushel too long, into dizzy heights of commercial and even national importance. To add to the impressiveness of the tale, an aeroplane alights at a critical juncture on the outskirts of the township, bringing the conspirators an urgent message to the effect that



AN AIR-LINER OF THE INDIAN AIR MAIL OVER THE FAMOUS ARCH OF CTESIPHON.

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the air route they have mentioned is to be proceeded with immediately. After which, at the crooks' expense, a dinner takes place at the hotel. At the end of this celebration, striking while the iron is hot, the crooks collect as much money as they can from the exhilarated townsmen for the establishment of a local air-harbour which, they declare enthusiastically, will be the most wonderful of its kind ever seen. Following which they make tracks for the railway station, board another train, and are never seen or heard of in that particular locality again.

Some of our French friends tell a good story of the early air days, when it seems that French aviation was afflicted for a time by a wily scoundrel whose method was to impersonate any aviator who appeared to be famous at the moment; and it is clear that this rogue must have been an actor at some more reputable phase of his career. The chief stand-by of this impudent fellow seems to have been an old racing motor-car—a fierce-looking, horribly noisy vehicle which used to dash into some quiet little French town with a roar from its exhaust like a battery of field-guns. From it, directly it came to a halt at the Mayor's door, leapt a picturesque figure in full aviator's kit, and bearing a sufficiently convincing resemblance to the flying hero of the hour. Monsieur the Mayor, probably engaged in his after-lunch nap, was of course considerably perturbed by the arrival of this gesticulating figure and also by the awe-inspiring din of that terrible-looking car. He was,

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in fact, thrown into just that frame of mind which rendered it most easy for this crook to impose upon him. The ruffian himself poured out a torrent of words to the bewildered Mayor, who was given to understand that this unexpected visitor was none other than the heroic character who had, we will say, just created some new air record in dramatic fashion. So far, so good ; and from the crook's point of view the rest was, as a rule, fairly simple. His story varied. Sometimes he said he had stopped at the town to select an alighting-ground in connection with another spectacular flight. It did not really matter much what the tale was—except that this crook never stayed long enough for the bewildered Mayor to recover himself. And then just at the right moment there came the crucial question of finance. For it appeared that by a stupid error he, the famous aviator, had not received an urgent remittance which should have been telegraphed to him that morning. Could M. le Maire? The loan need only be until to-morrow, as he would be visiting the town again on his way back to Paris. Well, what could be expected at such a moment as that? Naturally, that poor Mayor fell an easy victim. But the crook did not always obtain quite as much as he might have liked, and for the very good reason that there was not, as a rule, very much money in the mayoral coffers. Still, the trick could be repeated. One might, in fact, visit several towns in a day in such rapidly-delivered raids.

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Nothing could have been more amusing, in its effrontery, than the method of a couple of other crooks who, in the early days of flying on the Continent, posed as aviators about to attempt some remarkable feat, and victimised a number of hotel keepers, and those at popular resorts who were on the look-out for attractions. Appearing suddenly in great style, and booking expensive suites at the best hotels, these tricksters had with them an antiquated, cheaply-bought aeroplane with which they made great play verbally when—carefully concealed in a large crate—it duly arrived by goods train at the local railway station. That aeroplane was never taken out of its crate. Even if it had been, it would have been incapable of leaving the ground, so ancient had it become. And these two “aviators” were, for that matter, nothing of the kind. Neither of them could fly. They were just a couple of crooks, living on their wits as is the method of such gentry. Probably the boldest coup they planned, and which succeeded, was their visit to one pleasure resort which, they stated, they might perhaps choose as the starting-point of a spectacular flight. The local authorities were impressed. These two rogues lived like fighting-cocks at the best hotel for a number of days, entirely untroubled by any bill; and, when they departed suddenly, several local citizens had very unwisely made them cash advances which had to be written off as distinctly bad debts. Of course such a scheme could not be worked for long, and soon this daring couple vanished to spring

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up somewhere else in some fresh guise. Beyond the fact that one of them had made some flights as a passenger, the story of their aerial exploits was a fabrication from beginning to end.

Even more audacious, in a way, was that impostor—nobody ever knew who he was—who attached himself to the official party at Dover, immediately after Bleriot had flown the Channel, and participated in all the subsequent rejoicings, attending luncheons and receptions, and always escaping the detection which seemed imminent by representing that he was an official, or an interpreter, or something of that kind. Just what his particular scheme was nobody seemed to know. Apparently he did not swindle anybody, and no thefts could be traced to him. He just "spoofed" everybody, and then vanished just as quickly as he had appeared.

At one phase of air progress it seemed as though all the cranks in existence were inventing aeroplanes. In this case, however, humour was often tinged with pathos, particularly when some machine which may have taken a year to build collapsed in a cloud of dust. None of those who were present at it will, they say, ever forget that first test for model aeroplanes which was held at the Alexandra Palace. One man, it seems, brought along a kind of metal bird—an ominous-looking machine which, after he had wound it up, made a hissing noise and then flew round and round in circles, apparently pursuing its unfortunate inventor, until it suddenly pecked him in the face, and knocked his hat off!

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A tale pilots often laugh at concerns a certain erratic foreign champion who visited this country in connection with one of our early air meetings. Although he laboured under the disadvantage of being decidedly short-sighted, he was one of those born pilots who manage to triumph over every sort of difficulty. One of his idiosyncrasies was that he scorned maps and compasses, or anything of that kind, and simply jumped into his machine and shot off through the air, trusting apparently to a luck and a skill which very rarely failed him. On the occasion with which this story deals, there was a race from the city where the flying meeting was being held to another town lying some distance away, pilots having to circle round a church steeple which was a conspicuous landmark, and then return to their starting-point. The airman who is the hero of this tale was seen to shoot off at a tremendous speed, but even before those on the aerodrome lost sight of him he was steering wide of the mark. After which the telephones on the aerodrome were kept busy. Reports began to drift in from towns and cities in all directions, stating that some strange aeroplane had been making rapid circles round their church spire. It seems that the pilot, realising that he was lost as usual, had decided to make a turn round any church spire which projected sufficiently high above the earth to catch his eye. The fact should be repeated that, apart from this little failing of always losing himself, he was an extremely fine pilot, having the ability, apparently, of being able

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to put a machine down, without damage, in almost any open space that presented itself. And thus it was that the inhabitants of quite a number of towns in that part of the country had an exciting experience that afternoon. Suddenly they heard a "whirr" in the air above their heads, and then a small 'plane came diving down into any convenient spot such as a park, race-course, or recreation-ground. And as soon as the machine came to a standstill a gesticulating figure in goggles sprang up in its cockpit, calling out in very shaky English with a strong foreign accent :

"Ees this ——" mentioning the name of the city to which he was supposed to be flying according to the rules of the contest.

As soon as the local people, collecting their scattered wits, were able to find their voices and assure him that it was not, the pilot shook his head sadly, as though the fates were against him. Then he opened up his engine again, and skimmed away above the tree-tops on another short-sighted quest. Eventually, after having glided down into, and ascended again from, all kinds of places where a safe landing would have seemed impossible for any pilot less skilled at the business than himself, he came flying back at length to his original starting-point, being only too ready to join in the laughter which that whole affair aroused—more particularly when subsequent inquiries revealed that, though he had flown round so many different church spires, he had still somehow managed to miss the right one !

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Many more laughs, in pilots' rooms and flying clubs, have been aroused by the tale of that pilotless aeroplane which was designed and built to be controlled while aloft by wireless. I should mention that I am writing of the early stages of such experimental work. To-day the trials which are going on in this direction are of a very "hush-hush" and secret character, and nobody is expected to breathe a word about them. On the day of the early test which I have in mind, and which was held at a remote aerodrome, a number of big men in the air world, and many of the pundits of science, came together to watch the machine ascend. But directly after its motor had been started it took charge of matters in a very surprising fashion. Failing to leave the ground, it just tore madly across the aerodrome, engine roaring and propeller whirling. Then, swinging round abruptly, it charged towards the group of distinguished onlookers. They stood for a moment, horrified. Then, all dignity forgotten, they turned and ran, the machine making vicious rushes after them and then swinging off in some other direction, just as a maddened bull might charge here and there about a ring. And another scene which could hardly be bettered, for the sheer humour of its surprise, took place at the trial of a big troop-carrying aeroplane. After a small "army" of infantrymen had entered the cabin of this machine, it was sent up on a test flight, the pilot having instructions to land and "taxy" along till he came to a halt before a number of superior officers, who

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were to be shown how smartly the "flying army" could disembark. Unfortunately, however, the wind was very gusty that day and air conditions were extremely bumpy; with the result that, when this troop-plane came to a halt before the waiting officials, nothing at all happened for a moment. Then, very slowly and painfully, one pale-faced soldier staggered out from the depths of the cabin, and that was all! Nothing else happened, because the others, stricken by air-sickness, were simply helpless within the cabin, unable to move hand or foot.

V—ART OF THE TEST-PILOT : THE LIFE-
SAVING PARACHUTE

OFTEN one finds that a topic of conversation in places where flying folk meet concerns the work of those airmen of skill and experience who act as test-pilots, taking up into the air for the first time aeroplanes of new designs and types which may range from a tiny single-seater light 'plane to a big multi-engined air-liner. In our pilots' room at Croydon, for example, we have Captain Wilcockson—whose name I have already mentioned—and who in addition to piloting air-liners carried out the first aerial test-work with the famous Handley Page "auto-slot"; that safety device which checks any tendency for a machine to get out of control should it be "stalled" while in flight, thus robbing its wings of normal lifting-power.

