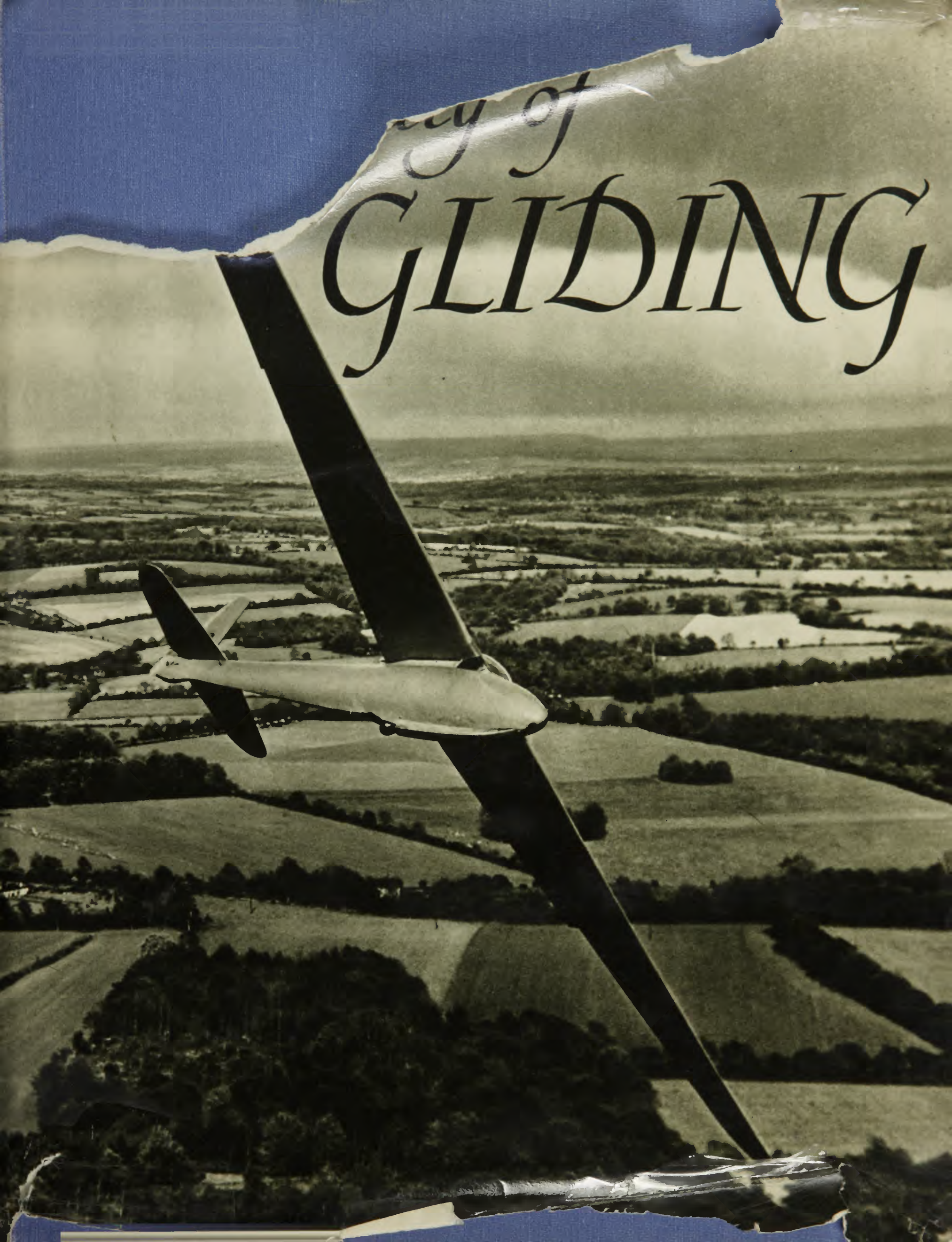
GLIDING



OF ALL SPORTS, gliding is one that is best suited to recording through the eye of the camera. The slim, elegant shapes of the aircraft, the towering cumulus clouds under which they soar, combine to make striking and dramatic pictures, and here we present nearly a hundred of the finest gliding pictures ever taken. Philip Wills, former world champion, contributes a long introduction that seeks to show what it is, what compound of thrills and beauty, that makes men take to the air in motorless flight.

photographs by

Charles E. Brown · Harry Hensser

Sally Anne Thompson

Philip Wills · etc.

35s. net

THE BEAUTY OF GLIDING

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GLIDING

With an Introductory Essay by

PHILIP WILLS

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Introduction

The Beauty of Gliding

PHILIP WILLS

I AM a bold man to try and convey in words the beauty of the earth and sky as seen by the sailplane pilot. For let no one imagine that it bears more than a distant resemblance to what is seen by the passenger of an airliner who may occasionally raise his eyes from the plastic plate of deep-frozen caviare in front of him and glance out of the window at the coloured cinematograph display outside.

The air to a glider pilot is a reality, not a shadow on a screen. He is in direct relationship with it, he is trying to understand it in all its moods; to learn its flow, its laws, and its colours, and to try and use this knowledge to his own ends. He cannot hope to know it all, but to the skilful pilot much is possible – flights of 500 miles and more, climbs to over 40,000 ft, races to goals 200 and 300 miles away. He is a lover of the air in the true sense, in that his love is entirely irrational. He does not fly for money or fame, but simply because he feels he must.

There is also another kind of beauty, which it is almost un-English to talk about: the comradeship, transcending national boundaries, of the gliding fraternity. For if you wear a gliding badge you will not walk the length of the main street in Cape Town or Melbourne, in Bulawayo, Auckland, Belgrade, Nancy, Madrid or Rio without being hailed by a fellow enthusiast. A glider pilot need never feel alone, for the air embraces us all and within its womb we are all brothers.

And so I have to try and show not only that the air is vast, sometimes strange and grey and lonely, but also that it can laugh and play in all the colours of the rainbow, it can be friendly and it has its own intimacies. To every glider pilot it has no doubt its own

individual flavours, so how can one of them portray this whole spectrum of experience to others? Perhaps the best I can do is to take a few highlights from some of my own flights and then leave it to the best photographers we can find to paint the picture.

IN THE MOUNTAINS OF THE SKY

One of the unexpected by-products of the dreadful weather conditions during the 1954 World Championships held at Camphill, in Derbyshire, was the appearance on several occasions of 'wave lift', a form of upcurrents mainly confined to winter, and July 30th proved one of these days. The extraordinary combination of winter conditions in mid-summer resulted in a flight unique in my 22 years' experience of gliding, and, I believe, unique in the history of aviation meteorology.

The weather all day had been hideous: a strong westerly wind, gusting to 30 knots under a torn grey sky over our damp and muddy Pennine moor. Nevertheless, as flying was possible, the small two-seater class had been launched at about 2.30 p.m., and and hour later most of the nine aircraft had left downwind, leaving the slope clear for the launch of the 35 single-seaters. My turn to start came about 4.15 p.m., almost too late to make a cross-country flight seem possible at all, but no sooner had I dropped the winch wire 600 ft above the hill-crest, than the unmistakably creamy smooth lift showed that wave-lift was about. I climbed rapidly to 1,800 ft and then turned north along the slope until I was over the valley running east-west, with the 1,000-ft bowl of Mam Tor upwind of me. I had hoped to find that this aerial weir was producing a standing wave downstream of it, and immediately my rate-of-climb indicator showed that I was right.

Holding my Sky steadily facing the wind, which at that height was blowing almost as fast as my air-speed, I was thus hovering almost stationary over the valley beneath, and quietly and steadily my altimeter wound upwards until, with ragged fringes of cloud all round, I was 4,000 ft above sea level. This seemed to be as high as I was likely to get, so I turned due east, to fly straight down-wind over the valley towards Sheffield, and immediately flew into cloud.

One main feature of these wave systems is that they frequently propagate others down-stream of them, and sure enough after holding my course in cloud for a few

minutes, I again found myself climbing smoothly. But in the dark grey murk of the cloud I could not expect to fly accurately enough to be able to swing upwind again, and use this second wave, so continued eastwards until a few minutes later I emerged from cloud and saw beneath me the bare slopes of Burbage Moor, sloping down to Sheffield ahead.

Everything now hung on whether I would find a third wave ahead of me, and I flew straight on until, to my joy, over a south-eastern suburb of the town, at 3,200 ft, my instrument again swung quietly to 'climb'. This was it: I swung smoothly round into wind and hung almost stationary in space climbing silkily upwards. Overhead was a flat and rather dirty sheet of cloud, stretching as far as I could see in all directions. There was nothing about it to make any glider pilot or meteorologist expect lift; nevertheless I found myself rising with gently increasing speed towards it, until in a short time it quietly took me in. The lift increased further and quite suddenly I burst forth into a scene that might have been on another planet.

I was flying north along the eastern slope of a gigantic, an endless, valley of dazzling cloud. The sun, which we had not seen for over a week, was blazing down from a sky of cloudless dark blue, striking from the rounded walls and floor of the cloud valley a white and insupportable glare. I fumbled hastily for my dark glasses and managed to find them and put them on.

The scene had the stark and splendid geometrical simplicity of a certain kind of nightmare. The cloud valley ran straight as a ruler ahead of me as far as the eye could reach. I was flying along in almost utter silence, with my right wing nearly touching the eastern slope, and about a third of the way up towards its crest, climbing steadily. On my left the slope fell away to the valley floor, which then curved smoothly up again to the parallel western side of cloud-hill. The cloud had the characteristic fuzzy and gauzy consistency of a wave-cloud, so different from the hard edges of cumulus, and the smoothness of my whispering flight was further unmistakable evidence of what I was in. As I flew along, rising quietly towards the crest, the probable shape of the air and the alternatives which lay before me rapidly crystallized in my mind.

Imagine one of those sheets of corrugated cardboard, flat on the underside and corrugated above. This gives an exact picture of the sheet of cloud I was amongst, but here the crests of the corrugations were five miles apart and the run of each valley, created as they were by the Pennine Chain to the west, might be a hundred miles or more to

the north, though probably only about 30 miles to the south, where the southern end of the range drops down finally to Derby.

The wind was blowing from west to east through these corrugations, millions of tons of air cascading soundlessly down the western wall of each valley, across the floor and up the other side to roll over again at the top and once more repeat its titanic oscillation an unknown number of times to the east.

What was so unexpected was that the cloud-coverage was complete; there were no gaps between the waves through which the ground could be seen from above, and from below the sheet of cloud looked unbroken and uniform, at about 4,000 ft above the ground. The thickness of cloud from the underside to the floor of the valley above was about 800 ft, and the crest of each flanking hill was about 1,500 ft higher still.

