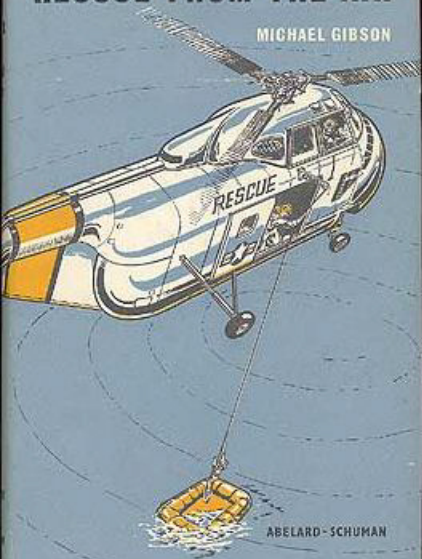


RESCUE FROM THE AIR

MICHAEL GIBSON



ABELARD-SCHUMAN



Rescue | *from the Air*

BY MICHAEL GIBSON

ILLUSTRATED BY GORDON DAVIES

ABELARD - SCHUMAN

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M. G.

one

The Early Days of Air Rescue

Very early one morning an R.A.F. Wellington bomber was on a wartime anti-submarine patrol over the Bay of Biscay. For a while all went well until, in the hour before dawn, one engine began to give trouble. Soon anxious eyes in the cockpit saw the oil pressure drop, and not long afterwards the engine seized up.

Under the orders of the skipper, Australian Flying Officer Triggs, the radio operator sent out their position and a call for help over the air. Triggs opened up the sound port engine, but it was soon over-heating and they were losing height. Over-board went all surplus equipment, including the load of depth-charges which had been intended for an enemy submarine.

Before long, however, there was nothing for it but to ditch the plane. With great skill Triggs brought her down and the crew scrambled out through the escape hatches, the skipper helping his co-pilot, who had been knocked unconscious.

It soon became clear that the Wellington would not remain afloat for long. The last man out had been Pilot Officer Badham, the navigator. He had pulled the dinghy release, but it did not work, and he went back inside the plane to try again. Water was rising rapidly inside the fuselage and when it reached his armpits he had to give up. Eventually Triggs himself managed to lever off the lid of the dinghy stowage container from outside and soon it was inflated.

But only just in time, for by then the water was up to the knees of the five men standing precariously on the wing, as the heavy swell buffeted the Wellington to and fro. They clambered aboard the dinghy and shortly afterwards the bomber disappeared beneath the waves.

A wretched couple of hours now passed, a time

of steady bailing of the partially swamped dinghy and of trying to fight off the effects of seasickness. Dawn came and another Wellington was spotted in the distance, but it was too far away to risk wasting a distress rocket. Then, at about eight-thirty, a Beaufighter, flying low and obviously searching for them, passed quite close without spotting them in the heavy seas, despite the rocket which this time they did send aloft. Their second and last rocket went in trying to attract the attention of a Whitley bomber, which approached them more closely than any of the other ten aircraft that they saw during the course of the morning. After that their only apparatus to signal with was the special flag which was part of the dinghy equipment, and the fluoresceine bag which they could trail behind them and which stained the sea yellow for some distance around.

However, with so many aircraft about, it did not seem possible that one would not spot them, and at two-thirty in the afternoon they were found by another Whitley, which arrived with a Beaufighter escort and dropped a bag of supplies, in which was a Very pistol and cartridges.

So far, so good. They had been found and once more they had an effective means of sending signals. But, though their location was known, was it possible that an Air/Sea Rescue launch or flying boat could reach them before dark? It was doubtful, anyway, if

a flying boat* would be able to land in the rough seas and a launch would take many hours to make the trip, even if one had set out for the area when the first alarm was given. And if they were not picked up before nightfall, they might drift many miles from their present position before daylight came once more, and then the search would have to begin all over again.

After a further nerve-racking wait, another Whitley appeared and, as it circled the dinghy, its signal lamp spelled out a message that brought new hope to the drenched and weary men below. A Sunderland flying boat was on its way.

But the doubts remained that it could arrive before night came. And could it land if it did?

A few minutes before eight o'clock that evening the Sunderland came in sight. It was still light, but a heavy sea was running and it was extremely doubtful if the pilot would attempt a landing. He circled, carefully weighing up the position, and when the great machine eventually turned and flew off for some distance, Triggs and his crew felt that they could not blame the pilot for deciding against coming down. However, they had mistaken their man, for he had only moved away from them to jettison his depth-charges and some of his fuel to lighten the flying boat.

*In the U.K. "flying boat" means a machine with a hull and no separate floats. The latter is called a seaplane. In the U.S.A. the word "seaplane" is used for both types.



PLATE 2 *Westland Whirlwind helicopters ready for delivery to the R.A.F.*

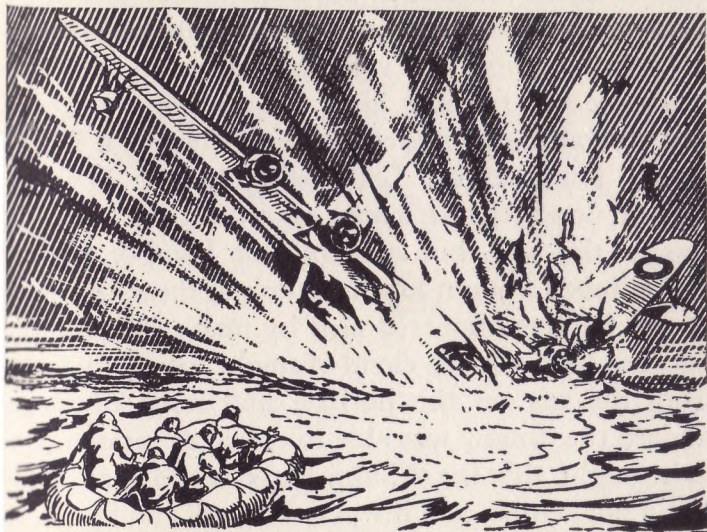


Single lift practice between an R.A.F. Whirlwind and a sea-going launch



PLATE 3 *An Avro Shackleton M.R.3 of the R.A.F. Coastal Command*

Back he came and the men in the dinghy watched, anxiety on all their faces, as the Sunderland came in ever lower about a mile away, skimming over the tops of the waves that at times hid it from view. A flash of white foam came as it touched the top of a wave. Then a second and a third.