Much that is highly-coloured has been written about test-pilots. They have been described, for instance, as "the men with the magic hands." The alleged perils of their calling have been drawn attention to, many times, in dramatic fashion; but as a matter of fact, quite apart from any lurid treatment of the subject, the fact remains that the successful test-pilot has to be a man of really remarkable attainments—a pilot who has to have

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the mind of an engineer, and who also needs the analytical viewpoint of trained observers and research workers.

In a profession which, to the onlooker, may appear as one full of peril, the experienced test-pilot safeguards himself by a carefully-developed system which varies according to any particular individual, but which in broad outline is much the same. Before ascending in some craft of a new design, the test-pilot will probably walk round that machine, as it stands in its shed or on the 'drome just outside, and gain shrewd ideas of how it is likely to behave in the air merely by the way the whole craft strikes his eye. After which, as a rule, he will turn to the designer with questions suggested by experience. Then come the actual trials. The test-pilot taxis the machine on the ground to accustom himself to the feel of the controls. Then he makes a few short, straight flights. Then come turns and other manœuvres. And after this he will take the machine up higher, and begin to put it through the tests necessary to show whether it is capable of the performance, in speed and in other directions, for which it has been designed. It is essential that a test-pilot should have the power of correct observation. After he has flown a machine he must be able to come down and tell the designer where the fault lies, if there is one. When a test-pilot takes up a machine he has never flown before he is much too busy concentrating upon the performance of the machine, and noting all the essential details, to feel in the

ART OF TEST-PILOT : LIFE-SAVING PARACHUTE

least nervous about his own safety. And, should anything untoward happen, his quick, attentive attitude of mind enables him to extricate himself from predicaments which the least delay, or loss of nerve, might render serious.

I noticed the other day that Steve Donoghue, our famous horseman, was emphasising the need in a jockey for "hands"—for that instinctive "feel" of a horse's mouth which raises a rider from out of the ranks of mediocrity and places him in the first flight. And exactly the same gift makes all the difference between ordinary humdrum flying and those remarkable things which a real master of his craft can do with any aeroplane he takes control of. Something seems to tell him what to do just a fraction of a second before it actually becomes necessary to do it; and the result is the smoothness, the effortless precision, with which machines fly when these experts are at the controls. But such master-pilots are rare, of course; as are horsemen of genius.

When a test-pilot is doing flying trials with some new machine he is on the alert, all the time, for any abnormal noise or movement. Should there come, say from the direction of the power-plant, any sound he cannot locate, or should some peculiarity develop in the control of the machine, no matter how apparently trivial, he will usually alight and proceed no farther with his tests until he has found out exactly what that unusual symptom may mean. How important it is to proceed cautiously was proved, I remember, in regard to one machine of

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an experimental type. The test-pilot was delighted with the way this machine handled when under full power. But a shock awaited him when he made ready to alight. Just as he was gliding in over the 'drome, preparing for his contact with the ground, the machine went suddenly right out of hand. One moment everything was all right. The next, though he moved his controls vigorously, the machine made no response at all, and struck the ground so heavily that it was damaged badly. The airman himself was lucky enough to escape with nothing worse than a shock, and he and the designer of that machine left no stone unturned in their efforts to solve the mystery. And solve it eventually they did, the explanation being this. Though at comparatively high speeds this machine was perfectly normal in control, the shape of its wings caused, at low speeds, a quite unexpected deflection in the air flow, the result being that the control-planes at the tail were in a sort of temporary vacuum. And this, for the time being, rendered elevators and rudder inoperative. Consequently, when he was about to land the airman had, without any previous warning, reached a critical slow-speed point at which the air rushed past his rear-planes without acting upon them, and he had operated them in vain. Naturally, once discovered, this defect was remedied.

I remember particularly the case of one test-pilot who was called abroad suddenly to demonstrate a new aeroplane before representatives of a foreign Government. Arriving in the early hours of the

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morning which had been fixed for the trials, he motored out to the 'drome and found mechanics busily erecting the machine, and he had hardly had time to glance over it when the officials who were to watch the flight arrived. Everything seemed all right, though, and the test-pilot climbed into the cockpit and gave the word to start the engine. Next moment he was in the air. And then, only a fraction of a second later, came disaster. For without the slightest warning that machine swerved, side-slipped, and crashed, turning a somersault and finishing up in a mass of wreckage. Onlookers rushed to the spot, feeling that nothing but a miracle could have saved the pilot from death. But apparently that miracle had happened, for they saw him crawl out from beneath a crumpled wing. By instinct, more than anything else, he had crouched low in his cockpit just before the crash came, and the machine had rolled over, smashing everything external, but inflicting on him, in his protected seat, nothing worse than cuts and bruises.

"What happened?" he was asked, as soon as he had been given a restorative.

"It's no good asking me. I've not the faintest idea," was his bewildered answer. "I moved my controls to make the machine do one thing, and it simply went out of hand and did something completely different."

It was not till this wrecked machine had been examined by experts that the mystery stood revealed. Compelled as they had been to work

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against time, the mechanics had joined up some wires wrongly, the result being that when the pilot moved one of his controls, expecting a certain result to follow, the surfaces moved in a quite abnormal way, and before he could do anything further the machine had crashed.

No one realised the need for caution, in testing an experimental aircraft, more than did that great pioneer designer, constructor, and pilot, the late Wilbur Wright. One of his acts has become historic. Just before ascending one day—it was while he was giving his first demonstrations in France—he turned to one of his mechanics and asked whether a certain adjustment had been made. "Yes," answered the mechanic. But though that might have been enough for most people, it was not enough for Wilbur Wright. Stepping down deliberately from his driving-seat, he walked round the machine in order to see with his own eyes that this particular adjustment had been well and truly made. He knew that, once in the air, his life itself might depend upon the proper functioning of every detail of that pioneer 'plane which he flew so carefully and yet so well.

It is the unexpected which so often happens in the air. Let me give you an example. A big multi-engined 'plane was fighting its way in the teeth of a gusty, rising wind. Suddenly some of the fabric tore away from one of the rear-planes, and just at an awkward moment the pilot found his big craft almost unmanageable. Out of control it would certainly have gone, in another moment or

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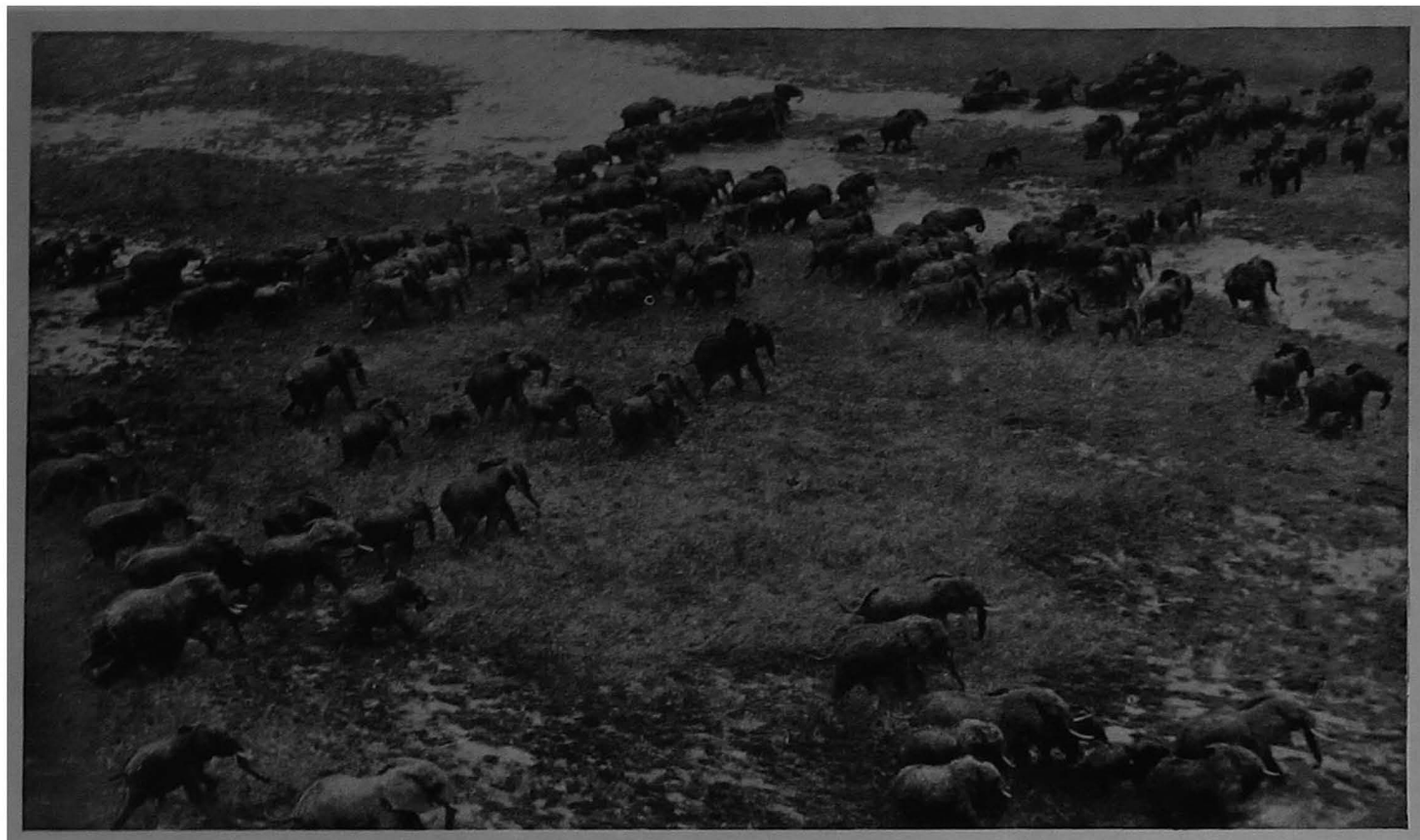
so, had not the airman in a matter of seconds done just those things, with controls and engine switches, which alone could avert disaster. By sheer skill, in fact, he held that partially crippled craft on an even keel, in spite of its dives and lurches, and managed to make a landing without breaking a wheel or wire.