My possible flight plans were clearly three. Firstly, I might fly on north, along the eastern wall, possibly for hours. But a mental calculation showed the disadvantage of such a plan, for with the strong westerly wind blowing from my port side, I should be crabbing across-wind, and might only make as little as 10 m.p.h. over the invisible ground a mile below. The task of the day was to cover the greatest possible distance, and as by now it was after 5 p.m., another four hours or so might bring me down in the twilight with only a comparatively few miles to my credit.

Secondly, therefore, I might fly north until I had climbed as high as possible, then turn east into the next valley I might expect to find, glissade down its westerly, down-sweeping slopes until I reached the far side, turn north again and climb its easterly face, then repeat the manoeuvre in a series of gigantic saw-tooths running north and east. This, if the system repeated itself often enough, would bring me eventually to the Yorkshire coast, but this was only some 80 miles distant, and I hoped it might be possible to go further than this.

My third plan, therefore, was to turn back and fly south down my valley, then east to the next one, and follow the same dog-legged flight path in the opposite direction. Since I could only expect the wave-system to run some 30 miles in the southerly direction, I might in this way reach the southern end of it fairly soon, but on the other hand my easterly tacks would be taking me in the general direction of The Wash, and if I could get round this into the bulge of Norfolk I had anything up to 150 miles to go, and with the following wind would, on my easterly legs, be covering the ground at over 70 m.p.h. This seemed the best plan, and I adopted it.

'*Justin from Philip. Do you read? Over.*'

'*Philip from Justin. Loud and clear. Over.*'

'*Am flying above the wave system out of sight of the ground. Height 5,000 ft, climbing. Approximate position five miles east of Sheffield. I intend to fly south to maximum height for about five miles, then turn east through the crest of the cloud to the next wave, then repeat south and east again. Suggest you make for East Retford. Will report position as soon as I can locate myself. Over.*'

'*Philip from Justin. Good gracious! Roger. Listening out.*'

I did a left-hand turn back on my tracks, and there, running south before me, was the endless valley with my left wing now brushing its easterly slope. The Sky gently traversed up this until the lift petered out at 5,800 ft, about 200 ft below the top. Here goes. We did a 90° turn to the left, the milky cloud rushed at us, the valley behind hesitated and faded from view. After a few moments, the rate of climb indicator swung from rise to fall, the cloud lightened and we burst out into a valley, the exact mirror of the one we had just left. Only now we were rushing smoothly down the upwind, western slope, and out across the floor.

As we neared the eastern side again, the indicator reversed to 'climb', and I turned to the right and was again traversing up the snowy side of the bulge. Again the similarity of a dream occurred to me, one of those dreams in which one is always running but always remaining in exactly the same place. This extraordinary sequence repeated itself five times, each crest being, as expected, slightly lower than the one before. The sixth time I dived into the cloud wall, I did not come out. As I sank, the cloud got slowly darker, and the unmistakable sulphurous smell of a steel-works a mile below, and probably several miles upwind, brought back a flash of the real world I had almost forgotten in the ecstatic three-quarters of an hour behind me.

'*Justin from Philip. Do you read? Over.*'

'*Philip from Justin. Loud and clear. You sound very near. Over.*'

'*Justin from Philip. Just coming out below cloud base. Will report position as soon as I can.*'

Dimly through the mist below, I saw green fields and woods, and a long straight road running in the direction of my flight, and on it, almost directly underneath, a silver pencil scurrying east behind a small black beetle.

'*Justin from Philip. Well, of all things! Am directly over you at 4,000 ft. Over.*'

'*Philip from Justin. Fancy meeting you here! It is a small world! Over.*'

'Justin from Philip. You are now in the unprecedented position of being able to tell me exactly where I am. Over.'

'Philip from Justin. You are 5 miles west of East Retford. What prospects? Over.'

'Justin from Philip. It looks as if this is the end of the waves. If so, I have about 35 miles to go, and should land somewhere a few miles east of Cranwell. Anyway, I will glide it out.'

And so it proved. There were two more following waves, the first holding me without loss of height for a couple of minutes, and the last only providing a momentary check in my steady but gradual descent. I eventually landed 62 miles from Camphill, three miles east of Sleaford, and there within a quarter of an hour Justin found me and picked me up.

Back at base three hours later, we found that only one other machine, the Yugoslav two-seater which had left the site an hour and a half before me, had succeeded in contacting the wave, and had flown 95 miles into Norfolk. The other aircraft had flown from five to 30 miles and then been forced to land. Thus ended a flight which epitomized the fascination and the unexpectedness of soaring, and which taught both pilot and meteorologist something new about the air over even our old and fully explored country; a flight which showed that you do not have to go as far as Everest, but can still encounter surprise and adventure in a sailplane as near to home as a mile above the smoky roofs of Sheffield.

ALTITUDE IN UNDRESS

The Mackenzie country in the South Island of New Zealand is an extraordinary oval, flattish plain, at an altitude of between 1,500 and 2,000 ft above sea-level, almost entirely enclosed by a ring of mountains, running between 5,000 ft and 6,000 ft high except in the north-west corner, where the mountains tower up to the majestic pyramid of Mount Cook, 12,340 ft high, surrounded by dozens of other snow-capped peaks.

Originally the whole plain must have been one vast field of ice, fed by the huge glaciers of the Mt Cook system, for in this range the rainfall varies within a few miles from 200 to 400 inches a year, and the glaciers move down from it at enormous speeds compared with their counterparts in the European Alps.

The Mackenzie plains are covered with sparse brown tussock grass. At first sight they seem dry and waterless, but in fact the whole terrain is laced with a network of clear, fast-running streams, and inset in it are three large lakes, Tekapo, Pukaki and Ohau. Lakes and streams contain large numbers of enormous trout, running up to over 18 lb. in weight.

Beyond the eastern rim the country slopes down to the green Canterbury plains, but westward and south-westward range after tumbled range of mountain, partly unexplored because of their fantastic ruggedness, stretch to the coastline, at its nearest only 40 miles away. It is a country of great beauty and fascination, of sudden, local and inexplicable changes of weather; in fact, the air over it must be as complicated and interesting as anywhere in the world.

With the prevailing wind blowing from west and north-west, tumbling abruptly over the main mountain wall of the Southern Alps into the Mackenzie basin, it is quite obvious that conditions are ideal for the formation of standing waves going to probably unprecedented heights; indeed on many days this is made obvious by the appearance of lenticular clouds at enormous altitudes all over the sky (see Plate 25). After the flight I am now going to describe, it is clear that waves of the first order of magnitude also exist in absolutely clear air, of a size which I do not think has previously been thought possible.

The Canterbury Gliding Club holds its Christmas training camp on a splendid site called Simons Hill near the south-western corner of the basin, and perhaps 15 miles from the western mountain wall. Here an isolated hill, rising perhaps 1,500 ft above the plain, provides hill-soaring in nearly all wind directions, with good landing fields at the foot. The friendly owner makes available his sheep-shearing accommodation, near a large flat field suitable for both aero-towing and winch launching onto the neighbouring brown slopes. Here, my friend Dick Georgeson and his wife took the Weihe sailplane which I had shipped out to him two years before, and which they allowed me once more to fly.

On December 29th, 1954, there was a light westerly wind, and Dick Georgeson came down from a flight around midday saying he had found a wave to 11,000 ft, some way to the east of the site. But as there was a cloudless sky, except for a low cap of cloud blanketing the westward mountains, I did not expect anything very big when I took off at 16.15 hrs, and so did not dress for height, although Dick insisted on giving me

a barograph and oxygen mask. As the ground temperature was nearly 100 degrees F., one did not dress for altitude unless one had to.

At the last minute the towing aeroplane found it was out of petrol, and though this still further reduced the chance of more than a few minutes' descending flight, I decided on a winch-launch onto the hill, thinking it didn't matter anyway. In the event, this unfortunate happening resulted in my eventual gain of height being considerably greater than it would otherwise have been.

I was winched to 550 ft, and turned back to the hill, which I reached at about 450 ft; the site at Simons Hill being 1,600 ft above sea-level, this gave me a low point on my flight of just over 2,000 ft above sea-level.

I found fairly good hill-lift at one point, and soon climbed up to the level of the top. Here I immediately found a thermal upcurrent, in which I circled up to 6,500 ft about four miles downwind of the site, over the pebbly channels of the Tekapo River.

From this point I flew north-westwards towards where Dick had previously reported a wave, and in a very few minutes found myself climbing at five feet a second. Incidentally, to fly down from a thermal upcurrent into a wave upcurrent a few miles away is a meteorological impossibility, but meteorological impossibilities are two a penny in the Lost World of the Mackenzie Basin.

Presumably, I was in the fourth or fifth wave in the lee of the mountain, and each wave would run north and south parallel to them. Mount Cook lay due north, so it became obvious that an attempt on it was possible. The lift was not strong, so careful flying was necessary as also a constant endeavour to picture the shape of the air in which I was flying, in the absence of any cloud to show the lie of the waves. I crabbed northwards until my wave seemed to peter out, then turned and flew upwind at 60 m.p.h. through the compensating downcurrent until, sure enough, I found myself in a slightly stronger one.

In this way I slowly dog-legged myself northwards and westwards (see Plate 10) until I was at 14,000 ft at the very mouth of the gorge leading up to the mountain. I tried to determine the distance between each wave and it seemed very short, until the following day I remembered that the speed shown on one's airspeed indicator grows progressively less with height. Indeed, flying at an indicated 36 m.p.h. at nearly 30,000 ft I was actually moving through the air at nearly twice this speed. But I don't think the wave-length was more than about two miles.

There is a small aerodrome in the valley almost at the foot of the mountain and this knowledge gave me courage to continue flying up the eastern wall of the tremendous valley which here slopes up in a tumbled screen of rocks to the huge Tasman glacier. Then I noticed an exciting thing, which for the first time made me think of a possible height record.

Overhead and to the east, the sky was a clear and dazzling blue, but, as I have said before, the mountains to the west were completely hidden by an unbroken sheet of cloud clamped down on their summits. I now noticed that where this sheet of cloud came to an end, over the east-facing wall of mountains, it was curling over and descending like a waterfall down the slopes, evaporating into nothing after falling a few hundred feet. And Mt Cook itself had a similar waterfall-like cap.

From the altitude I had now reached I was looking at this cap from above, and from this angle it looked irresistibly like the top of a lenticular cloud. The conclusion was that downstream of the mountain, even in clear air, the air itself might be rebounding in a wave-like form.