1 Next second the giant machine had cartwheeled on to its side

And then it happened. The port wing float buried itself in the fourth wave and the next second the giant machine had cartwheeled on to its side and the starboard inner engine was a mass of flames.

Horried, the watching men looked across the windswept tossing waters, but they saw no sign of life and after a while darkness descended. Cold and

miserable they waited through the long hours. They had glimpsed a dinghy floating beyond the Sunderland after it finally sank, but it was impossible to see if there was anyone aboard and it seemed unlikely that any of the flying boat's men could have survived that terrible crash. It would be hopeless even to try to reach it in those heavy seas and they felt in their hearts that such a trip would be in vain.

In the morning the wind had dropped, but the seas were still running high. Triggs and the others saw several planes searching and at length a Beau-fighter found them. Later still another Whitley flashed down the welcome news that a destroyer was on the way, but suddenly the bomber turned and climbed flat out for the clouds as three German Arado fighters appeared as if by magic on its tail. Seconds later a black cloud of smoke rose ominously from the sea on the horizon and none of those aboard the dinghy was able to convince himself, try as he might, that the Whitley had escaped. Certainly it did not return, and it was only small comfort that they saw no more of the German fighters either.

And so the day dragged on, with the plight of the five men growing steadily worse. Night came and it was obvious that they would now, unless they had the most astonishing luck, have to wait until morning for the destroyer to find them. It would not be an easy task for it, even in daylight.

Day came once more, a day of low cloud and mist, and the only thing Triggs, Badham and the others

saw during all the long, seemingly endless hours of light was the fin of a shark, which they scared away with a Very cartridge. They knew that the search for them would be going on, but with visibility down to little more than a mile, and cloud ceiling practically nil, there was very little chance of it succeeding. They had no drinking water and they existed on only the tiniest quantity of food from their emergency pack, which was all they had managed to salvage from their Wellington before it sank. Thus their fourth day came and went.

It rained during the night, but when morning came the sky was clear and blue, and with it came a revival of hope. For the first time in a long while they spotted the second dinghy again. But it was still a long way away and in their exhausted state the chances of reaching it would have been very remote, even had they seen any sign of life aboard.

However, about midday a Beaufighter flew low overhead and then circled, sending signals down that they should try to contact the other craft as it had an injured man aboard.

Somehow the five rallied their strength and began to paddle. About 1,000 yards separated the two dinghies and it took them five hours to cover the distance. During that time there was an anxious spell when four FW 190 long-range fighters dived on them suddenly. They thought that their end had come, but the pilots only waved to them and then flew off.

In the middle of the afternoon two Hudson reconnaissance planes turned up and dropped another dinghy. They diverted their course slightly to pick it up, so that it was six o'clock by the time that they reached their goal.

Only one man was aboard, weak from exposure. He was a former beach lifeguard from Sydney in Australia. His name was Watson and he was the only man now alive of the crew from the ill-fated Sunderland.

Unknown to Triggs and his men, and against the odds, all the flying boat's crew had survived the crash, but the only one of their dinghies that they had managed to inflate had burst. Watson, a strong swimmer, had volunteered to try to reach another dinghy that had been dropped for the Wellington's men by one of the earlier Whitleys, but so far away from them that they had not been able to do anything about it. He had reached it, but in such a state of exhaustion that he had been unable to return to his comrades, who had gone down with the Sunderland when it sank.

Triggs and the others did what they could for Watson, using supplies from the dinghy the Hudson had dropped, and they got him aboard their own craft.

Not long afterwards another Beaufighter was overhead, but it was chased off by two FW 190s. Then came a Sunderland. It passed right over, but appeared not to see them, and they dared not signal

to it for fear of attracting the German fighters again.

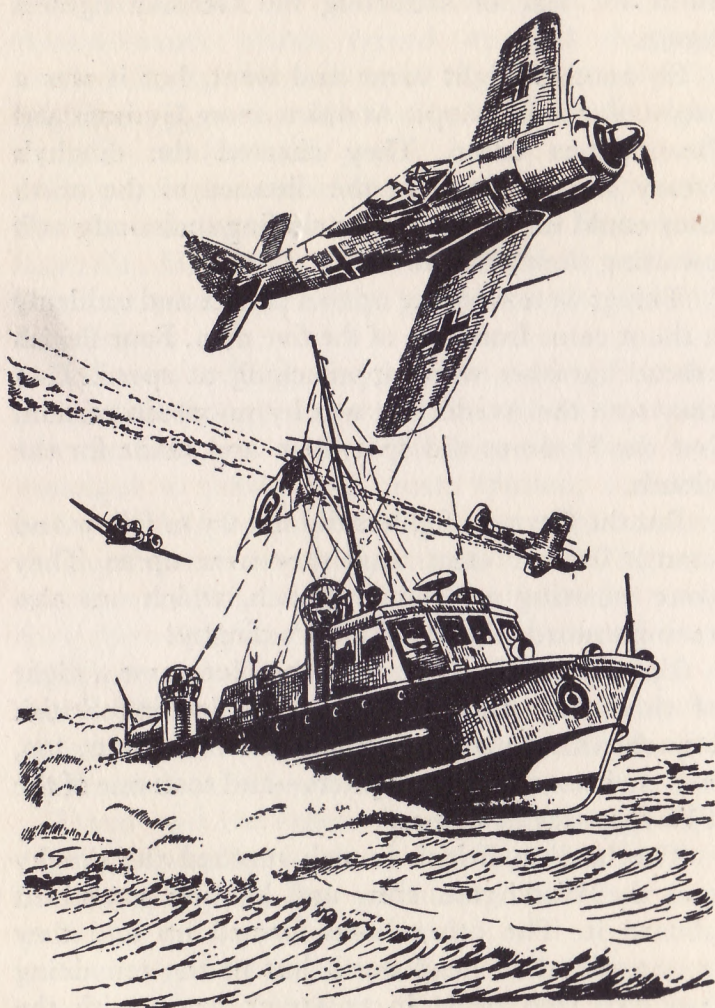
So another night came and went, but it was a night of renewed hope. At dawn, more Hudsons and Beaufighters came. They cheered the dinghy's weary crew, though in the distance to the north they could see three Arados circling ominously as if awaiting their chance.