Often, in an emergency, a test-pilot has reason to be thankful that he can call upon such a reliable "lifebelt of the air" as is provided by the modern parachute. When some experimental machine gets out of hand, and refuses to come back under control again, the test-pilot may have to make up his mind to abandon ship, jumping for his life with his parachute, and leaving the spinning or diving machine to continue its unchecked path and crash somewhere to destruction on the earth below. The latest parachutes, as I have already mentioned, take the form of a neat pack to wear on one's back, or a cushion upon which a pilot can sit, the necessary harness being already in position. The result is that the pilot has nothing to obstruct him, so far as his parachute is concerned, if any critical moment should arrive when he must make a jump for it. Springing from his cockpit, he allows himself to fall for a second or so in order to get well clear of the machine. Then, pulling a ring he holds in his hand, he causes a tiny pilot parachute to be ejected from the container which holds the main parachute. This pilot parachute draws out after it the main parachute, and in a moment or so the pilot's fall is checked, and he floats down gently to

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the earth. Of course it is not always such plain-sailing as that. I remember, for example, the case of one pilot who left in a great hurry a machine which had caught fire in the air. He fell clear of the machine. His parachute opened. All seemed well. But then to his horror he saw that the blazing aeroplane had begun to fly round and round him in narrowing circles, threatening at any moment to collide with him as he dangled helpless below his parachute. A really nasty moment, that, if ever there was one! The pilot, by pulling the cords on one side of his parachute, endeavoured to spill air out of it and accelerate his rate of descent so as to take him more quickly out of this danger zone. But that deserted, burning 'plane now seemed as though it was following him with deadly intent. He felt so helpless, in fact, as he hung there, with this blazing monster drawing nearer every moment, that he almost gave himself up for lost. Then, however, just in the nick of time, the wings on one side of the aircraft burned completely away, and it crumpled up and fell straight down in a pell-mell dive, passing unpleasantly close to the slowly-descending pilot as it went plunging earthward with a stream of smoke behind it. To be chased like that by one's own machine—and by a burning machine, too—was certainly an awkward predicament.

Each pilot who saves his life by parachute becomes, automatically, a member of an unofficial but well-known organisation known as "The Caterpillar Club," and the value of the parachute may



A HERD OF AFRICAN ELEPHANTS STAMPEDING AS THEY HEAR OVERHEAD THE ENGINES OF AN AIR-LINER.

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be judged from the fact that approximately 1,000 pilots have now made jumps under circumstances which have made them eligible for membership of this unique club. The development of the parachute has, indeed, been a romance in itself. Many years ago there were balloonists who were experimenting with crude, early types of parachute, and some lives were lost in those days when a jump was attempted and a parachute would not open properly. Then, however, by degrees, inventors got really to grips with the problems involved. Parachutes were more scientifically designed. They were built of better materials. Their method of functioning was made more accurate. And now to-day, at any crisis, they can be relied upon implicitly.

It has often happened that the pilot of some big mail-plane has owed his life to his parachute. Every effort is always made to get the mails through, no matter what the weather may be. But occasionally, after starting on some section of a flight, a pilot has encountered conditions so abnormally bad that he has been obliged to abandon his machine, trusting to his parachute to bring him to earth safely. And in the case of fires in the air—rare events nowadays—parachutes have saved lives that might otherwise have been lost. In military operations, too, when a couple of machines may collide while carrying out some difficult manoeuvre, the use of the parachute has meant all the difference between life and death for the pilots involved.

A capital story is told about the use of the

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parachute during some manœuvres which were being carried out by military airmen. One of the pilots was flying just on the fringe of a widely-populated area when his motor gave trouble and threatened to set the whole machine on fire. Turning outwards, away from the streets and houses, he was obliged to leave his machine by parachute, as smoke and flames were beginning to blow back on him in his cockpit. The aeroplane crashed into some fields by the side of a river, doing no damage, luckily; but the wind blew the descending parachute back over the streets and houses, and the pilot had to make a precarious landing on the roof of a small house. Freeing himself from his parachute, he opened a skylight and dropped down into a loft, afterwards making his way to the top of a flight of stairs. The sole occupant of the house, as it happened, was an old lady who was shortsighted and somewhat deaf, and who had neither seen nor heard anything of the descent of the parachute. She was dumbfounded, therefore, to see a young man in flying kit beginning to descend her stairs. But the pilot was quite equal to the occasion. With extreme politeness he explained what had happened, and apologised profusely for having been obliged to intrude upon her in this way. As soon as the old lady grasped the situation—a process which took some little time—she rose to the occasion splendidly, insisting that the pilot should make himself comfortable in her best sitting-room, while she hastened to make him a cup of tea. And

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it was upon this homely scene that a rescuing party intruded, their car pulling up outside the little house just as the pilot and the old lady were settling down comfortably to do justice to a nice pot of tea and a plate of home-made cakes.

One of the greatest parachute experts in our Royal Air Force was the late Leading-Aircraftsman E. Dobbs. He carried out a great amount of valuable test-work, particularly in regard to "delayed drops" in which, after jumping from an aeroplane, a parachutist allows himself to fall perhaps for some considerable distance through the air before he pulls the ring which causes his parachute to open. There are two aspects of these "delayed drops." One is military, the other spectacular. In war-time, by making a delayed drop, an airman obliged to abandon his 'plane can fall well clear of any conflict before pulling the cord opening his parachute, thus escaping not only the risk of entanglement with any burning or partly-broken craft, but also the perhaps even greater peril of machine-gun fire. It was one of the ironies of Fate that Leading-Aircraftsman Dobbs, after the risks he took in his pioneer parachute work, should have lost his life when carrying out some quite simple experiments with a jumping-balloon at the Stag Lane aerodrome, Edgware. There was, one may remember, quite a craze for a time in connection with these jumping balloons. They are comparatively small balloons, capable of bearing the weight of one man, and the operator is suspended beneath them

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in such a way that, when he takes a leap from the ground, the balloon carries him through the air for a short distance in a sort of huge "spring-heeled Jack" jump, during which he may negotiate fields, trees, and hedges in a series of giant strides. Several of these jumping balloons were constructed in this country, and Leading-Aircraftsman Dobbs was greatly interested in the sporting aspects of this new idea. He agreed to make some practical tests with a jumping balloon, and enjoyed several hours' sport with one of them at Stag Lane. And then, after the proceedings were really over and most of those witnessing the tests had left the 'drome, he was so keen that he said he would make just one or two more jumps. And the result was that a minute or so later he was dead—a victim to the peril of those overhead high-tension cables which now stretch in all directions. In making one big jump with his balloon, Dobbs succeeded in clearing a low clump of trees. But just on the other side of these, quite unknown to him, there stretched a line of overhead high-tension wires. No doubt he saw his danger, just at the last moment. But there was no means of checking the movement of the balloon. He was carried into the wires, became entangled in them, and, while trying to extricate himself, received a shock which proved fatal almost immediately. This accident, and others which have unfortunately followed it, have drawn forcible attention to the dangers to which, under certain conditions, flying folk may be exposed by the existence of the grid system of over-

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head power lines. It is a matter regarding which our air organisations are still in consultation with the electrical interests concerned. The placing of warning beacons on all pylons over a certain height is one step which has been agreed to, and which is now being brought into effect. But visual signals, even of a fog-piercing type, may prove extremely difficult to see from a fast-moving aircraft in conditions of really bad visibility ; and, in addition to a system of visual signals, it is recommended that in certain cases these obstructions should be made to emit a wireless warning signal, which could be picked up by instruments in a pilot's cockpit and which would inform him that he was approaching a pylon, or line of overhead wires, even though the visibility was so bad that it was impossible to see any form of light signal. That, however, though its importance led me to mention it right away, is a digression from the actual subject with which I am concerned at the moment, although the death of poor Dobbs gave us one of our earliest warnings of the danger of these live wires stretching across the country in all directions, and spelling death for any unfortunate aviator who may fly into them in fog, or when making a forced landing:

Another famous parachutist in the R.A.F. was Corporal A. East, and he, like Leading-Aircraftsman Dobbs, concerned himself with experiments in delayed drops. After some very fine work in this direction, Corporal East met with his death while attempting a very long drop. He jumped

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from a machine one day at a height of about 6,000 feet, and fell head-downwards for about 2,000 feet. Then those on the ground saw that he was beginning to turn head-over-heels as he fell, and seemed unable to regain the dead-down position which would enable him to determine how far off the ground he was, and so judge the moment for opening his parachute. His idea in this particular experiment was to fall as far as possible before pulling the release ring, always remembering that time must be allowed for the parachute to fly out and open and check the operator's fall. Probably, it is thought, owing to his being unable to check the somersaulting tendency as he approached the ground, Corporal East on this occasion made the fatal error of pulling the ring of his parachute just a second or so too late. The parachute came out of its container all right, and began to function accurately. But Corporal East, as I have said, had left it just a bit too long, and, although the parachute had begun to check his fall, he hit the ground so hard that he received fatal injuries.