By now I was directly opposite the eastern face of the mountain, the width of the Tasman ravine away from it. I took a hasty photograph (Plate 11) and then decided to fly straight at it.

Not many years ago, to fly at an obvious downcurrent pouring down the face of a mountain in the middle of inaccessible peaks would have been regarded as a suicidal act, but sailplane pilots go on learning about the air, and on this occasion my analysis proved correct, for about two miles from it I flew into another wave, and this time far stronger than my previous one. The rate-of-climb indicator moved smoothly up to 20 ft a second, and the majestic mountain started to shrink below me like Alice in Wonderland with her mushroom.

The view expanded in all directions. To the west, an unbroken sheet of cloud with, beyond it, a glimpse of the sea. Below me, to the south-east, the whole Mackenzie basin lay like a huge, oval, irregular, brown frying-pan; beyond it to the east, the country sloping down to the sea, visible 100 miles or more away. To the north-east, endless snow-clad peaks and glaciers peering out of the edge of the cloud-sheet. Overhead, nothing but cloudless blinding blue.

The altimeter wound itself up to 20,000 ft (Plate 12), then 25,000 ft, and I moved up almost directly over the big mountain, now sadly diminished in size, the Weihe

hanging apparently stationary in smooth space, facing into wind. I tried the controls to see if increasing stiffness might be apparent, due to the grease freezing or control-cables shortening in the cold; but packed with anti-freeze grease, they seemed entirely unaffected.

The cold – suddenly I became aware of it, and then was amazed that I had not felt it before. For I had taken off clad for the heat of mid-summer, and was wearing nothing but an open-necked cotton shirt, grey flannel trousers, a sports coat, light city walking shoes and a pair of thin nylon socks.

This rather dreary sartorial revelation now became a major factor in my future course of action, although I later discovered that my increasing numbness was being assisted by the fact that I did not fully understand Dick's oxygen system, and so was considerably under-feeding myself with oxygen.

About now I began to feel rather vulgar stomach pains, caused by the expansion of the stomach gases in the low pressures of this high air. I began to wonder when to leave off.

Twenty-eight thousand feet above sea-level, and still going up. I had long ago broken both the British gain-of-height and absolute altitude records. Well, let's go for the height of Mount Everest. Twenty-nine thousand: done it. What about the round thirty thousand? Probably fortunately, I forgot that at 33,000 ft the World gain-of-height record would be mine.

A number of small, sharp splintering sounds from the thin Perspex canopy of the cockpit made me sit up; it was showing signs of cracking, due to contraction in the cold. Supposing it cracked enough to break up?

The possibilities after that were uniformly dreary in the extreme. In my light clothes, I could stay in the machine, but I could not hope to lose height nearly fast enough to avoid being overcome by the cold long before I got down to a safe height. I could jump overboard with my parachute. This would mean leaving my oxygen supply, and I would then have a few seconds before losing consciousness. If I pulled the rip-cord at once, my rate of descent would be so slow that I would be frozen as stiff as a log long before I reached the ground. If I left it folded, I might expect to come round again around 10,000 ft, but it would take at least two minutes falling free to lose the four miles down to this height, and I would by then be far too frost-bitten to have any fingers left for pulling the rip-cord, if I hadn't already hit a mountain top.

The spectacle I presented was, in retrospect, not without its funny side. A very

dusty middle-aged gentleman, in light summer clothes, nursing an uncomfortably bloated and borborygmal stomach, suspended in space in a small, thin, plywood cigar at a height considerably greater than Mount Everest (for the altimeter now showed we were approaching 30,000 ft), staring anxiously at a miserably thin bit of celluloid-like sheet a few inches in front of his face, which had almost certainly never been selected with a view to carrying such an onerous responsibility as that of preserving him from a rapid end by deep-freezing. The outside temperature was around 50 degrees of frost.

This is 20th-century fun with a vengeance.

With quite a sharp bang a 3-inch crack suddenly appeared just in front of my nose, and I came out of my reverie with a start. This was the signal for home. I took a last photograph (Plate 13), turned downwind, the rate-of-climb indicator swung to 'down' and we were on our way.

The inside of the cockpit cover misted over with frost, and I put out my bare fingers to scrape a patch clear. My fingers stuck lightly to the transparent panel, and I felt as if they were being burnt. I snatched them away and rubbed them in the palm of my hand.

I put out my air-brakes to hasten my descent, but found that, even at 60 m.p.h. on the clock, I hardly seemed to be moving. As I had 45 miles to get back to base, I put them in again and put up my speed to 75 m.p.h., which must have been a true air-speed of around 150 m.p.h. At last we moved back into the downward part of the wave, and began to lose height at a round speed. My feet were lumps of ice. I took them off the pedals and left the rudder to itself and stamped a small tattoo on the floor of the cockpit.

Slowly we edged our way home, and at last we were down to 10,000 ft. I turned off the oxygen and took off the mask with a sigh of relief. There was the landing field, Dick and Helen still waiting patiently by the silver trailer. I had been away nearly four hours; it seemed longer.

I landed, still cold in my bones, but very, very happy.

Had the barograph worked? Glory be, it had. My lucky day.

The height achieved was officially confirmed as 30,400 ft Absolute Altitude, 28,200 ft Gain of Height – both British records.

RIDING THE MISTRAL

Briefing time, the World Gliding Championships at St Yan aerodrome in central France, July 11th, 1956.

'The task today', announced M. Eyraud from the platform, 'is a goal race from St Yan to St Auban on the River Durance, a distance of 302 kms. The aerodrome on your maps is called Château-Arnoux. In view of the distance of this flight and the mountainous nature of the route the retrieving trailers must follow, there will be no contest tomorrow.'

There was a rustle of excitement amongst his two-hundred-odd hearers, as M. Gerbier, the meteorologist, took his place on the platform and pinned up his cabalistic charts. He turned at last to his expectant audience and said: '*Nous avons aujourd'hui la situation classique du Mistral.*' It was enough. We were given today the longest, most spectacular, and possibly the most exciting goal race that had ever been offered a Championship Meeting.

The Mistral is a strange strong northerly wind that roars its way from Lyons for 160 miles down the regal valley of the Rhône to the Mediterranean. Either side of the valley is flanked by mountain chains, with the result that any north-westerly wind arriving at Lyons is funnelled and concentrated into the deep groove of the valley and becomes a fast steady northerly stream, hot and dry in summer, cold and dry in winter. This rapid corridor of air is also descending so that in summer it is quite cloudless; thus from a very great height the eye would see a river of cloudless hot air, 30 miles wide and 160 miles long, cutting a straight line between vast areas of sky dotted with cumulus and wave clouds on either side.

From the sailplane pilot's point of view, this corridor presented a serious problem, since there would be little lift to be found in it, yet we had to cross it to reach our goal. Clearly the best plan would be to try and get round the northern end of it, over Lyons itself, and then dash south-east to the virile mountain air of Drôme, the Basses Alpes and Provence. From here on the prospects were exciting enough, since these mountains, roughly speaking, form a series of parallel spines running from west to east, forming the outlying spurs of the Hautes Alpes dominated by Mont Blanc. These escarpments thus face directly into the northerly Mistral and deflect it powerfully up-

wards, so that any sailplane reaching them must find very strong lift on each windward face, and strong wave formations over the whole area reaching heights certainly in excess of 20,000 ft.

The dish we were therefore offered was a royal *Macédoine de Fruits*, containing almost all the major forms of upcurrents used by sailplane pilots; on the leg to Lyons thermal and cloud-flying, thereafter slope-soaring on a gigantic scale and wave-flying. Never have 60 pilots strapped themselves in to their brightly-coloured cockleshells with livelier anticipation.

The 60-mile flight as far as Lyons over the Monts du Beaujolais was a little more difficult than we had expected, but most of us survived it. At the base of many of the cumulus into which I circled I found large flocks of darting swallows, feeding on the swarms of insects carried up in the warm rising air from the sunny fields below; but the birds never followed the insects or me into cloud, being just as incapable as I would be to fly blind were it not for the additional powers conferred on me by the magic properties of the gyroscope. After Lyons, 40 more miles on a south-south-easterly course and I would reach the mountains, and all, I thought, would be well. It was a struggle, but I made it, and the wide bowl of Valence opened up, of which the south-eastern part is boxed in by two walls of mountain at right-angles to each other rising up almost sheer to over 3,000 ft. But something had gone wrong, the situation was far from classic after all. The meteorologists must have made some minute error in their forecast of the moisture-content of the air, for instead of ranges of mountains rising sharp and hot into clear air, with puffs of white cloud far overhead, the view ahead on course consisted of sinister black walls rising up and disappearing into a complete sheet of grey and black cloud.

To offer oneself up to one of these frowning cliffs and be sucked up into, and possibly above, such a pervading and turbulent shroud would obviously be suicidal, since one would either fly blindly into one of the myriad peaks, or else get trapped over the clouds with no possibility of navigation and the eventual certainty of finally having to descend again, quite lost, over virtually unlandable country.

Our course lay south-east diagonally over the mountains, but since this was clearly impossible, the only alternative was to try and keep to the westerly end of each ridge, within reach of the Rhône valley, and whilst keeping under cloud, climb high enough

on each face to enable one to dart over it or round it on to the one behind it. But this was not to be easy.

The lower half of each escarpment was densely clothed in trees, the upper part bare and jagged rocks, and there was no hope of landing at the foot, whilst the wind was so strong that, once pinned to the face, it was impossible to force one's machine any distance north again to reach kinder country. And each succeeding mountain-wall was partly 'in irons' from the one in front of it, so that if one reached it more than half-way down there would probably be no lift at all, but a wildy turbulent cataract of air which would sweep one helplessly down to the rocky floor of the cleft below.

However, this was World Championship flying, not a Sunday afternoon at Dunstable, so after a lot of delicate juggling I got myself pinned against the first battlement, and was rapidly swept up, a span or two away from the precipice, to the top. Towards the east the razor-edged ridge ran up into the cloud-sheet, but where I was there was perhaps a 300-ft gap through which I could peer downwind, over the precipitous valley of the Drôme to the next range of Roche-Courbe, a 5,000-ft mountain towering up invisible and menacing into the ceiling of cloud. And now I saw something which put the lid on my troubles, and made me realize my catalogue of woes had so far been incomplete. Over the valley of the Drôme, looming and rotating like a gigantic garden-roller, was the largest rotor-cloud I have ever seen.