Things were working up to a climax and suddenly a shout came from one of the five men. Four British rescue launches were approaching at speed. Had they seen the Arados? It was by no means certain, but the Hudsons did spot them and made for the clouds.

But the German fighters did not try to follow and soon it became clear what they were up to. They were escorting a German launch, which was also racing towards the Wellington's dinghy!

Then suddenly down from the blue came a flight of three FW 190s, diving at the leading British launch with guns spitting. But the four boats, too, had their escort—Beaufighters—and soon one of the FW 190s was in flames.

The leading British launch reached the dinghy and the Wellington crew and Watson scrambled aboard it. The other boats formed up and they swung round to head north just as the remaining two FW 190s came in to attack again with the Beaufighters in hot pursuit. Gun fire from the launches sent smoke trailing from one of the enemy



2 The two German FW 190s came in to the attack with the Beaufighters in hot pursuit

fighters, after which they turned away and headed for the French coast.

Meanwhile, the German launch, still with its Arado escort weaving above it, was circling in the distance, unable to make a move with the odds so much against it. Gradually it dropped away and vanished over the horizon as the little convoy went on its way, but the excitement was not quite over.

The launches had to sustain one further attack from a Ju 88, which the Beaufighters drove off, and a giant FW Condor shadowed them for some hours, though it kept its distance and did nothing more.

And so, after five and a half days at sea, the little party at last reached home, after what must have been one of the most dramatic chapters in the story of British Air/Sea Rescue. Lives had been lost, the lives of those setting out to save others, but that is in the tradition of air rescue services anywhere. Everything must be risked while there is still a chance.

This was a story of *organized* rescue work as it was carried out in the early days. Air rescue as we know it now has a very short history, and before going further it might be as well to make a distinction between somebody being rescued, and people saving themselves. The Air Rescue services are designed to save others. People in trouble in the air have saved themselves countless hundreds of times

but, their stories are not those of air *rescue*. They are air adventure.

The code of the American Air Rescue Service man puts it neatly, dramatically and well:

It is my duty, as a member of the Air Rescue Service, to save life and to aid the injured. I will be prepared at all times to perform my assigned duties quickly and efficiently, placing these duties before personal desires and comforts. These things I do that others may live.

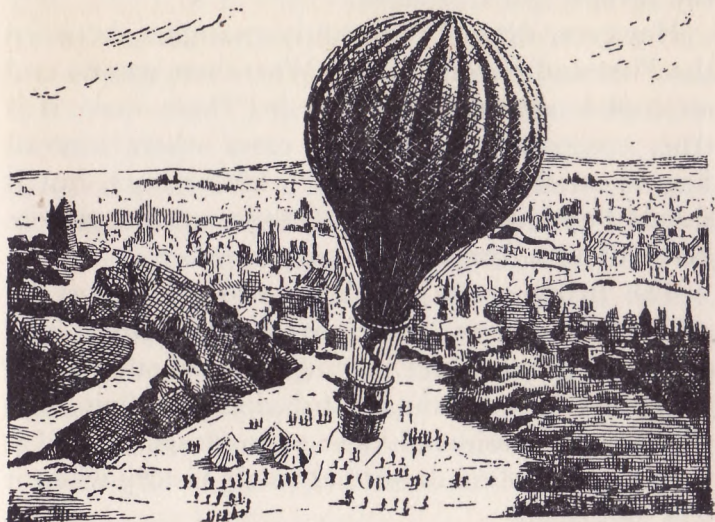
That *others* may live, and there you have it, whether you are a Rescue man of America, Great Britain, or any other country.

But perhaps we can now take a quick look into the more distant past, to Paris in 1870. There was a war in full swing then called the Franco-Prussian War—France versus Germany. Paris was besieged and the wounded had to be got out somehow. By land it was impossible, for the enemy armies were on every side, and thus it was that the very first Air Rescue operation came into action.

For the first time in history, one hundred and sixty patients were taken out of the town by air. Observation balloons were used, for of course there were no planes in those days.

It must have been a frighteningly difficult undertaking because, apart from the cramped space in the baskets beneath the balloons, and presumably some hostile fire from the enemy, the flyers were at the mercy of the wind and weather for their direction of flight. They must have waited for a

breeze in the right direction in the first place, but if it was strong enough to be relied upon to hold and to give them any speed, it would hardly make for a comfortable landing. The balloon has yet to be made



3 *The first air rescue in history, by balloon from
besieged Paris*

that has brakes, and how many of the patients survived has not been recorded.

But there it was: the first Air Rescue.

We now jump fifty years, to the first World War. In 1915 the French Air Service used aircraft in Serbia (then a State on its own, but now forming the eastern part of Yugoslavia) to fly out their wounded. The French, in fact, seem to have been

the pioneers of Air Rescue, for eleven years later they were using improvised ambulance planes in the Atlas Mountains of Morocco, in North Africa, where they had another war on their hands against the savage Riff tribesmen.

However, despite these early examples, between the First and Second World Wars there was no real attempt to organize Air Rescue. There were, it is true, comparatively isolated cases where aircraft flew dramatically in to save a life or lives, but it should be remembered that the circumstances were very different from those we know today.

The flying range of planes was very short by modern standards. There were no regular long ocean crossings by air. Flying the Atlantic was an adventure for only the most daring, and flying the Pacific was considered close to madness, even if it was the kind of madness that made history when it was successful.

If these early long-distance flyers came down in the water there were no planes which could cruise comfortably for hours on end, covering thousands of miles far from land while searching for them. And, even if there had been, the actual apparatus of rescue from the air was hardly developed. Radar was unknown, radio communication was primitive, and the fully equipped rubber rescue dinghies of today just did not exist. The unlucky flyer could only hope that his machine would stay afloat for a few hours and that his radio call for aid—if, that is, he

carried a radio at all—had been picked up by a ship not too far away. That was about all.