It is not difficult to imagine the care that must be exercised, and the cool judgment that must be displayed, in timing one of these really long delayed drops. It is essential for the operator to provide himself with efficient goggles, otherwise the rush of air may make his eyes water to such an extent that he cannot judge his decreasing height as he comes plunging earthward. A watch strapped to the wrist, with a specially large seconds hand to

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catch the eye, is carried by some delayed-drop experts. This watch they hold closely before their eyes, as they fall, counting the seconds, and thus estimating the distance they have fallen ; and then, at some pre-determined moment, they pull the cord and open their parachute.

A thrilling spectacle, apart from its interest in purely technical directions, is a well-judged delayed drop by parachute. One of the greatest modern exponents is Mr. John Trantum, hero of delayed drops innumerable, and who was saying the other day that in spite of the supposed dangers of such a calling as his, the worst that has befallen him is that on one occasion he landed rather roughly and sprained an ankle ! To see Mr. Trantum perform is to watch a master of his art. Nonchalantly he takes his place in the passenger's seat of an aeroplane. Then the machine climbs and is manœuvred by the pilot above the flying-ground. Through field-glasses one can see the parachutist, a tiny but clearly visible figure in his white overalls, stand up in the aeroplane and dive head-first into the void. For a moment after that one may lose sight of him. His falling body flashes so quickly through the air that the eye is tardy in following it. Then somebody cries : " There he is ! " Automatically one adjusts one's line of vision and sees a white, doll-like figure falling earthward some 500 or 600 feet beneath the aeroplane. It seems a long time that one stands there, watching the white figure of the parachutist in its fall. Actually it is a matter merely of seconds. For 1,000 feet or

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more Mr. Tranum falls without attempting to bring his parachute into play. And still downward he comes for another few hundred feet. Then, suddenly, just above and behind him, there is a flash of white, like a puff of smoke. Bigger it grows, and one realises that Mr. Tranum has pulled the cord ejecting the closely-packed parachute from the container on his back. Opening wide, a graceful sight, it quickly checks the parachutist's fall, and brings him safely to earth almost at one's feet.

VI—PILOTING ON THE EMPIRE AIR ROUTES

To my mind, and also in the opinion of fellow-pilots, there is no greater achievement in the world of aviation than the organisation and regular operation of the British Empire air routes which now stretch southward from London to Cape Town and eastward from London through India and Malaya towards Australia.

Pilots and staff engaged in the operation of these Empire airways have experiences which are totally different from those encountered on any other air-lines throughout the world. The immense distances which these air-lines cover take them over a widely diverse type of country, and through every conceivable type of climate, with the exception of Polar conditions. Both air routes start in the Northern Hemisphere and cross the Equator into the Southern Hemisphere; so that a flight occupying approximately a week may take one from winter in a temperate climate through perpetual Equatorial summer to the summer of another temperate climate, or vice versa.

Before actually describing some of the incidents with which I am familiar in connection with flying along these routes, it would not be out of place to make some mention of the great advantages which the inauguration of the Empire air routes

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has conferred. These are not confined to the rapid transport of passengers, freight, or mails from one terminal to another, but they have also proved a great boon to those actually living in the countries—many as yet in process of development—along which the routes pass. This is particularly so in regard to the service through Central Africa, where—owing to the long detours which have to be made by steamships even after a journey to the coast has been accomplished—the time-saving is particularly marked. In this connection I have in mind the case of Mr. Grahame Williams, who is interested in the Luganzi sugar factory situated near Kampala in Uganda, right in the heart of Africa. Mr. Williams found it necessary to leave his office in London and visit Kampala in order to discuss important details in connection with the operation of the factory. His other interests made it imperative for him to be back in London in the shortest possible time, and by using the air service he was able to fly to Kampala, spend twenty-two days there, and fly back to London in a total time of only thirty-four days, a feat which would have been impossible by any other means. In fact, it would have taken him approximately the same period by ordinary transport just to get from London to the factory.

Then, again, take the case of Mr. Robert Adler, a resident of Johannesburg. Mr. Adler is an invalid, and he was advised by his physicians that a visit to London for special medical treatment was a vital necessity. At the same time, owing

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to his condition, only the smallest possible amount of physical movement was desirable, and for this reason his physicians were extremely doubtful of the wisdom of allowing him to travel by train to the coast and thence by steamer to England. It was resolved, therefore, that the experiment of transporting Mr. Adler by air should be tried. Every assistance was given by the airway authorities. Two chairs and tables were removed from the cabin of an aeroplane, and a lightly-constructed bed on which Mr. Adler could travel was substituted. He arrived at the airport at Johannesburg in an ambulance, from which he was carried into the air-liner. His doctor accompanied him on the whole of the flight to London. The experiment was completely satisfactory. On his arrival in London by air, so far from the journey having had any ill-effects, Mr. Adler was actually better in health than when he left South Africa, and it is pleasing to relate that the treatment recommended had the desired result.

Another instance of time-saving occurred when I was at Kisumu. Two would-be passengers arrived at the airport and wished to travel to Nairobi in Kenya Colony. Unfortunately, until the service arrived, it was not known if there was accommodation available, as they had applied so late for their seats. Just to be on the safe side, time-tables for the rail services were obtained in order to fix up alternative travel arrangements for them should there be no room on the 'plane. They discovered, on consulting the rail time-tables,

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that the journey from Kisumu to Nairobi occupied twenty-four hours, whereas by air the same journey took only two hours. Fortunately, when the air-liner arrived, they were able to find accommodation and thus avoid the twenty-four hours' train journey.

In addition to the main air routes, many feeder services have been opened, and there are a number of pilots both in Africa and India engaged in piloting air-taxis. I remember while in Rhodesia reading the following message, which had just arrived by wireless :

*Puss Moth VP-YAN, Pilot Thomson, passenger
Mr. Palmer, arrived Mongu from Livingstone.
Flying time 2 hours 40 minutes.*

That was rather a bald statement, but the passenger, Mr. Palmer, the District Commissioner of Mongu, 2,000 miles up the Zambesi river, finds it crowded with interest. He knows that the only other way of reaching his home from Livingstone is by barge manned by thirty natives with paddles, and that the journey takes three weeks each way and costs £35 return fare, as compared with three hours each way and £20 return fare by a specially chartered aeroplane. On these voyages by barge up the Zambesi one has to carry camp equipment. Each night a stop is made somewhere ; it may be in a swamp infested with crocodiles (one can see them in scores from the air), or on a drier spot where one may quite probably be kept awake by

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the roaring of lions. During the course of the journey the whole barge has to be lifted by its crew of natives over rapids, cataracts, and sandbanks. Quite often the barge has been known to be charged by a hippopotamus, and recently a passenger was bitten by a snake at one of the night stops, and died in a few moments. Perhaps nowhere else would one find a more outstanding example of the saving of time and money offered by the use of air travel.

Quite apart from the personal saving of time by passengers, there is, of course, the advantage which the air services offer for the transport of urgently-required merchandise. This is particularly so in the case of perishable goods, as is instanced at Mpika, a very small township in the heart of the jungle in Tanganyika. The manager of the small hotel there told me that he obtains all his supplies of perishable foodstuffs, such as meat, butter, eggs and bacon, by air. These are dispatched each week by the air mail flying north from Cape Town to London. They are loaded on to the 'plane at Broken Hill in Northern Rhodesia and reach him two or three hours later. The only other method of obtaining supplies is by motor-van, which has to travel over rough tracks and occupies two days or more on the journey.

Talking of eggs, I was told by a farmer in South Africa that one of his main difficulties was to obtain pedigree poultry stock from Britain. He considered that British pedigree stock was the

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finest in the world, and wished to improve his own stock by the addition of some British breeds. The transport of live poultry over 9,000 miles was too expensive an undertaking, and he had tried importing hatching eggs from England by steamer, but had found that when they arrived in Africa they had become unfertile, due either to the length of time in transit or to the jolting they had received on the journey. He therefore decided to try the experiment of having the eggs brought to him by air, and when I saw him his first consignment, consisting of one hundred eggs, had just reached him from England, only eight days after they had been laid. He had, immediately on receipt, placed them in an incubator and they had, much to his satisfaction, just hatched out.