Most people still think that the most extraordinary and dangerous conditions tackled by sailplane pilots are in cumulo-nimbus or storm-clouds, and certainly to wrestle one's way up through the rain and hail and lightning of one of these monsters to heights in excess of 30,000 ft is exciting enough. But such great strides in instruments and in design have been made since the war that in fact large numbers of flights in these clouds have been made in the last ten years without dangerous results. In fact, we had had a very good example at St Yan a few days before this flight, when 27 sailplanes went into one such cloud, reaching heights of up to 25,000 ft without any trouble arising.

But within the last few years explorers of wave-systems in the lee of mountain ranges have come across layers of incredibly turbulent air, frequently marked by vast untidy rollers of cloud called rotor-clouds. These rotors can be seen by the naked eye to be rolling over and over at high speed, with rags of tortured cloud being flung over and out at all levels, and in and underneath them the air is tossed around with unprece-

dented violence. In 1955, in such a cloud in the U.S. an exploring sailplane quite suddenly literally disintegrated, in spite of strength factors higher than those of many aeroplanes, and the pilot had a miraculous escape by parachute. He found himself falling with the nose of the glider locked to his feet by the straps of his boots, but when he pulled his rip-cord the jerk was sufficient to pull his feet out of his laced boots and he descended to safety.

Now I knew that the formidable monster I could see was not likely to be such a killer, since the mountains over which I was flying were far smaller than those of the Californian Sierras, but in this case I was faced with the problem of flying under it whilst surrounded on nearly all sides by invisible mountain peaks, at an altitude insufficient to give me much chance of finding a safe landing place should I be forced down. I heard myself saying, 'And we do this for fun!' I decided to try out a trick I had practised earlier in the year on the smooth and friendly slopes of the Long Mynd. The plan was possible because of a miraculous little compass recently invented by a gliding enthusiast at home which is 'dead-beat' and shows one's course instantaneously at all times. Keeping to the west end of my escarpment, where there was a small gap of clear air between the crest and the cloud, I checked my compass course on each tack of my beat and allowed myself to be drawn up blind into the cloud.

Six minutes on 050°, turn, four minutes on 335°, turn, six minutes . . ., all the time watching my rate-of-climb indicator like a fascinated rabbit. Green, up 5; green, up 3; green, up 3 – rapidly and easily we gained a further 1,000 ft, then, blind, turned and held a grim southerly course. The climb turned to a descent, two or three minutes went by, and we broke cloud, over the Drôme valley, safely south of the mountain I had just left.

Suddenly there was a jar and a shock, and my starboard wing fell into nothing. With full opposite aileron we hung and slid in space for what seemed an age. The next ten minutes were unforgettable. Seven pilots eventually completed this flight, and all of them confessed they had never experienced such wild turbulence before. Many were forced to land in the Drôme valley, and Bill Ivans, the American holder of the world altitude record in the Bishop wave in California, had his machine fall out of his hands at 60 ft into a rocky field – it was completely destroyed, and Bill cracked a vertebra and was laid up in hospital in plaster.

But my extra 1,000 ft stood me in good stead, and a shaken pilot reached the Roche

Courbe ridge in one piece, climbed, dodged round behind it over the Jabron to the Montagne de la Lance, and again over and to the valley of the Eygues.

Here patches of blue sky began to show between the mountains, and it became possible to try and mount through the rough air, up past the clouds to the wide smooth waves in the blinding blue air above. Since these waves would run due east, once attained any one of them would lead one in blissful smooth silence straight over the mountains to the goal in the valley of the Durance to the east.

And this is what happened. With the vulturine bald-headed Mont Ventoux to the south marking my position exactly, I struggled and slowly gained height in the wild air, until quite suddenly I was over it, riding in silky silence whilst below me the clouds lay in enormous ribbon-like rolling masses from west to east like the warp-threads of a gigantic loom.

I climbed to 10,000 ft and set course direct for the goal. The contrast between the struggle and the maelstrom I had left and this last leg of the flight was almost too dramatic to be real. It was nearly 7 o'clock, and the sun was setting beyond the Rhône valley to the west. To the south the clouds dissipated and the brown and grey parallel spines of Provence, like ranks of soldiers, led the eye to a distant blue circle which was the Etang de Berre behind Marseilles. To the north-east cloud-piercing snow-capped mountains swelled up to Mt Pelvoux and the massif dominated by Mt Blanc. Below and to the north-west was my carpet of rolling cloud, dazzling white and glowing pink in the sinking sun. In absolute calm, in absolute peace, with a whisper of silken air over the wings, I flew at 10,000 ft and nearly 100 m.p.h. to the goal which had seemed so impossible to reach.

The valley and the blue Durance opened up ahead, I jumped back two waves to the Montagne du Lure, and there was the aerodrome, on the river bank. I put my gallant Skylark into a steep dive and crossed the line at nearly 100 m.p.h.

As I landed and got out, the hot gale struck me in the face. The mistral, '*Une situation classique du Mistral*'. As I said afterwards to M. Gerbier, he must have been thinking of the more sombre classics, such as Dante's Inferno.

CONCLUSION

I hope that these stories of three flights will give something of the flavour of the air – or a few of the many flavours – to my readers. But I would hasten to emphasize that these are 'big-game' flights, and that no one should run away with the idea that every time a glider pilot adventures the air he will be subjected willy-nilly to experiences of this order. On the contrary, such flights are the result of hundreds of attempts over many years, and will only be attained if sought arduously and with devotion.

The ordinary flight from a gliding club on a Sunday afternoon may be as peaceful and delightful as you can wish, and range from an hour or so circling and wheeling with other highly coloured aircraft in the locality of the site with a return to tea, to an attempt at a 300-kilometre triangular speed flight which may take several hours but, if successful, again gets the pilot back to his starting point.

The sport of gliding is now carried on in most countries of the civilized world; in the U.K. the British Gliding Association, 19, Park Lane, London, acts as the focal point.

The successful glider pilot requires an oddly contrasted assortment of qualities. In the air, individualism in excelsis, a quick brain, powers of rapid decision based on a constant series of reasonings which must in time become almost instinctive. Every flight produces a number of moments when one of several possible moves has to be selected, and the pilot who wins the day is he who makes the greatest number of correct decisions.

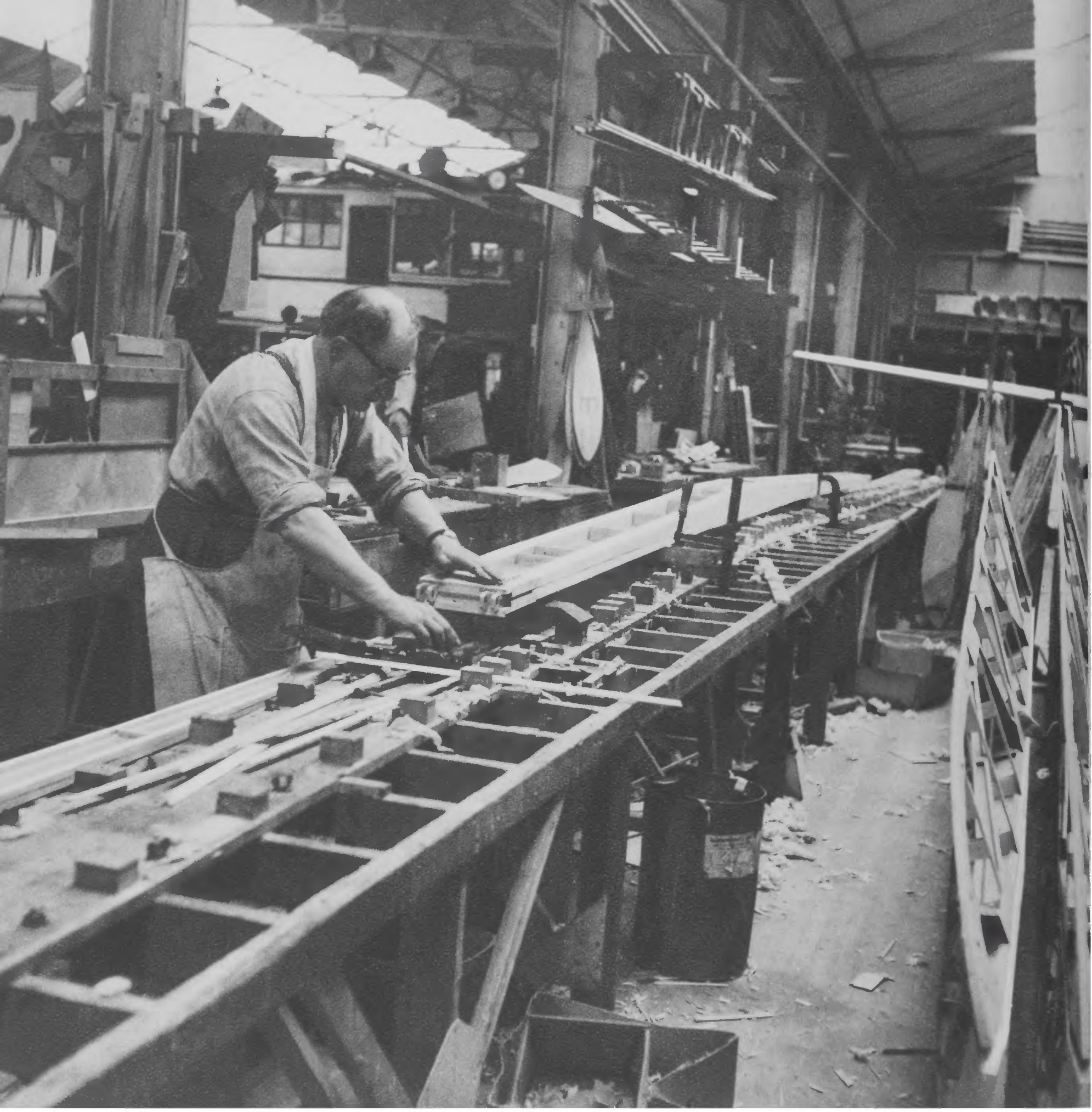
On the ground however, co-operation is the watchword. Every take-off involves the unselfish work of a number of his fellow members: each glider has to be assembled and checked, towed out to the starting point, the launching car, winch or aeroplane must be prepared, and a dozen other jobs done. And so one of the Beauties of Gliding is the spirit of comradeship which has been built up all over the world between all who fly without the aid of an engine, and this too will I hope emerge from some of the photographs which follow.