If he was reasonably close to a coastline, of course, he would stand a better chance, particularly if he had been seen to come down. He might be picked up by a passing coastal vessel, by a lifeboat, or even by a seaplane or flying boat, but the two latter could only land if the sea was comparatively calm.

Air Rescue on the land at this time was equally undeveloped. There were some ambulance planes, which, in the early days, were rather crude conversions from first-war light bombers like the De Havilland 4. In the rear-gunner's position, directly behind the pilot, a bulky-looking but really very small cabin would be built into the structure. The side would fold up lengthwise to allow a stretcher to be put in, and the plane's normal top speed of 120 m.p.h. must have been greatly reduced in consequence by the weight.

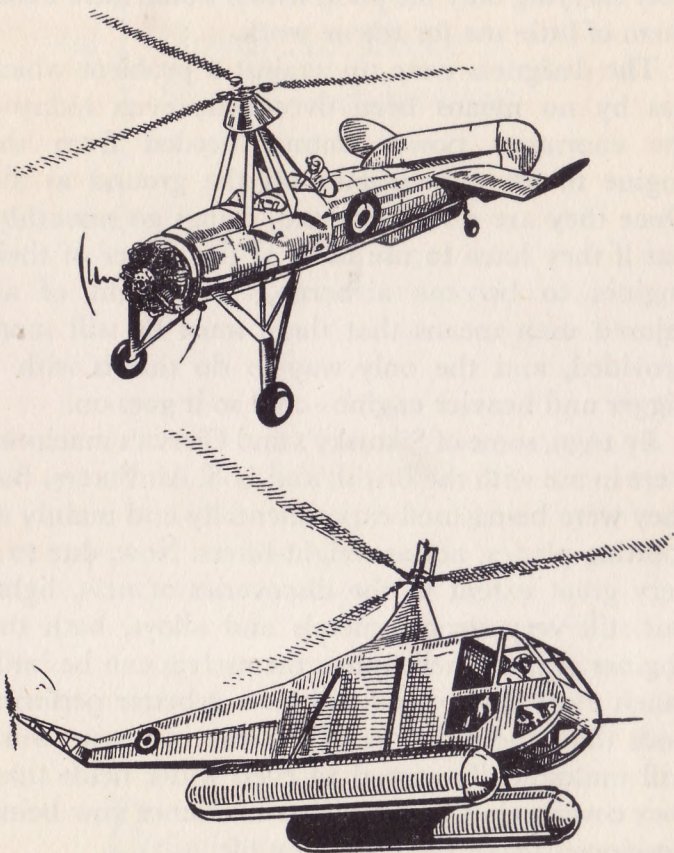
However, these makeshift machines, and other rather more workmanlike ones that followed, were used perhaps to fly a patient to hospital from a remote farm or some other lonely spot, provided always that there was a ready-made air-strip or a large field for the machine to land on. Or it might be that it was a seaplane or amphibian that was employed if there was a lake or slow-flowing river at one or both ends of the journey.

Great deeds of bravery by pilots and doctors were performed, but they were working against heavy

odds. Blind-flying instruments were primitive, making a flight through storm, mist or fog a major undertaking, and landing was something during which the pilot crossed his fingers and hoped for the best. In mountainous country Air Rescue was impossible, though planes were used to spot an injured man or a lost party of climbers and to guide an over-land rescue team to them.

Nowadays, of course, there is one ever growing factor in almost all Air Rescue, both by land and by sea—at any rate in coastal waters—the helicopter. Between the two World Wars helicopters were only in their infancy. People had been experimenting for a long time with the idea of a machine that would take straight off without a run, and two men, a Russian and a Spaniard, had come nearest to success by the 1930's. Sikorsky, the Russian, worked in America on the lines of the helicopter as we know it today, with a power-driven rotor. The Spaniard, Cierva, worked in England on his Autogiro. In this, the rotor vanes were free to rotate on their own. They would support the machine in the air, but for forward movement a normal engine and airscrew were used. A run of several yards was needed for take-off except in the later "jump-start" models. Take-off was not completely vertical, though an enormous improvement over normal winged planes.

Both these men made great strides in their own fields, and there were a few other people working on variations of their principles at the same time. But



4 *An Autogiro of the 1930's and a helicopter of the 1960's*

neither the helicopter nor the Autogiro was really out of the experimental stage by the time the Second World War started. In any case, those that had proved most practical were small machines, prob-

ably carrying only the pilot, which would have made them of little use for rescue work.

The designers were up against a problem which has by no means been overcome, even today—the enormous power output needed from the engine to lift a helicopter off the ground at all. Once they are off the ground, things go smoothly, but if they have to use most of the power of their engines to become airborne, the weight of an injured man means that there must be still more provided, and the only way to do this is with a bigger and heavier engine—and so it goes on.

By 1939, some of Sikorsky's and Cierva's machines were in use with the British and U.S. Air Forces. But they were being used experimentally and mainly as spotting planes, not as weight-lifters. Now, due to a very great extent to the discoveries of new, light, but still very strong, metals and alloys, both the engines and the helicopters themselves can be built much more lightly and still have a better performance than the old ones. Their use in rescue work will undoubtedly spread to even wider fields than they cover today, as the bigger machines now being developed begin their working life.

two

Royal Air Force Search and Rescue

Before 1935, flying boats alone were equipped with triangular rubber dinghies for use if they were forced down in the sea. These dinghies had apparatus with which to signal, though the range of it was small. Service planes flying from carriers had destroyers standing by to pick up ditched pilots, and most of the ship-borne machines had some form

of flotation gear, either in the wings or in the fuselage, which would keep them afloat for a considerable period. If the plane was not too seriously damaged, and if the pilot was still able to operate it, distress signals might be sent out on the plane's own radio. But it was then dependent on the Lifeboat Service and Royal Naval craft to get them out of their predicaments.