Still talking of eggs, but of a different kind this time, the secretary of the Tanganyika Angling Club pointed out to me with pride a large number of young trout which were swimming round in a special hatching pond belonging to the club. "Those young trout," he said, "have been hatched out from 2,000 trout eggs which were flown to us from the Government Trout Hatchery at Jonkershoek in South Africa. I do not know any other method by which we could have received them, and I also believe this is the first time that trout eggs have been conveyed by air, at any rate over such a great distance."

Harking back for a moment to the subject of supplying perishable goods by air, I was remarking, while in Juba, on the good quality of the bread there.

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"You airmen are partly responsible for it," said my host. "Our local baker now receives a weekly consignment of fresh yeast from Khartoum by air mail, and the fact that this arrives fresh has a great deal to do with the good quality of the bread. Before the air mail started we had to be content with something much inferior. The coming of the air mail has, in fact, driven away the feeling of isolation which we in Juba used to suffer from. If we wanted anything which did not happen to be in stock in the town, it used to take us weeks to obtain it, and this made us feel right out of things, but now this feeling of isolation has vanished, and one of the most frequent remarks heard is, 'Wire to Khartoum and have it sent down by air mail.'"

Writing of Khartoum reminds me of an amusing incident that occurred whilst I was there. They have a cinema theatre in Khartoum and on this particular occasion the residents were nearly deprived of their entertainment. The programme of fourteen reels failed to arrive as it should have done by passenger train on Thursday. In reply to a telegram a message was received which stated that ten reels had been dispatched from Wadi Halfa and would arrive in Khartoum by Sunday's express train. In view of the impossibility of ascertaining whether the ten reels due to arrive contained at least one complete film, a telegram was sent at noon on Saturday to a film agency in Alexandria, asking for an entire programme to be dispatched by air from Cairo on Sunday morning. The pro-

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gramme was delivered to the air-liner "Hadrian" and arrived in Khartoum two hours before the first performance was due to commence; and Khartoum had its picture show that Sunday night, at any rate!

Another benefit which the airway confers to those living along this route was also demonstrated in Tanganyika. The coffee plantations in that country suffer very badly from a pest known as "mealy bug," which creates havoc amongst the coffee plants. The extermination of these insects by spraying is practically impossible owing to the expense involved and the difficulty of exterminating every insect. But they have one natural enemy, the ladybird. Ladybirds consider the mealy bug a tasty morsel, and their presence keeps the pest in check. Unfortunately, however, there were no ladybirds in Tanganyika, and the Government turned to the air service to remedy this defect. It was imperative that the ladybirds should arrive at the earliest possible moment, as the pest was getting too firm a hold. An urgent cable was therefore sent to the Government entomologist to the Union of South Africa at Port Elizabeth, who immediately dispatched a large quantity of live ladybirds by air to Tanganyika, where they were released in the coffee plantations with beneficial results. The Government entomologist stated that before the days of rapid air transport it was most difficult to send beneficial insects for any considerable distance owing to the great mortality amongst them, but in this particular case, in spite

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of the length of the journey, only one of the lady-birds died on the way. They were, incidentally, provided with a quantity of mealy bugs on which to dine during their flight.

The aeroplane has, of course, been instrumental on many occasions in saving life, either by rushing patients to hospitals or by rescuing people who have been marooned, but in Africa there is a new life-saving task in which the flying machine can be employed. This is in the carriage of serum from laboratories to outlying districts where epidemics suddenly arise. An instance of this occurred at Broken Hill, where a Dr. Voigt sent a wireless message to Salisbury one evening asking for a supply of a special serum to be sent for the inoculation of a Mrs. Berry whom he was treating. The serum actually arrived at Broken Hill airport at nine-fifteen the following morning. The doctor was on the aerodrome waiting for it, and as he signed for the parcel he remarked: "This will probably save Mrs. Berry's life. Thank goodness you got it here straight away."

VII—MEN OF A NEW CALLING

I HAVE asserted before, and have endeavoured to prove by a good many instances, that neither romance nor adventure is dead in this modern world of ours—not, at any rate, so far as flying is concerned. And now I am going to give you a few more examples. Take, for instance, those young men who are now doing work no men have ever done before—the station superintendents, or “station-masters,” who have gone out to take charge of the airway stations, and there are something like fifty of them now, which are dotted along our main air-mail routes to India, Africa, and the East. Pioneers these young men are—and some of the air stations they manage with such unflinching tact and efficiency are far out in lonely deserts, or in the heart of forests or jungles. Sometimes, in spells say of heavy rain, when native roads and tracks become impassable, they are cut off entirely from civilisation except for the arrival of the big aircraft with their passengers, mails, and freight; although, of course, there is always the wireless by which they keep in touch with other stations and with the mail 'planes in flight.

Wonderful work, this! True pioneering! And these young men have to use any amount of

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initiative and judgment. Local sheikhs and chiefs have to be dealt with shrewdly and courteously. Air passengers have to be studied and made comfortable. All sorts of local problems have to be grappled with, many of them difficult, some merely amusing.

Here, just by way of example, is a brief impression of the actual work of a station superintendent at a lonely aerodrome in the heart of Africa. It is several hours before dawn, but the wireless has just brought news that an air-liner is approaching and will soon be landing to re-fuel. This means that guiding flares must be put out at once on the landing area. Lions have been heard during the night, and some have actually been seen out on the aerodrome by day. But a little thing like that must not affect the running of the air mail. So the superintendent arms himself with a Verey pistol, not so much to scare off the lions as to act as a little moral persuasion for the native bearers whose task it is to carry out the flare buckets. And so the small procession is formed. First come the "boys" with the flares. Then behind them there is the superintendent with his pistol. They grope their way in the dark across the 'drome. Suddenly the ominous growl of a lion is heard. The superintendent flourishes his pistol. The natives tremble so violently that their buckets rattle noisily. Whereupon the lion appears to think better of it. Anyhow, he retires, and the flares are laid without any further incident of a similar nature.

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Here is another rather unusual little story. The air mail was about to arrive at Wadi Halfa one day when the station superintendent caught sight of a strange black object away out on the landing area, just at the point where the big machine would be coming in. Hurrying out, he found a very old native woman squatting on the 'drome, with a varied collection of local commodities arranged around her. And she explained, upon being questioned, that these articles were for sale, and that she thought the air station would be an ideal spot to come and try to dispose of them. The danger of her position was, however, explained to her with some urgency, and she was persuaded to move to a safer spot.

Remarkable tales some of these airway station-masters have to tell. Near the Wadi Halfa 'drome there is an enterprising local sheikh who means to benefit commercially from the opening up of his territory which the coming of the air mail implies. So he has established an elaborate camp out in the desert for the entertainment of visitors. They ride out on camels and, on arriving for a few days' stay, they find this camp luxuriously equipped with wonderful carpets and up-to-date furniture. And in the evening they sit down to a five-course English dinner!

Bewildering are the weather contrasts which have to be reckoned with on an air line like that which crosses Africa from north to south. There may be torrid heat in the Sudan, with temperatures rising to such a point that the bulbs of thermometers

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burst ; while at the same time, away along southern portions of the route, pilots may be dodging snow-storms ! But whatever happens, the services must fly to schedule, and station superintendents must be ready to greet their passengers with a smile and, often by the exercise of remarkable ingenuity, make sure that their halts are pleasant. When you remember that some of these air stations are in the heart of the jungle, or in remote desert areas along the Persian Gulf, the comforts provided are really wonderful. Here is a glimpse of a passenger halt for lunch at an air station in the heart of Africa. The meal is served in a marquee shaded by trees. The floor of this marquee is formed by tiny pebbles which, watered by the staff just before the passengers arrive, give a welcome coolness to the atmosphere. Actually the temperature is somewhere about 100 degrees in the shade. But a large petrol-driven fan has been installed. This works so efficiently that the passengers are loud in its praise, and enjoy their meal in real comfort. And that is just one instance among many. No effort is spared to make airway travellers comfortable. At some stations wells have been sunk for irrigation purposes, and the staffs are now able to grow local fruits and vegetables for the meal tables of passengers.

The station superintendents along the Empire air lines are able sometimes to come to the assistance of the railways. Not long ago part of the Sudan railway line was washed away in a violent storm, the train service from Egypt being disorganised.

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And it was here that the airway came to the help of the railway, the local officials being able to arrange to pick up twenty bags of mails from the railway and fly them on to Khartoum so that there should be no delay.

Amusing tales abound in connection with such a new enterprise as the operation of Empire airways. Here is one concerning a passenger's watch. This traveller was flying south from Cairo, and it was while he was on the Khartoum stage of his flight that he found he had lost his watch. He reported this fact to the officials, but for the moment no sign of the missing watch transpired, and the passenger had to continue his aerial journey towards Cape Town. The various station superintendents were not, however, content to let the matter rest there. Queries flashed up and down the air line. The search continued here and there. And before long all the trouble was rewarded, the missing watch being discovered in one of the flying-boats where the passenger had let it fall without noticing his loss. It was forwarded post-haste along the air line, travelling swiftly from station to station until it came into the hands of the superintendent at Cape Town, and he was able to hand it to the delighted passenger, who had given it up for lost. A distance record in lost property recovery, that is believed to have been!