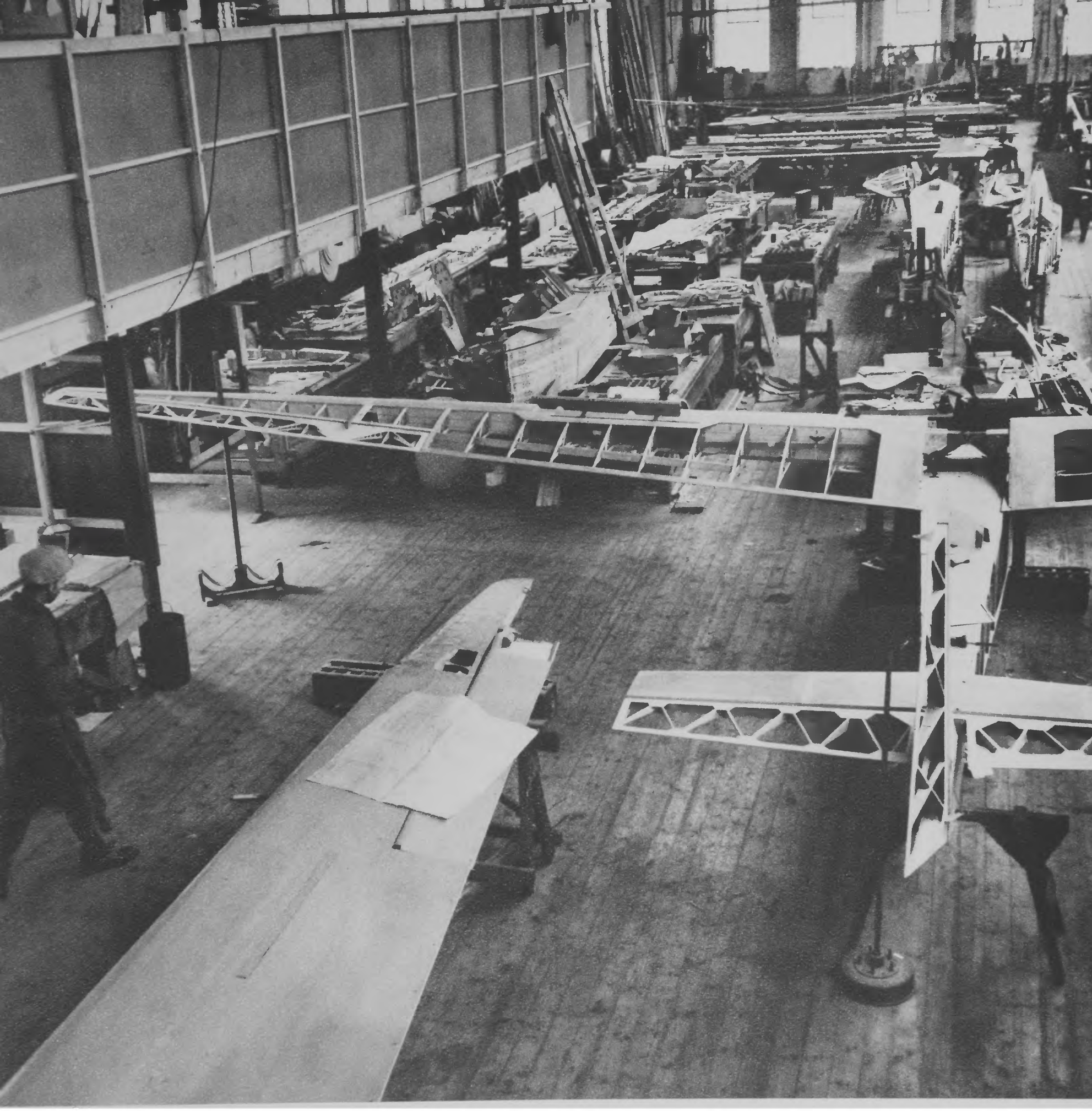
The air which is the centre of our interest is a thin film of gas, a few miles deep, surrounding our terrestrial globe and protecting us from the regions of outer space. Its constitution is complex, and so is its behaviour; indeed this is yet not fully understood, and this is one of the fascinations of our sport, for on any flight a glider pilot

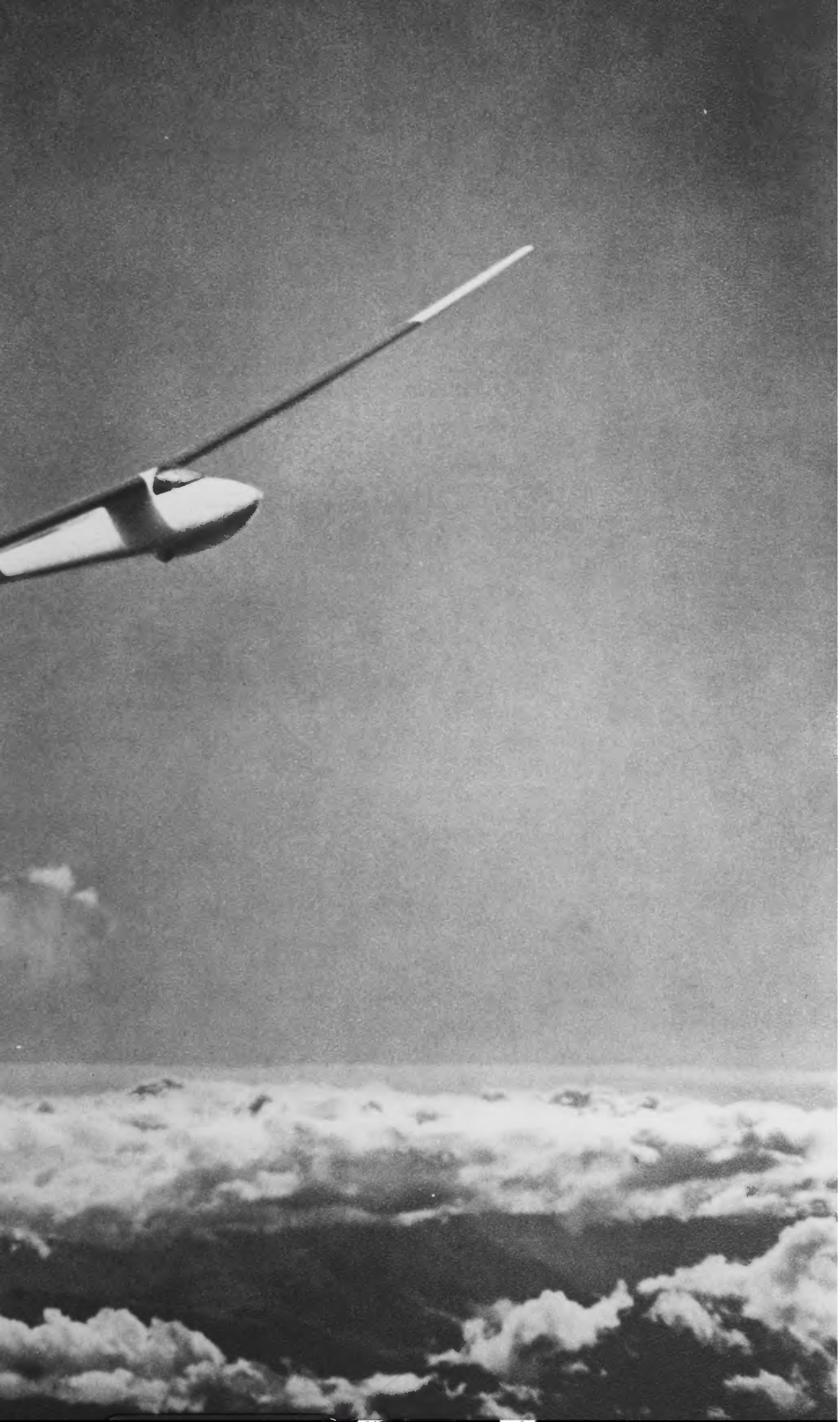
may discover something about the air which has been previously unknown. But we do understand enough to enable us to fly with safety. Using normal skills, in our modern aircraft and with our latest instruments, today the ordinary club pilot can exceed performances which twenty years ago would have been regarded with awe.

Beauty is a subjective thing, and the air has a thousand moods. Every glider pilot no doubt builds up his own highly individualistic picture of it. But every one of us thanks God that we were born in this age when man, for the first time, can explore and taste and sample for himself its fascination and mysteries.

The Plates





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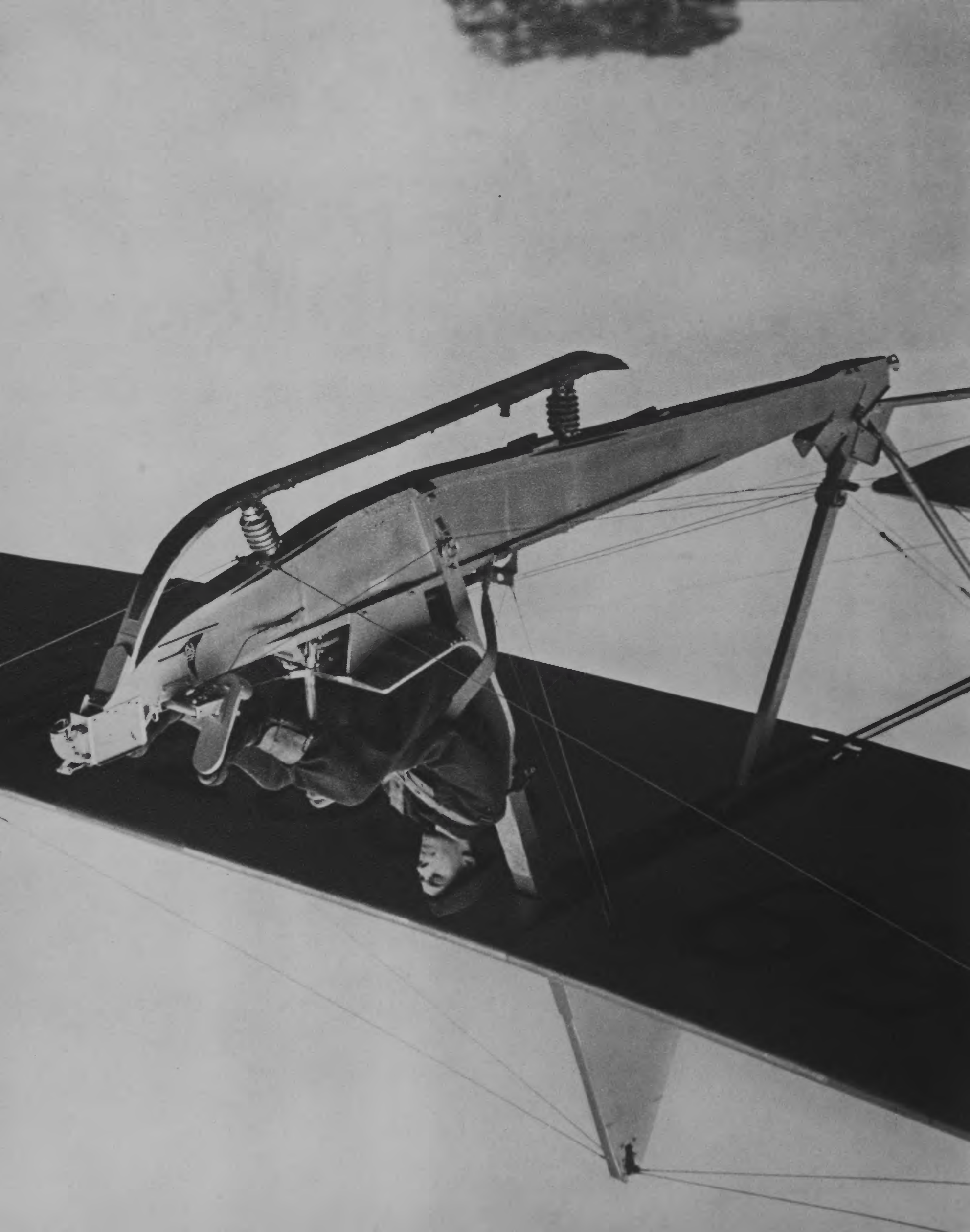