However, by 1936 people began to realize that something more was needed. Fifteen special, high-speed launches were provided for the Royal Air Force for search and rescue. These were stationed at various points round the coast of the United Kingdom and at the most suitable overseas bases. From 1938 onwards all new types of British service planes were equipped with inflatable dinghies and special survival gear. The Coastal Command was made responsible for Air/Sea Rescue.

Then came the war, and for a time the organization that had worked well in peacetime carried on as before, but things were changing, and it was the Battle of Britain that brought matters to a head. This, of course, was the action fought by the Fighter Command of the R.A.F. which, by defeating the German Luftwaffe, forced Hitler to change his plans for invading the British Isles.

During the course of the battle, hundreds of Allied pilots were scrapping over the English Channel and flying long distances on patrol over the North Sea. Many were limping home in crippled

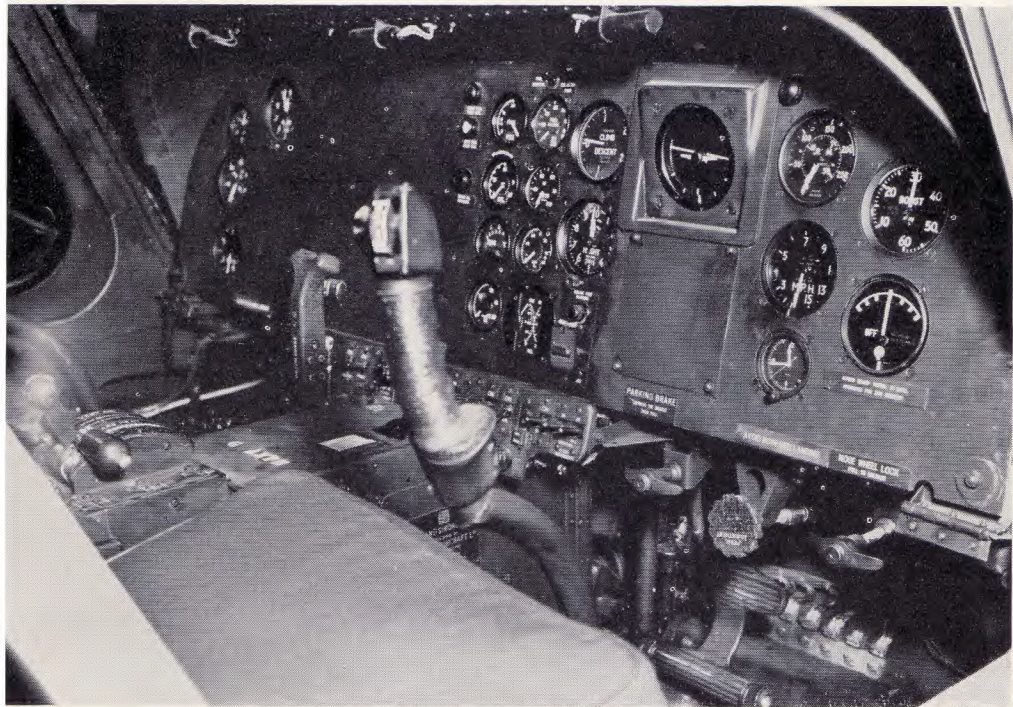


PLATE 4 *The controls in the cabin of the Westland Whirlwind*



PLATE 5 *The scoop net in use. The small white drogue at the back of the net steadies it in the water*

planes from raids over Germany and France. Again and again machines were forced down for one reason or another before they could reach the shores of England, and generally speaking the plane could be reckoned a total loss. If it was not already smashed beyond repair by enemy fire, the ditching might damage it further—if it did not sink at once. Recovery would have been far too difficult and costly to be worth while.

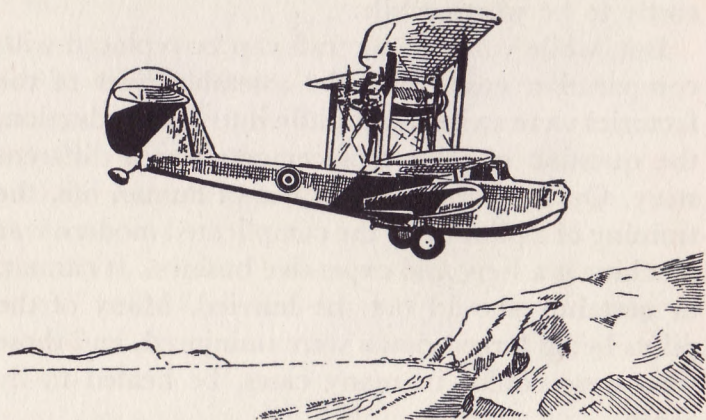
But, while valuable aircraft can be replaced with comparative ease, and the assembly lines of the factories were swinging rapidly into full production, the question of pilot replacements was a different story. Quite apart from the loss of human life, the training of a pilot to fly the complicated modern war machine is a long and expensive business. It cannot, or certainly should not, be hurried. Many of the pilots being forced down were uninjured, and those who were could, in many cases, be healed to fly again.

Rescue with a minimum loss of time was of vital importance. Even if the pilot was uninjured and was supported in the water by his inflatable life-jacket—his “Mae West”—or even if the crew of a big plane had taken to their dinghy, conditions in the North Sea, particularly in winter, were so bad that few human beings could survive for long in the icy, windswept waters.

Actual rescue work was still carried out in the main by the special rescue launches, but aircraft of

the R.A.F. Air/Sea Rescue Service saved hours of searching by the rescue vessels and could remain in the vicinity of a downed pilot to guide the launch to him. Sometimes, too, they could drop a dinghy.

Of the aircraft which could actually land by a ditched flyer if conditions were not too bad, the one mainly employed was the Supermarine Walrus amphibian. It was small, single-engined, and very



5 *The Supermarine Walrus of the R.A.F. Air/Sea Rescue
in the early days*

noisy and very slow, but its rather ungainly appearance must have been a very welcome sight to many a pilot who had given himself up for lost. Indeed the knowledge that rescue was really being organized on a large scale had a very great effect on the morale of the fighting pilots generally. It must have been to them like the introduction of the parachute many years earlier.