Picturesque scenes in plenty are to be found at our Empire air stations. Take M'beya on the African route. Here is a township, not yet de-

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veloped, in the heart of a new gold-mining area. It is a happy hunting ground for prospectors, gold-diggers, and other figures who look as though they had just stepped out of the pages of a novel. And to all such remote communities the arrival and departure of the air mail is one of the events of the week. They flock out to the aerodrome, watching everything that goes on with keen attention.

While they are carrying out their many duties, the superintendents along our African airway are being reminded, constantly, of the vicinity of wild life in its most primitive forms. At the Dodoma station seven lions were seen out on the aerodrome during one week not long ago. It is here that the station-master has a clever little baby baboon, which gives loud and early warning of the approach of any lion. Apparently it either hears or smells the animal long before its approach becomes known to the human inhabitants of the station. At another station the superintendent awoke to hear a terrible uproar coming from the adjacent native village. And the alarm of the natives was certainly justified, seeing that a huge hippopotamus had forced its way into the village and was engaged in devouring the grass roofs of the huts! But all such local excitements are taken for granted after a time. The station superintendent has no time to develop nerves. He is too busy. And whenever he has any time to spare he cultivates an aerodrome garden, or perhaps organises a sports club. A life to keep young men on their mettle, this!

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The operation of these Empire airways is providing a crop of amusing stories concerning the mental reactions of natives when they see one of the big mail-'planes. One native who came to an aerodrome in the jungle, and who had never seen a flying-machine before, stood in amazement, hardly believing his eyes, as one of the four-engined monoplanes circled just before landing.

"Would you like to be up there in that great bird?" an official asked.

"No," answered the native; "but what I should like is a sitting of its eggs to take back with me to my village."

The jungle does not yield without a struggle to the march of civilisation. In the early days of the African air mail a party of mechanics were on their way in the early morning to one of the aerodromes when, in the track right in front of them, they came upon a number of lions busily engaged on the remains of their breakfast—the nature of which was not discovered, which was perhaps just as well. Retreating from this alarming spectacle, they found just behind them, looking extremely pugnacious, a giant rhinoceros. At such a moment there was only one thing to be done. They clambered up the nearest tree and, as one of them said afterwards, they were relieved to find that there was no snake lurking up that tree!

From the airport at Bagdad came a tale concerning the late King Feisal of Iraq. It appears that a couple of Americans were flying by the ordinary air mail from India to England. When

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the air-liner landed at Basra, at the head of the Persian Gulf, two Iraqis embarked in the machine. Soon after the air-liner was aloft again, and was winging its way towards Bagdad, the Americans approached the two new travellers and suggested a game of bridge. A pack of cards was obtained from the steward and the game proceeded steadily until Bagdad was reached. On alighting at the airport the Americans were surprised to find that the aerodrome was apparently in the occupation of a military force. A guard of honour was drawn up. Officials were standing to attention. Banners were flying, and a band was playing. As their two fellow-travellers descended from the air-liner, the whole military turn-out sprang smartly to attention, while the two Iraqis walked to the edge of the 'drome and drove away in a magnificent car with a military escort.

One of the bewildered Americans turned to an official and said :

“ Say, just who are those two guys ? ”

Back came the astonishing reply :

“ Don't you know ? Why, that's King Feisal and his aide-de-camp.”

“ Gee ! ” exclaimed the American. “ If anybody had told me in my little home-town that I should play bridge up in the air, over the Garden of Eden, with a reigning monarch, and that he would take a hundred and fifty dollars off me at a game I thought I knew, I should have called him a liar ! ”

When our British air-liner “ Astræa ” made a

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survey flight along eastern sections of the 10,000 miles air-mail route from England to Australia, a descent was made for fuel on Bathurst Island, a lonely spot off the north-west coast of Australia. The natives were spellbound when they saw the great monoplane come gliding down, and their amazement was equally great when, after taking on petrol, the air-liner taxied along close to them and, ascending again swiftly, disappeared in the direction of Port Darwin, on the Australian coast. Actually, for some time after "Astræa" had alighted, the natives were so mystified that they did not care to approach the machine. But presently their king drew near enough to catch sight of the Royal Mail emblem, with its crown, on the air-liner's side. Whereupon he gave a cry of delight and, pointing to this crown, declared that he now realised that the aircraft had come from the King of England, and that he, as the King of Bathurst, must be the only one to approach the machine, it being "taboo" for anyone else to go near it. At which his followers retreated hastily, while he himself, evidently feeling that the occasion required some special act of recognition on his part, proceeded with his own hands—and much to the astonishment of the air-liner's crew—to sweep and clean out the interior of the machine. When the time came for "Astræa" to depart, the king refused to accept any gift or token from the air-liner's crew, but, drawing himself up in truly regal fashion, gave them a message as from himself to the King of England; this being to the

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effect that, as from one king to another, he would not be at all averse to receiving a gift of flour to replenish the stock on the island.

The visit of the air-liner provided the little native boys of the island with a new amusement. They began the construction of wonderfully accurate mud models of "Astræa" complete with wheels and propellers, the latter being made of small strips of cocoa-nut palm. One young enthusiast equipped his model with five propellers; whereupon a member of the Catholic Mission on the island reminded him that "Astræa" only has four.

Nothing abashed, the youngster replied promptly:

"Oh, dis one quick fellar. 'Im much better. Catch 'em Darwin proper!"

VIII—THE ELUSIVE LION : BY AIR OVER
AFRICA

WHEN pilots first began flying over Africa, animals of all sorts ran for shelter when they heard the whirr of engines overhead. But already things are different. The animals have grown wiser. Aircraft have ceased to frighten them. As one flies overhead nowadays, they just stand and watch one's machine pass over. All, that is to say, except the lion. For some reason or other, the king of beasts still distrusts the flying-machine, and when he hears one coming he continues to retreat hastily into the very deepest parts of the neighbouring bush. But occasionally, if you are lucky, you may get a good view of lions from above. Sometimes, for example, if you are flying low, you may come upon a group of these splendid animals, young and old, standing below in the brilliant African sunshine. When they catch sight of the aeroplane they raise their heads—probably snarling angrily. Then, with one accord, they find discretion the better of valour, and beat a hasty retreat into the adjoining cover.

There is one thing that strikes you particularly when you are flying over Africa. Nature has camouflaged animals, with their speckled and dun-coloured coats, so as to make them hard to detect

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amid their natural surroundings when they are viewed from ground level. But they have no such immunity when one comes on them by way of the air. When you are flying above the bush, any moving object can be distinguished easily. And of all the thrills one experiences when flying over Africa the greatest is that of watching wild-life from the air. The interest never palls. Always there is something fresh to see. Amazing, for example, is the variety of the wild-life one sees from above in Central Africa—now only a few days away from England by air. It is a veritable paradise of game—elephants, rhinoceros, wildebeest, giraffe, zebra, and different types of the antelope tribe.

Marvellous, too, is the scenery one looks down on. Two impressions, particularly, remain in the minds of those who travel across Africa by air. One is the view obtained of Kilimanjaro—that famous mountain which is called “Monarch of Africa.” Superb this great mountain looks from the air! And then there is the view which is obtained of Table Mountain while high in the air, and from a distance of perhaps fifty miles. One of the most beautiful sights they have ever seen, some travellers declare! A great country is Africa, with a vast future, and the trans-African air mail, which has already made such encouraging progress, will, I am certain, become one of the most important of the world’s air routes, stimulating trade and accelerating progress. It will not be long, I am convinced, before there will be a very considerable

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increase in the number of English tourists visiting Africa by air. Airways are still in their infancy from the point of view of the loads they carry, rapidly-growing though these loads are; while one must never forget, when considering future progress, that there is now a generation growing up which is entirely air-minded, and which will take to aerial travel just in the same way as to travel by land or sea. With the development of air transport, Kenya in a few years should be a pleasure-ground for English people, being reached in just a few days from London in air-taxis, private 'planes, or big air-liners.

IX—"MODERNISING" THE DESERT

THE last time I was in Cairo, halting for a day during a long special-charter flight, they told me a capital story which shows how modern travel is now beginning to alter conditions even in the heart of remote deserts. On one of the westbound services of the Indian air mail, Captain Spafford, who was piloting the famous 4-engined air-liner "Hannibal," had arrived mid-way between Bagdad and the Gulf of Suez, roughly 80 miles west of Rutbah, when he decided to alight in the desert to make some quite minor adjustment. Assuring his passengers that all was well, he glanced over the sandy wastes surrounding the air-liner and observed :

" Well, this is the real desert ! "

But he had spoken just a little too soon, because hardly had his words been uttered when—despite the fact that they had come down in such an apparently desolate spot—visitors began to arrive in a simply astonishing way. First came five cars, dashing up at high speed, and bringing fourteen interested spectators. Then several aeroplanes of the Royal Air Force appeared in the sky above ; and, after finding out that nothing much was amiss, they entertained the air-liner's passengers with a little impromptu flying display. These

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R.A.F. machines were followed almost immediately afterwards by another aeroplane—this time a machine piloted by Captain Wheeler, who was engaged on special work for the Iraq petroleum interests. He landed close to the air-liner and wanted to know if he could be of any assistance. His six passengers joined the other interested spectators. And then, just after that, a couple of cars appeared, driven by natives, who just glanced over casually, but did not stop, taking the whole scene quite for granted.

“And there you have the desert to-day,” was Captain Spafford’s comment.