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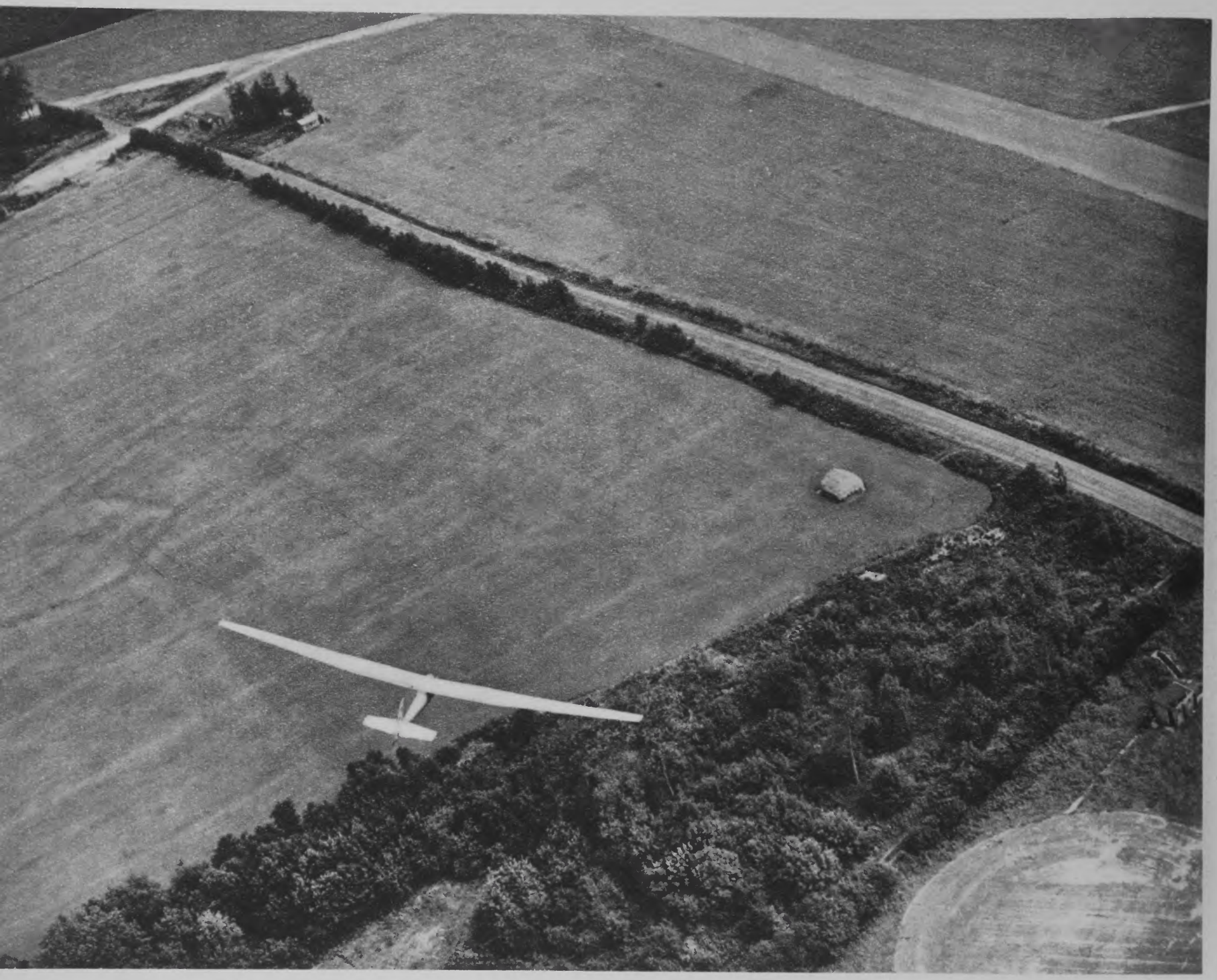