At the end of the Second World War the R.A.F. Air/Sea Rescue Service, besides its many aircraft, had over two hundred launches and other marine craft. But when the strength of the R.A.F. as a whole was reduced after the fighting ceased, the size of the Rescue Service had to be cut down in proportion.

A much smaller number of sea-going craft was kept for search and rescue duties, but it is a very expensive business keeping planes in action in a comparatively small Air Force purely for a rescue role. So it was decided that the main aircraft search and rescue tasks would be carried out by the four-engined reconnaissance machines already in use with Coastal Command. Some of them would do double duty.

The new organization was called Search and Rescue, in place of the old title of Air/Sea Rescue Service, and responsibility for it was given to Coastal Command. Rescue Co-ordination Centres at Plymouth and at Rosyth in Scotland were set up to control and co-ordinate all s.a.r. operations, which might well involve, besides aircraft, the Lifeboat Service, coastguards, Civil Air Traffic Control Centres, the Royal Observer Corps, the army and R.A.F. or police posts. Some of these were, and still are, welded into one efficient organization by the Co-ordination Centres as and when the need arises.

Search and Rescue is in the first place a military unit for the saving of lives of service personnel. It

is true that in 1951, the R.A.F. did take on responsibility under an international convention for going to the assistance of civil aircraft in distress as well, but this was only so far "as it may find practicable". This means that S.A.R. is not obliged to rescue anybody outside the service if, as may well be the case, its aircraft are standing by, perhaps to guard against a mishap in a big aerial exercise, or for other service reasons.

But of course this official ruling does not take into account the spirit of all Air Rescue organizations throughout the world. No reasonable call for help on an S.A.R. unit is ever turned down, as hundreds of swimmers round the coasts of the British Isles and elsewhere have come to know with gratitude. Nevertheless, each unit commander must always bear at the back of his mind that service flyers in distress must come first, and it must be a worrying time for him when all his machines are out on civilian rescue operations at one moment. Happily, no case has yet occurred when service flyers have been lost in circumstances like this, but it is something which should always be remembered when calling on S.A.R. for assistance.

In spite of all this, S.A.R. units on certain parts of the coast have calculated that something between eighty and ninety per cent. of their calls come from swimmers in distress. In other parts, where boating is more popular, it is amateur sailors who need saving.

In one way, however, s.A.R. is glad of the practice that its crews can get from these rescues of swimmers and yachtsmen. Though they can, of course, stage incidents themselves, these can never be quite the same thing as picking a desperate and probably struggling swimmer from the water, or winching



6 *A large part of the work of the R.A.F. Search and Rescue detachments is the rescue of amateur sailors*

up the survivors of a small waterlogged or capsized boat, which might at any moment vanish under the waves. In one case a life or lives is at stake: in the other, they are not. It is as simple as that.

An incident of this kind occurred on an autumn morning in 1958. No swimmers or yachtsmen were

involved this time, but the rescue was just as thrilling in its own way, and it happened quite by chance.

Three small girls were out on the edge of the mudflats that line the estuary of the river Orwell, near Felixstowe in Suffolk. It was their half-term vacation from school and the three had decided to go looking for shells. They had found some on one of the many shingle banks, but soon one of them spied a particularly interesting shell a little way out on a mudbank. The problem was, how to reach it.

One of the girls, Marianne Couchi, was ten years old. She was not the eldest, but she was the only one who was wearing rubber boots. It was dangerous for any of them to go out on the mud, but the precious shell was not so very far, and with the high, rubber wellingtons surely it would be all right.

Marianne stepped off the shingle and could at once feel the soft mud under her feet. But it seemed quite safe.

She went on, taking one slow step after another, the soft, oozing mud rising higher up the sides of her boots with every move she made, until she began to realize that it was becoming harder and harder to pull her boots free for the next step. Then all at once, she could move no more. She was stuck fast.

Desperately her two friends, Jacqueline and Pamela, called advice from the safety of the shingle, and frightened as they were, they had sense enough to realize that it would be worse than useless to try

to go after Marianne to pull her out. If they had, they would only have become stuck themselves. With great presence of mind, they took off their coats and began to tie them together with the idea of making a crude rope to throw to her.

They would have to hurry. The tide was coming in.

And in this plight we leave them for a moment for the cabin of a Whirlwind helicopter of No. 22 R.A.F. Search and Rescue Squadron, which had taken off that morning from the airfield at Felixstowe on a training flight. At the controls was Flight Sergeant W. H. McEachern and, as it cruised about the area, he and his crew could see the wide, hazy stretch of water where the Orwell and the Stour rivers merged into one and entered the sea at Harwich on the other side of the estuary. But suddenly McEachern's casual glance became one of concentration, for he had spotted three tiny figures far below on the edge of the mudflats. They were waving and it might well have been just a greeting. Children, and even at times adults, would wave as a helicopter passed on its rather ponderous way.

However, the position of the three figures near the edge of the water raised doubts in the minds of the helicopter's crew. It would do no harm to investigate more closely.

McEachern brought the Whirlwind lower and soon all doubts had gone. The figures were those of three small girls, and they were in serious trouble.

Their waving arms were no friendly greeting; they were frantic signals for help, and the helicopter's crew knew as well as the girls did that the tide had turned.

Sergeant McEachern looked about him, and, choosing a spot on the beach not too far away as the best place to land, brought the helicopter down. At once a member of the crew, Sergeant J. Bambridge, jumped out and ran down to the mud to rescue Marianne. He reached her—and found that he, too, was stuck fast!

McEachern and his companions were watching anxiously as Bambridge gave them a signal with an expressive wave of his arm, which told them very plainly what they had to do. There came a roar from the Whirlwind's engine as the pilot opened the throttle. The great rotor whirled faster and the machine lifted slowly once more into the air.

Even as it turned towards the two trapped figures the sling was being lowered on the winch, and, as soon as it was right overhead and the helicopter hovering, Bambridge looped the sling round his waist and put his arms round the frightened and muddy girl. Then, very slowly, the winch began to lift them clear, though the pull of the mud was so great that Marianne's boots were left behind.