How modern inventions are annihilating distance was borne forcibly upon the minds of one group of passengers who were occupying the saloon of a big air-liner which was 2,600 feet up in the air in its flight between Bagdad and Basra. It happened to be Derby Day and, as all the world knows, this annual classic of the racing world is run at three o’clock in the afternoon on the famous Epsom Downs. A long way, it seemed, from this race-course near London to that air-liner flying high above the desert. But the great race had only been over a few minutes when the wireless operator in the aircraft, sitting on duty with his head-phones to his ears, intercepted a message which gave the result, and was able to communicate it immediately to those passengers in the saloon—who, even though they were poised at the moment over desert wastes, far from civilisation, thus knew the Derby winner almost as soon as they would have

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done if they had actually been standing on the course at Epsom.

It is, indeed, wireless which enables so many remarkable things to be accomplished on the airway. Take one of the flights along the southern sections of the Africa route. Though a gale at the time was blowing down trees and tearing up telegraph poles, the pilot of one of the mail 'planes, keeping in touch with wireless stations, climbed thousands of feet till he passed above the storm area. Then, guided by wireless, he continued flying to schedule, alighting exactly on time at a station far out beyond the storm-zone.

Nothing could be more interesting than to study the log-books of machines flying on the Empire air mails. Station after station is picked up by wireless. Routine messages flash to and fro. Pilots obtain bearings whenever they need them. All is smooth-working and systematic. Even when they are high above primeval forests, pilots are still in touch with the stations along their routes. In one of the reports which came through, not long ago, the story was told of a small party of airway engineers who were flying from one part of Africa to another in a machine required to supplement a service. While in the air they were in wireless touch with various stations, and presently a message came through advising them to alight for an hour or so to avoid a storm just ahead. This they did, coming down at a jungle halt hundreds of miles from any where. There was not a sign of life as they alighted ; but hardly had they

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emerged from their cabin when a friendly native appeared, apparently from nowhere, and clambered up a tree to fix the aerial enabling them, while on the ground, to keep in touch with wireless stations along the route. Nor was this all, because a big-game hunter appeared suddenly on the fringe of the jungle. His camp, it appears, was not far off, and he insisted upon their coming back and joining him at lunch. An extremely fine lunch it seems to have been, reminding them more of a West End restaurant than the wilds of Africa. After which, receiving a favourable weather report, they quickly resumed their flight—being much entertained in their minds to find that prompt assistance, to say nothing of a first-class meal, might be obtained in the depths of an African jungle.

As for the general comfort of travelling by air nowadays, I do not think one can better the story of the passenger who had just made a flight from India. It is the custom to ask travellers by the long-distance routes to mention any point that may have struck them as to ways in which the services may be improved. The passenger whom I have in mind, on alighting at Croydon after his trip from India, was duly asked this question. He had to ponder a long time before he answered. Then he said :

“ I think the glass of beer I had at Bagdad might have been a bit cooler.”

Well, all one need say is that if that is all an air passenger can find to complain of, after flying 5,000 miles, it shows we have progressed pretty

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considerably in the fifteen years during which we have been operating aircraft commercially.

Another story which airway officials tell deals with the reliability of the air mail, and concerns a letter received from Africa not long ago. This letter was from a golfer living at Salisbury, in Rhodesia, who goes out regularly at the same hour on to his local links, which lie just on the route taken by the big mail 'planes. And the point of the story is this. That golfer says he times his games now by the passing overhead of the air service to Cape Town. Each time he arrives at the sixth tee, there is a drone of engines and the flying mail passes overhead, punctual to the minute after flying thousands of miles. So you see the aircraft is doing something more even than accelerate our correspondence for us. It is acting as a time-check on the game of that golfer away in the heart of Africa. Actually it does something even more than that. Government officials in Africa tell me that the regular passing of the air mail is becoming useful to them in verifying statements by natives when they are being questioned as to the day or time of some occurrence. Usually they are very vague, time meaning little to them, and one day being much like another. Now, however, when questioned, they answer promptly :

“ Yes, that was just before [or just after] the big aeroplane came over.” And that gives the time-check required.

I often wonder how many of those who now send 50,000 letters a week by air to India and the

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East, and more than 30,000 to Africa, pause to think of that remarkable organisation, on the land as well as in the air, which now permits aeroplanes and flying-boats to proceed smoothly to schedule over section after section of the Empire routes. And yet, as a matter of fact, this organisation is quite unique. There has been nothing like it in the history of transport before. At practically every hour of the twenty-four, somewhere along the air lines stretching to the East, or southward from Cairo across Africa, a big aircraft is aloft with its passengers, mails, and freight. And every day, at the present time, our British mail 'planes cover a distance of more than 6,000 miles. Nobody, save those behind the scenes, can realise the intricacy of modern airway organisation. On a big map in the London traffic offices are plotted from hour to hour the positions of aircraft in flight. As a machine outward-bound from London flies across south-east England, its pilot is in regular touch with the Croydon airport by wireless telephone in the manner I have already described. He reports his departure from England above the Channel. He signals his arrival over the French coast. And so on in similar fashion, either by wireless telephone or by telegraphy, reports reach London of the completion of section after section of trans-Empire flights. After Europe has been traversed, the Mediterranean is crossed by flying-boats which are equipped with powerful wireless plants to enable them to keep in constant touch with terminal or intermediate airports. And on

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via Bagdad and the Persian Gulf to India and the East, or southwards over Africa, the aircraft are signalled methodically from station to station, the result being that the head-quarters staff, sitting at their desks in London, can tell at a glance the position of machines thousands of miles away. It is not only a triumph of air organisation, all this. There is also a very big ground organisation to be considered. Pilots, engineers, wireless operators, meteorologists, station superintendents, air traffic experts, and air-liner stewards—these, and many others, now have their activities controlled from head-quarters in London. More than 16,000 miles of European and Empire air routes are, at the time of writing, being controlled from one central " brain " in London ; and the object of all this organisation is to save time—minutes, hours, days ; to expedite the travel of passengers and merchandise ; to enable business men to send letters to points thousands of miles away, and obtain replies, in the time required for a single journey by any other means. And here, incidentally, is an example of what Empire air transport means to those living in far-off places, as well as to people at home. Recently a man strolled into one of the air stations away out along the Africa route. He wanted to buy a gift in London for a member of his family, and he wanted it urgently. At such stations, I may mention, are now to be found indexed catalogues in connection with a regular system of air-goods dispatch. From one of these that client chose the article he required, and the

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same day his order was dispatched by air mail. In a week it had been received in London, and the order executed, the parcel going out to him on the return air mail ; and what it all meant was that, just on this one transaction alone, the total time-saving was more than a month as compared with surface transport.

Along the southern shore of the Persian Gulf one finds small colonies of Europeans stationed amid the various tribes of Arabs. The whole of this shore-line is desert country, and the amenities of modern life, as understood in Europe, have hitherto been lacking sadly. The advent of the air mail has, however, changed all this considerably, the big machines on the India route now passing regularly up and down this Arabian side of the Gulf. And even in some of the most arid districts, where it is difficult, if not impossible, to grow anything but dates, fresh fruit is now available, regular consignments being carried from India to the various points of call along the Gulf by the weekly air mail. The value of this service was illustrated at Bahrein on the occasion of a picnic party organised by the staff of one of the oil companies which are at present investigating the rich oilfields believed to exist there. Early on the day before the picnic they dispatched a wire to Karachi, asking for supplies of fresh fruit and other dainties to be sent down to them by air mail. This actually arrived, after its flight of 1,500 miles, at 10.15 the following morning—that is, on the day of the picnic.

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An interesting development of this air traffic along the Persian Gulf is that it is benefiting not only the Europeans but also the large Indian population which has settled in this not-too-hospitable country. There is nothing the average Indian worker loves so much as his betel leaf, which he chews as assiduously as the American chews gum. The betel leaf must, however, be fresh ; but hitherto these Indian workmen on the Persian Gulf have been deprived of facilities for satisfying this craving. Now, however, quantities of fresh betel leaf are carried by every air mail leaving India, and all along these southern shores of the Persian Gulf one can now see the Indian workmen contentedly chewing their betel.

Extensive pearl fisheries exist along this shore. In fact, when the air mail alights at Sharjah, in the Gulf of Oman, where a halt is made for the night, one of the chief amusements for the passengers is to be entertained by native pearl vendors who, clad picturesquely, endeavour to dispose of their wares to the aerial travellers. The great bulk of the pearls, however, are not sold locally, but are now dispatched by air for marketing either eastward to India, or westward to Iraq and Egypt

X—A PEEP INTO THE FUTURE

DURING the time I have been associated with flying, from 1915 to 1934, I have lived through a remarkable period of aerial progress. I watched military air power developing in the later stages of the War until it reached a point when, had hostilities continued, it would have begun to exercise a critical influence on the whole campaign. And then, with the coming of peace, I saw all this immense air energy diverted suddenly from military to commercial purposes. Air lines have grown. Speeds have increased. Flying, from a passenger's point of view, has become not only extremely swift, but also extremely comfortable and reliable. And air mail loads have grown on our British lines from about 100,000 letters a year in 1924 to more than 12,000,000 letters a year in 1934.