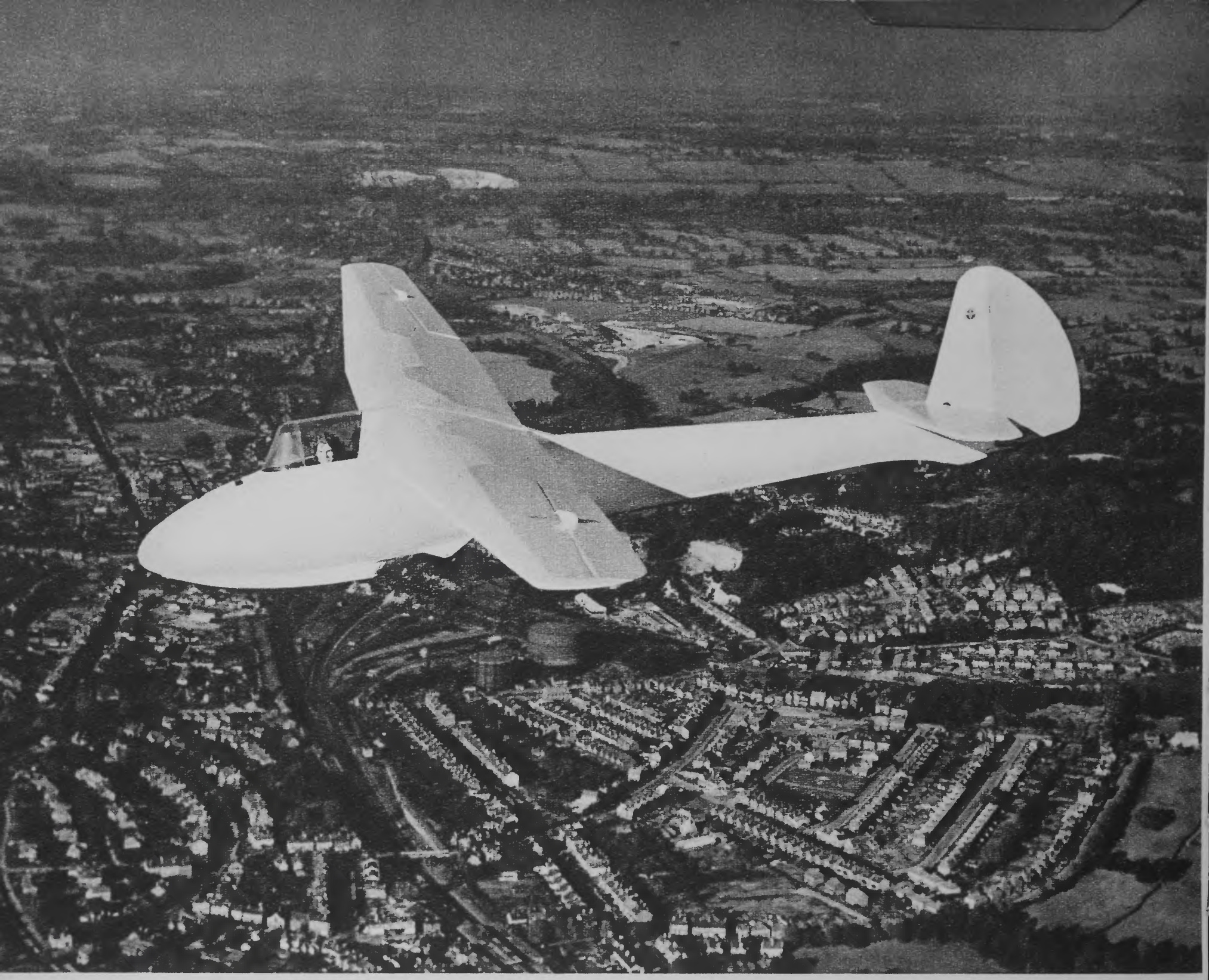


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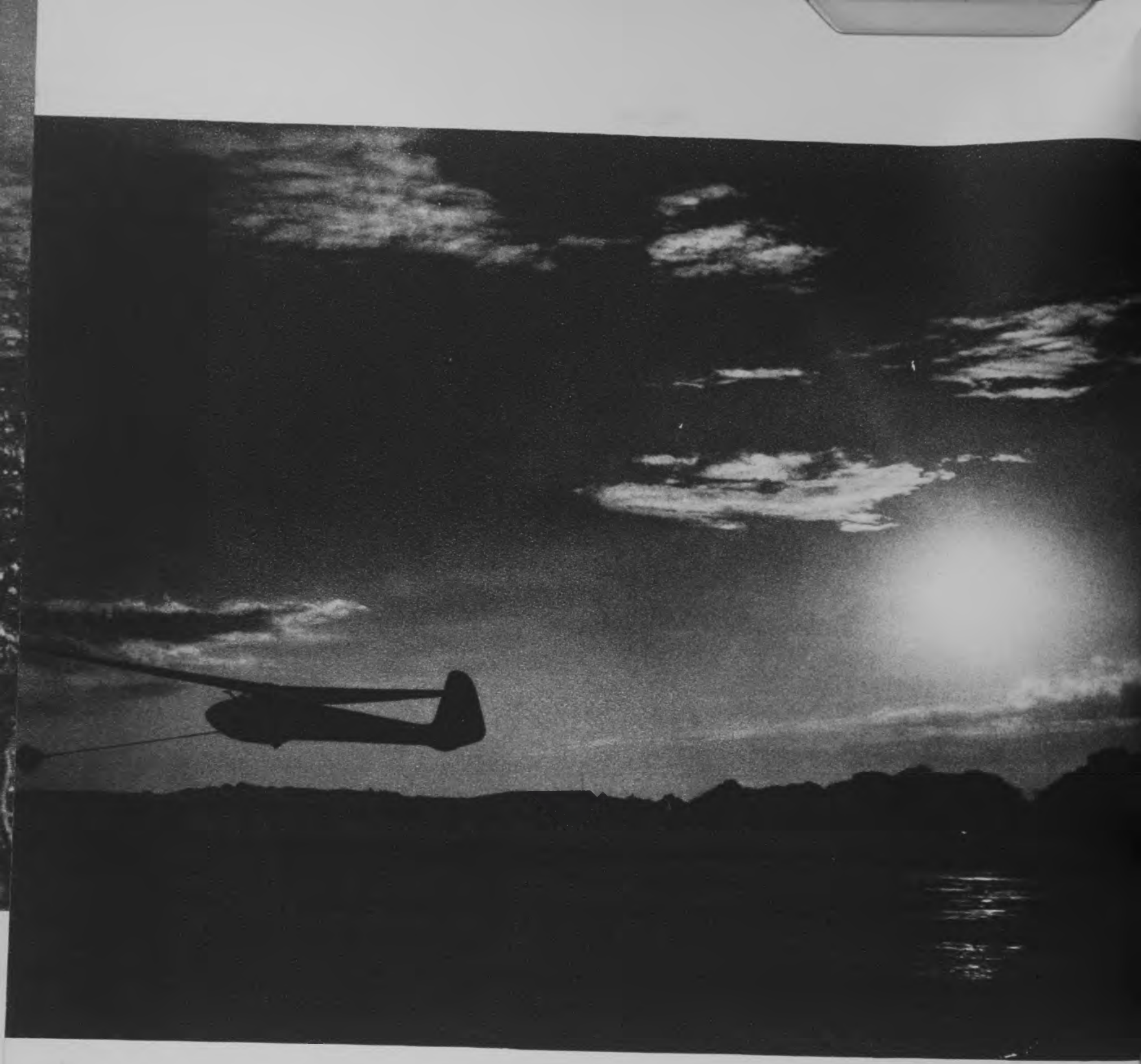


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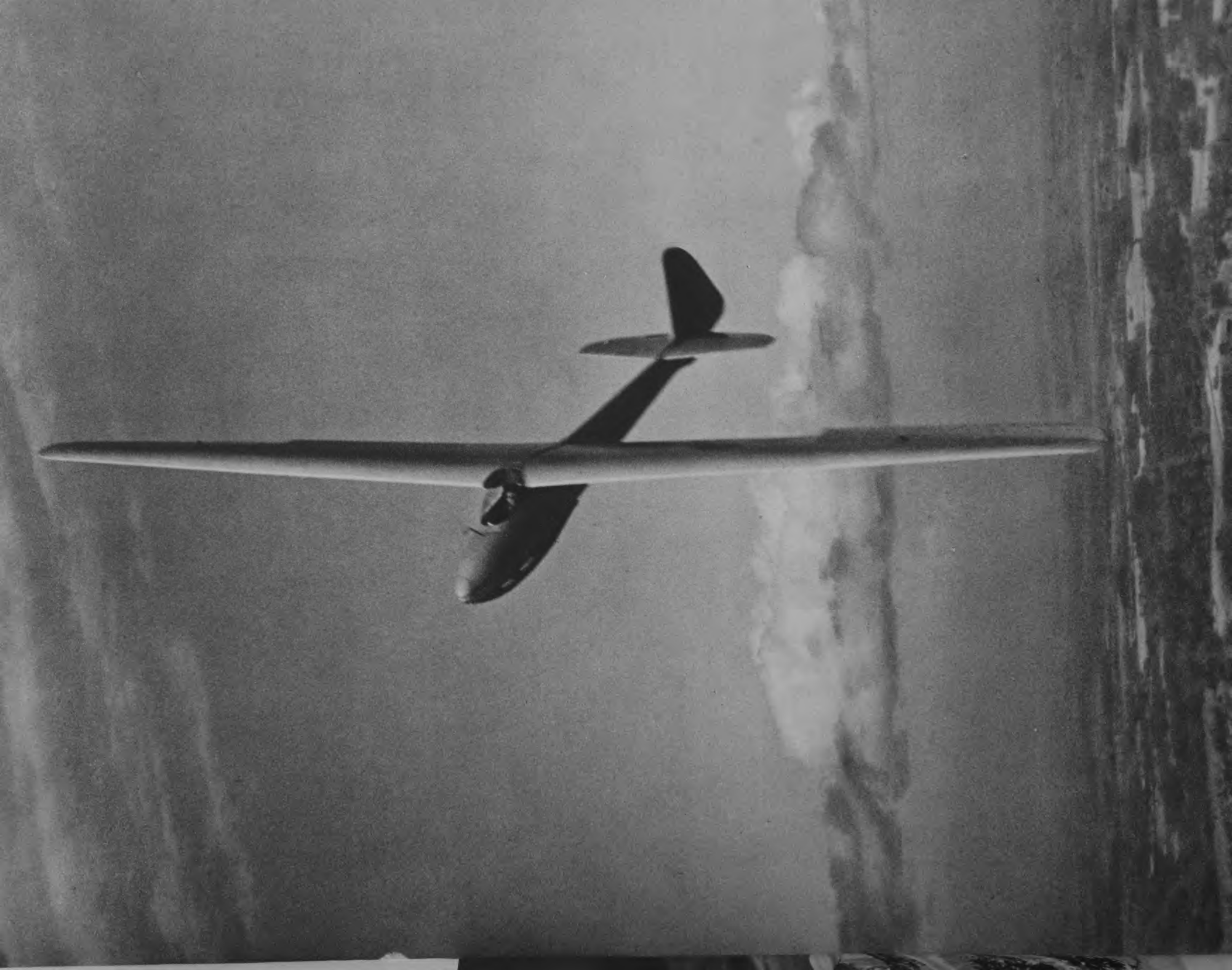