She did not, however, lose them altogether, for the Whirlwind dipped again as soon as the man and child were safely aboard and one of the crew managed to work them free. Then the machine returned to the

shingle to pick up Jacqueline and Pamela and soon afterwards three very muddy but now happy little girls were delivered in safety to the Search and Rescue headquarters. Bags of sweets for all of them and a quick run home by car, completed the adventure.

Quite apart from this voluntary work for small craft, bathers and others, R.A.F. Search and Rescue has agreed to give help to larger ships that may be in difficulties. Such a request may come from the nearest Naval Commander-in-Chief, but in addition a very close personal contact is maintained between each individual s.A.R. helicopter unit and the coastguard and lifeboat stations in its locality. In many cases a delay of minutes after a call for help has been received may make the difference between life and death, so R.A.F. station commanders have the power in such circumstances to take immediate action.

R.A.F. Search and Rescue units will be alerted if a plane is overdue or has sent out an emergency call, and of course they will act at once if anyone has actually seen a machine crash or a ship in trouble.

An outstanding case occurred not very long ago, when the "scramble" bell sounded in the operations room of No. 275 R.A.F. Search and Rescue Squadron Detachment, based at Leuchars in Scotland. The crew there was in a constant state of readiness, as they are every day from dawn to dusk, and at

once they sprang into action. As the pilot ran out on to the airfield to start the engine of their Sycamore helicopter, the navigator was calmly but speedily noting down the details of the incident as far as they were known.

A Norwegian ore vessel, the s.s. *Dovre fjell*, was wrecked on the Pentland Skerries. This is a small group of islands lying in the narrow channel between the most southerly of the Orkneys and the north-east tip of Scotland. When weather is bad there, there are no half measures about it, and on this particular occasion the sea was so rough that the lifeboats which were standing by were unable to get anywhere near the ship because of the dangerous rocks on which it had run aground. Great waves were crashing down on the decks and there was a risk of the vessel breaking up.

All this the navigator noted, pinpointing on his maps the exact location of the wreck, and trying to find out if it was likely that anyone on the ship had been injured. Then he raced outside to join his pilot, who was already warming up the Sycamore's engine. Though only two minutes had passed since the "scramble" bell they were almost ready for take-off, and the navigator glanced rapidly over the rescue equipment already aboard the plane to see if there was anything that could be dispensed with on this trip to cut down on weight. It looked as if there might be some heavy lifting to do if the crew of the ship had to be winched off,

and in such rough weather even ounces might make the difference between success and failure.

A matter of seconds was sufficient to satisfy him that there was nothing aboard that would not be needed—as far as he could judge from the information about the wreck which he had been given



7 *R.A.F. Search and Rescue Sycamores and Royal Naval Dragonflies co-operate in rescuing the crew of the s.s. Dovrefjell*

—and within four minutes the helicopter rose into the blustery upper air and headed due north over the wide Firth of Tay.

When the Sycamore reached the scene above the wrecked *Dovrefjell* it was joined by two British Naval Dragonfly helicopters from Lossiemouth, and the

three machines together, despite the terrible conditions, were able to make four runs over the wreck and fly off eleven of the ship's crew, taking them to a nearby emergency landing ground. This is a simple story to tell, but not simple to carry out when one remembers the difficulty of flying a helicopter at all in stormy conditions. And, as in almost all rescues from ships, there was the ever-present danger of the helicopter's hoists fouling in the rigging of the *Dovre fjell*.

This danger is increased a hundredfold when the vessel is a sailing ship, with its masts, stays and stanchions, and possibly torn sails whipping in the wind—which only serves to emphasize the bravery of an R.A.F. Search and Rescue helicopter winch man who, in the winter of 1957, went down on the sling from his machine no fewer than eight times to pick up the eight members of the crew of a sailing ship which was sinking off the south coast of England—in a snow storm.

In Great Britain helicopters are now used almost exclusively for Air Rescue. Their advantages are obvious, and generally speaking the distances they have to fly are not very great. As the helicopter's flying radius of action is only about forty to fifty miles (the total range is, of course, approximately twice this distance) this is an important factor, particularly when there is a search involved as well as a pick-up.

Though S.A.R. helicopter units are mostly based

at fighter stations, as it is the single-engined jet fighter plane operating over the sea that is most likely to need their help, they still come under the control of Coastal Command through the Co-ordination Centres. There are only two helicopter squadrons altogether, but these are distributed in flights of two aircraft each at R.A.F. stations round the coast of the United Kingdom. The U.S.A.F., which works very closely with the R.A.F. in rescue matters, has an Air Rescue squadron at Prestwick which has Whirlwinds and Rescuemasters for long-range search. The Royal Navy plays its part, too, and has seven Naval Air Stations, including one in Northern Ireland, from which their Dragonfly helicopters can be called in for rescue work, should they be needed. The Dragonflies have many duties with the Fleet, but in addition to these and to being on call for Search and Rescue, one will always be flown off from a carrier and be standing by in the air when other aircraft are landing or taking off. If a mishap occurs, rescue from the helicopter can be carried out in minutes.

For long-range work beyond the range of helicopters, Coastal Command uses planes from its Maritime Reconnaissance squadrons, which are equipped with four-engined Avro Shackleton landplanes.

In addition to the role s.A.R. plays in rescue work, most units, particularly in the remoter areas such as the Highlands of Scotland and the Hebrides,



8 *The R.A.F. Search and Rescue helicopter detachments
in the British Isles*

have an arrangement with their local hospitals that they can be called on in an emergency to act as aerial ambulances. In some cases they may fly a patient from an isolated, snowbound farmstead, or from a lonely island, and land actually in the hospital grounds, so saving the many weary hours that the journey might have taken by land or sea—if, in fact, the journey was possible at all by other means than the air. But the hospital authorities always bear in mind the helicopter's true role and only make such calls on s.A.R. in cases of direst need.

One such case occurred not very long ago, in Cornwall. A girl was badly hurt while swimming and was taken at once to Truro hospital. However, it was decided that the only chance of saving her life was to transfer her with the least possible delay to Bristol, where she could be put in the care of a specialist. In any other conditions the journey by road would not have been a terribly long one—160 miles—but here every minute counted. So R.A.F. Search and Rescue were alerted and shortly afterwards a helicopter landed on Truro football ground, where an ambulance with the patient was waiting. Within an hour she was in Bristol.