We often talk about what is called "the air age"—the era of universal flight. Well, we stand on its threshold to-day. America is spanned, from San Francisco to New York, by a day-and-night air mail. From London, eastward, runs the Empire route which, by the time these lines are being read, will probably have reached Australia. And active plans are in hand for bridging the North Atlantic with a high-speed aerial mail. Given also a flying route across the Pacific, and land-lines

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and ocean-lines will be connected so as to form a great airway which will completely encircle the globe. And an important aspect of this long-distance flying, particularly from the point of view of carrying mails, is the research work now going on in regard to high-altitude flying. At great heights, provided one uses a specially designed and equipped machine, the lessened resistance of the upper air enables one to attain speeds which would be impossible in the denser atmosphere nearer the earth. The experts of many countries are busy with this problem, which involves the use of super-charged engines and variable-pitch propellers, and also a method of ensuring a constant supply of oxygen to the occupants of a high-flying machine. Already speeds of from 1,000 to 1,200 miles an hour are predicted for aircraft which fly at a height of many miles above the earth's surface, and some remarkable forecasts are being made of what travel will be like if and when we reach such colossal rates of travel through the air. A thing that lingered in my mind the other day, after listening to some of this fascinating talk, was the contention that the day will come when we shall be able to disprove the old saying that it is impossible to be in two different places at the same time. And this is how the apparent miracle will be achieved. By perfecting very large aircraft, with special engines and propellers, capable of rising ten or twelve miles high and up in the thin, low-resistance air attaining such speeds that machines will be rushing like projectiles through

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these higher zones, we shall span the Atlantic in an almost unbelievably short space of time. Instead of lasting five or more days, as it does by steamship, the ocean passage between London and New York may, high-flying advocates believe, shrink to such an extent that, ultimately, great winged passenger craft, reaching colossal upper-air speeds, will reduce those five days to not more than about five hours! And in this way, remembering the difference between our clocks and those of New York, the seemingly impossible feat will be accomplished of being in two places at the same time. Assume, for example, that in a liner of the upper air one rushes up from London at twelve o'clock noon, bound on a meteor-like dash across the Atlantic. At that moment the clocks in New York—bearing in mind that they are approximately five hours earlier than those in London—would be pointing to 7 a.m. This would mean that if we cleaved our way above the ocean at the enormous speeds envisaged, and actually glided down over New York within five hours of leaving London, we should look beneath us and see the hands of the New York clocks pointing to twelve o'clock—just precisely the same time as the London clocks had indicated when we ascended at the beginning of our rocket-like rush. Thus we should achieve the apparently impossible, and be in two places, more than 3,000 miles apart, at the same time!

Far-fetched some of these ideas may seem at a first glance, but they do not seem so fantastic when

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we remember some of the actual achievements which flying now has to its credit. It was only twenty-five years ago, in 1909, that the international speed race at the world's first air meeting, at Rheims, was won at 47 miles an hour. And now to-day the world's air-speed record stands at over 400 miles an hour, while plans are in hand to take it to something like 500 miles an hour. And in the height which aircraft attain, and in the distances they fly non-stop, all the negative ideas of sceptics have been sent completely by the board. And, even so, the aeroplane as a transport machine is still in its infancy, with not more than about thirty years of practical development behind it.

Many things we have seen in flying. Many more we are yet to see. One of the most fascinating fields for development lies in the evolution of small, low-priced aeroplanes for popular use. Already the light aeroplane is bringing in a new era of Continental touring. Already one can buy a neat little machine, to carry a couple of people, for not more than £450. And at the present time the energies of many clever people are being devoted to the question of introducing mass production into the manufacture of light aircraft and of small low-powered engines, this having the effect of bringing prices down to a still lower level. What is aimed at, now, is a little aerial runabout, carrying two people and their week-end luggage, and selling at a figure of about £250; while there are mass-production experts who believe that ultimately we shall have baby 'planes selling at the prices of baby cars.

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From the point of view of making the small popular aeroplane a practical machine for the man in the street we already have little craft of the autogiro, or rotating-wing type, which will go almost straight up in the air, which will jog along through the air when required at very low speeds, and which can be brought down almost vertically, to pull up almost at the point where they touch the ground. A great deal of time and a great deal of money has been devoted to research work in this field, and to-day one can obtain little revolving-wing craft in which the controls have been so simplified that such machines are, to all intents and purposes, just as easy to handle in the air as are motor-cars on the roads.

All this purely flying progress is, of course, dependent upon the development of a widespread ground organisation. When you own an aeroplane you want somewhere to fly to. When you decide to visit some friends down in the country by air you want to be able to turn up one of your air maps and find a landing-ground within convenient distance of your friend's house. Those, in fact, who use aeroplanes like motor-cars need a ground organisation at their service which is the aerial equivalent of the garage system at the service of those who use the roads. This is one of the key-notes to future progress. Without all this ground organisation of main airports and intermediate halting-points we cannot expect any very big increase in the number of privately-owned aeroplanes. Nobody is going to buy a

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machine which, for lack of facilities in using it, is likely to be more or less of a "white elephant." Fortunately, in this country, following an urgent appeal which was made not long ago by the Prince of Wales, local authorities are becoming keenly alive to this question, and the number of municipal airports is steadily on the increase, while seaside towns and other resorts are beginning to see the advantage of catering for pleasure parties who travel by way of the air.

At the same time, considerable attention is being paid to the possibility of dealing with regular air traffic by instituting big overhead landing stages in the heart of cities, thus saving the time now spent in motor-car or motor-coach transport to outlying aerodromes. The Postmaster-General, when he spoke recently of plans for developing the air-mail system of this country, referred to the importance of being able to start mail 'planes from, and bring them in to, departure and arrival platforms located right in the centres of big areas of population. But such plans are by no means all plain sailing. Many technical problems are involved; to say nothing of the expenditure of very large sums of money. We have, however, in this respect, one of those developments in which we may see remarkable progress in the fairly near future. Already the practical difficulties are being investigated of roofing over big railway stations and thus providing elevated platforms for mail planes and passenger craft. Another scheme which is being worked upon is for the provision of a raised stage

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over a portion of the Thames in London. Much, of course, in the use of such stages on an all-the-year-round basis, depends upon the further developments we may expect with aircraft and with various forms of scientific navigation. There is our old enemy, fog, to be borne in mind. But nowadays the pilot of a big multi-engined machine will take off from a fog-bound 'drome and climb up into clear air above; after which wireless signals will guide him on his course, bringing him in directly over the air station which is his destination, even though the ground below him should still be observed by fog. But then, of course, there still remains the question of making an actual landing on a fog-bound 'drome. Here, however, valuable work is being done with special wireless beams, and also with powerful "neon" lights, sunk beneath glass covers on the surface of a landing-ground; while information which has lately been received makes it seem possible that we may be able to disperse fog, by chemical means, just on the very limited area required by a machine when it is making its contact with the ground. In fact this fog problem, already partly solved, may be solved before long completely by the researches which are now in progress. Science does not admit that there is such a word as "impossible," and in flying, as in other sphere of human progress, we find that one difficulty after another can be solved as our full technical resources are brought to bear.

To-day flying is a magnificent sport. It is also the ideal method of high-speed travel. Looking

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back over more than a million miles of flying, I can see how, every day, transport by air has been made swifter, safer, more reliable and more comfortable. Civil aviation, with all it implies in quickening the world's transport, is, in my view, one of, if not the, most important of all modern developments. Already, though our airways are still in their infancy, we see how they can save us not merely hours but days and weeks when any long journeys are in question; and in these days the saying that time is money is truer than it ever was before. Nobody nowadays need hesitate for a moment about flying. Our modern aircraft not only give us speed but they give us safety, reliability, and a degree of comfort which equals, and in some respects surpasses, that of surface transport. Already we can see how, as the age of the air develops, it will mean a new world for us—a world of wider, swifter, more universal travel, in which we shall journey thousands of miles just as easily and quickly as to-day we now travel hundreds, and in which no part of the earth's surface, however remote, will be more than a few day's journey from London by air. I feel convinced that the world will be a very much better place to live in when we are reaping the full advantages of the age of the air. It is the personal touch which means so much. I myself have seen many a time, and so have my fellow-pilots, how some captain of industry, by the use of a high-speed 'plane, has been able to elucidate on the spot a knotty point which has defied all previous

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treatment by the impersonal methods of letter or cable. The world wants to know itself better. We need to be as at home in foreign capitals as we are in our own, and in this respect air transport is the greatest of all removers of artificial barriers. After one has been flying thousands of miles in all directions, as I have for years, one forgets the existence of frontiers. One simply crosses the Channel and steers on above Europe, and great foreign cities are no longer strange and remote places. They are just so many ports of call for the flying man.

I feel keenly about all this. And so do many of my pilot friends. There is an immense psychological importance about the widespread development of aviation, and nobody realises this better than air pilots, who are as at home at some air station, far distant across the continent, as they are at our own fine airport at Croydon. Narrow-minded views cannot survive the tolerant opinions one soon begins to form when one "drops in" constantly by aeroplane at towns and cities in distant lands. One's ideas cease to be national. They become universal. One begins to think of one's fellow-men not as citizens of any particular State, but just as citizens of the world. Transportation is civilisation, as Kipling has reminded us, and in world-encircling air transport—with the time it will save and the progress it will stimulate—we now have the key to the future.

THE END