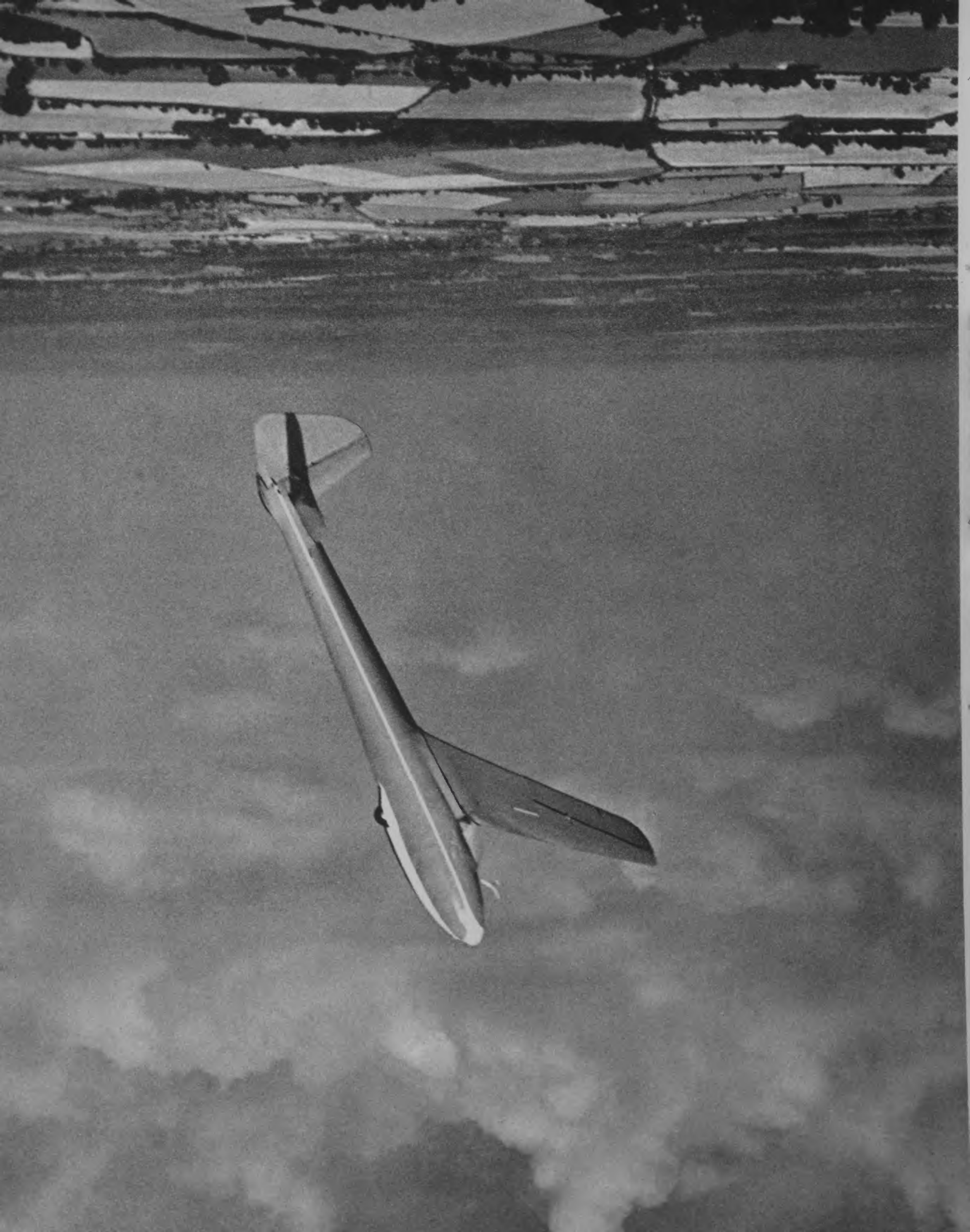


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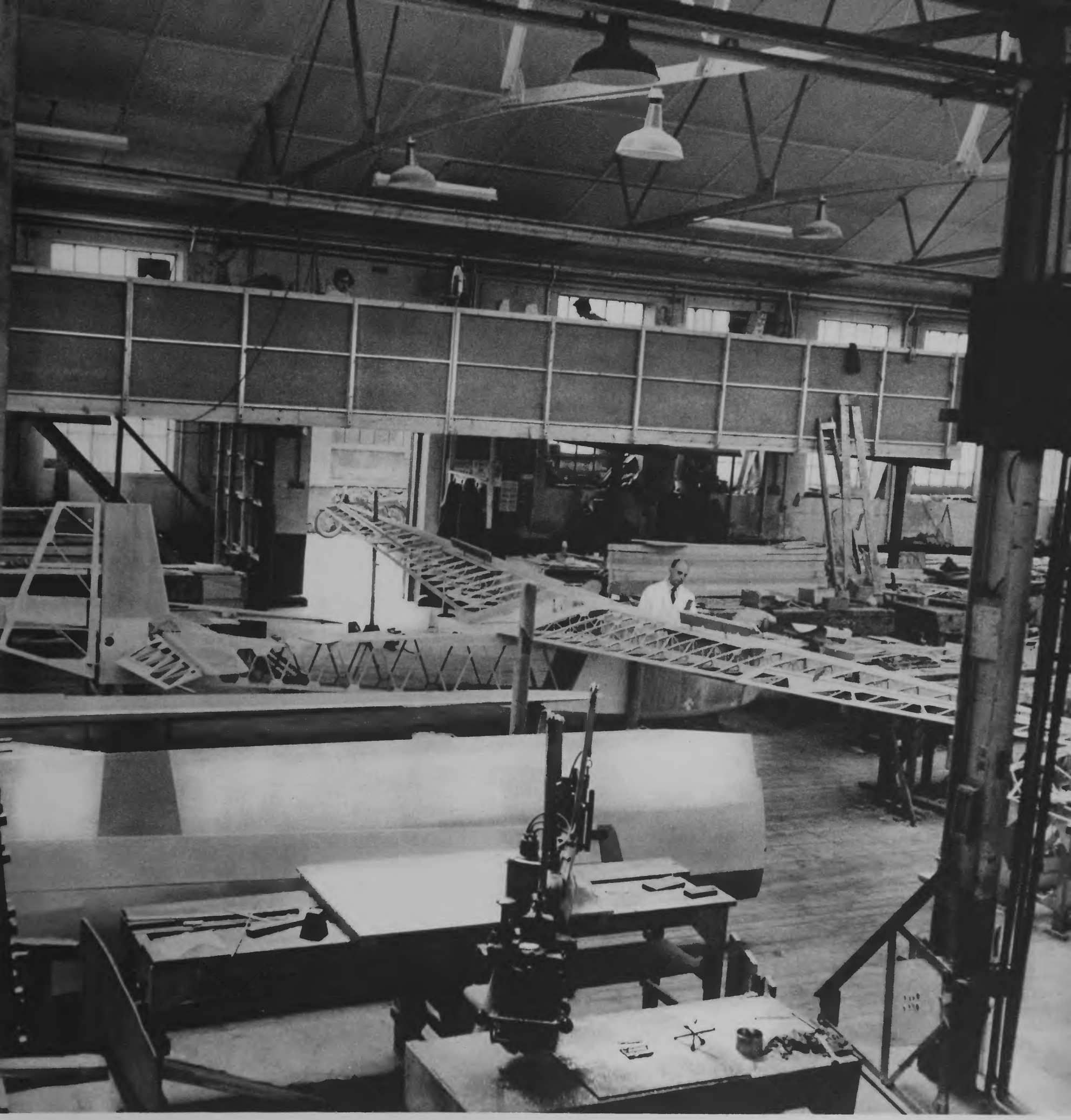

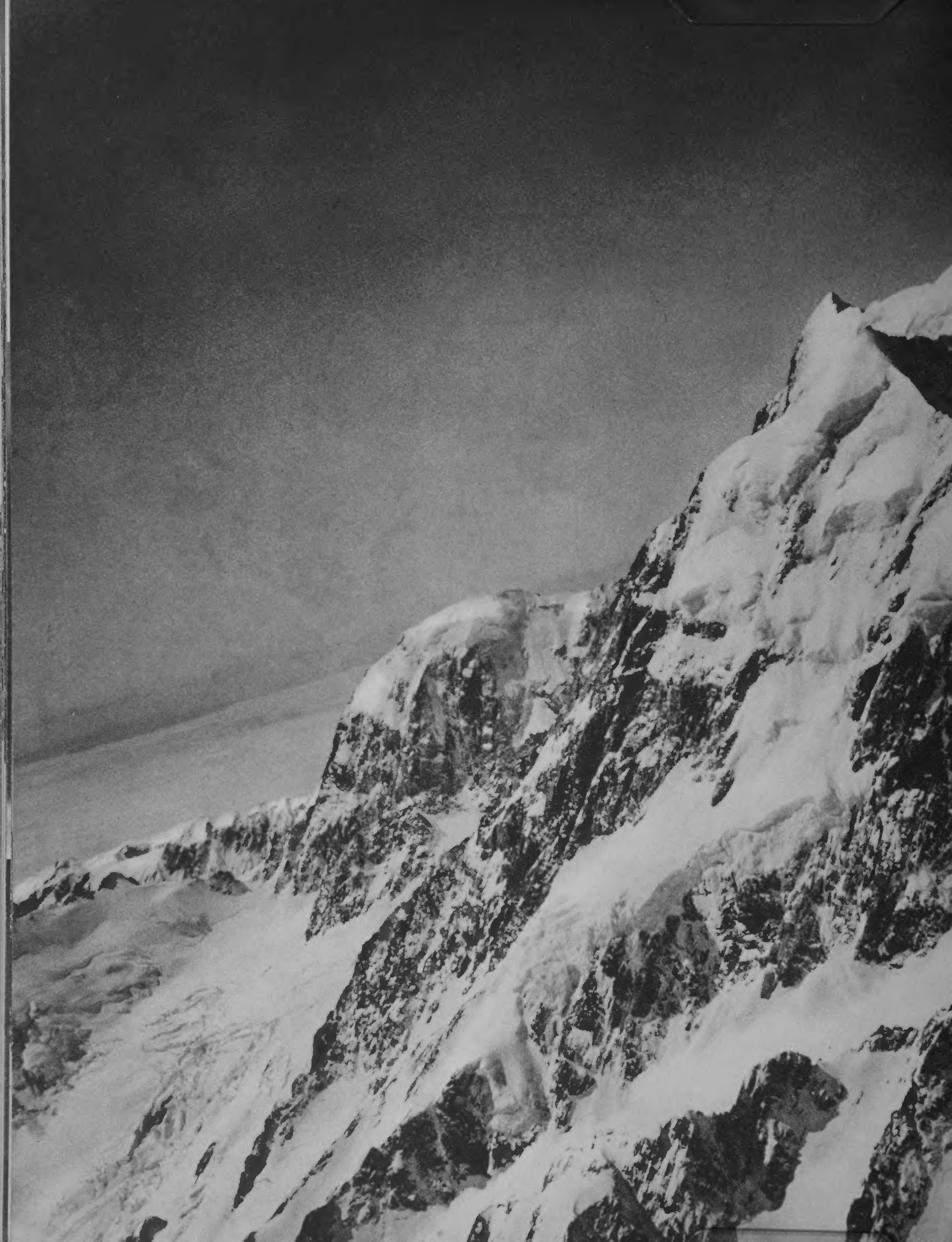


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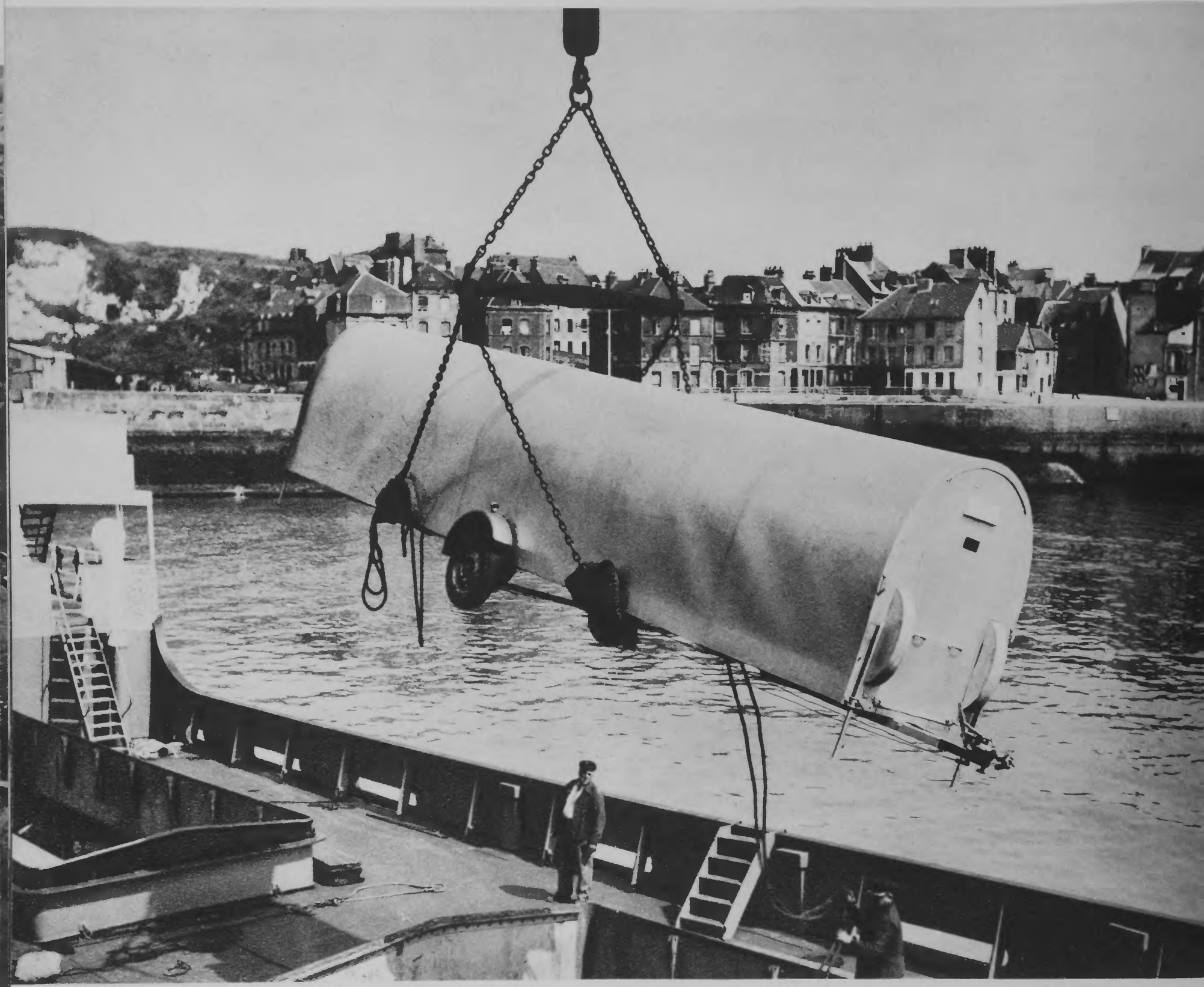


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