Finally, at least a brief mention must be made of the part that R.A.F. Mountain Rescue teams play in the work of s.A.R. There are six teams based in the more mountainous regions of the United Kingdom, and working with them the helicopter's role is often one of search, and sometimes of flying the injured to

hospital. There are not a great many places that a helicopter can reach that a ground team cannot get to in a comparatively short time once an accident has been located, but given the right weather conditions and the right type of country the helicopter can often manage on its own.



9 *A stretcher is winched aboard a Sycamore after ground rescue by an R.A.F. Mountain Rescue team*

S.A.R., of course, operates abroad, in most places where the R.A.F. is stationed and it is a most noticeable thing that, in general, politics are forgotten and forbidden frontiers ignored by both sides when a call for the helicopters goes out over the air.



PLATE 6 *A double lift rescue by an R.A.F. Sycamore helicopter.
The rescued man is wearing a survival suit*



*A survivor being winched up to an R.A.F. Sycamore by the
single lift method*

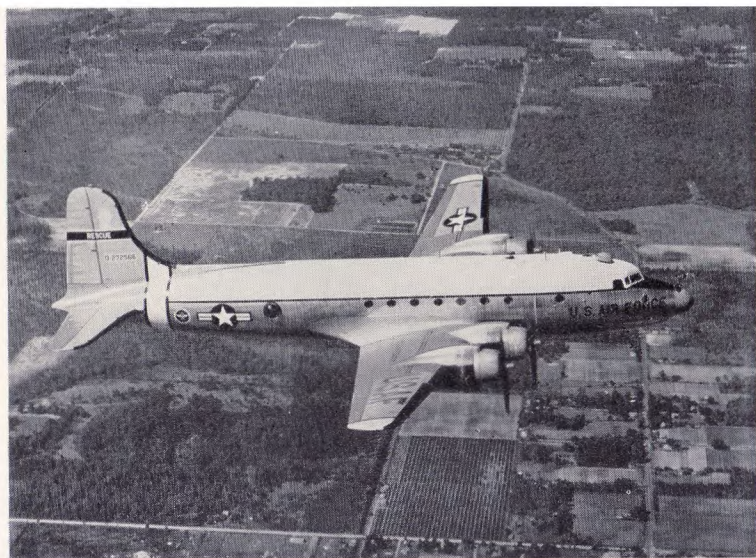


PLATE 7 *The four-engined Douglas Rescuemaster of the U.S. Air Rescue Service*



The Grumman SA-16B amphibian, of the U.S. Air Rescue Service in the foreground, has now almost replaced the Grumman Albatross shown behind it

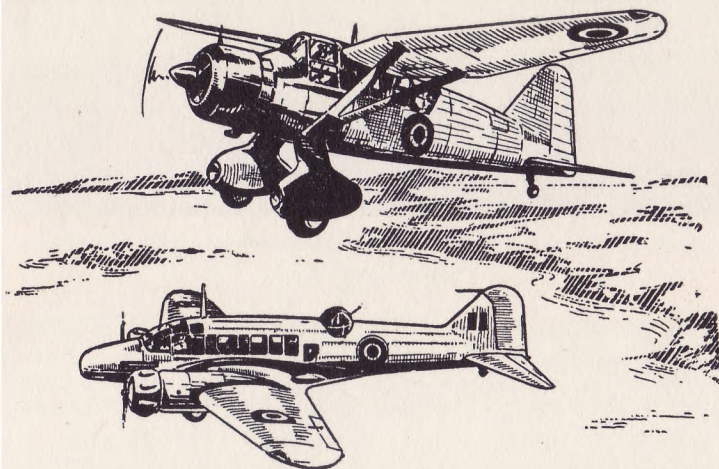
three

The Machines and Equipment of the R.A.F. Search and Rescue

A brief mention has already been made of the planes which were used by the Air/Sea Rescue units of the R.A.F. during the Second World War. None of these were designed in the first place for a rescue role, but they were chosen because they were the most suitable available and were capable of modification to the requirements of the service.

Within their limitations they carried out their duties adequately.

The Avro Anson, a small, twin-motored low-wing monoplane, dated back to long before the war. The Coastal Command version had a crew of three and was used as a general medium-range reconnaissance



10 *A Westland Lysander (top) and an Avro Anson, two early machines of the R.A.F. Air/Sea Rescue*

plane. As such, it was invaluable in searching for survivors of ditched planes and sunken or crippled ships.

Another machine, the Westland Lysander ("Lizzie," as it was known in the Air Force) proved itself very adaptable for Air Rescue work. It was a high-wing, single engined monoplane, capable of flying at very low speeds. Operating mainly

in the Dover area, Lysanders would go out after an aerial engagement—with a fighter escort to protect them—and could drop the rubber dinghies slung from their bomb racks with great accuracy close to a ditched pilot. They would then generally wait in the vicinity until the Air/Sea Rescue launches they had called up by radio arrived to complete the operation.

But the venerable and ungainly Supermarine Walrus was the machine that really came into its own on Rescue work. As an amphibian, it could and did land to pick up survivors, many times in conditions of great danger from rough seas or from enemy minefields off the coast of Europe. And many, many times Walruses had to taxi back to their bases because of the weight and the numbers of the survivors they had picked up.

At the end of 1943 a much cleaned up and more powerful development of the old Walrus, the Sea Otter, came into service and carried on the work. But in addition to operating from bases in the United Kingdom, the Sea Otter carried out most successfully Air/Sea Rescue in the Far East during the Burma campaign in 1944-45. The four-engined Avro Warwick was also used for search and was the plane that pioneered the carrying of airborne lifeboats.

Other machines such as Hudsons, Whitleys, and Sunderland and Catalina flying boats did conduct searches, but it was not their main function, which

was that of reconnaissance or patrol of one sort and another. They would be diverted from these duties if a search was called for in or near the area in which they were flying.

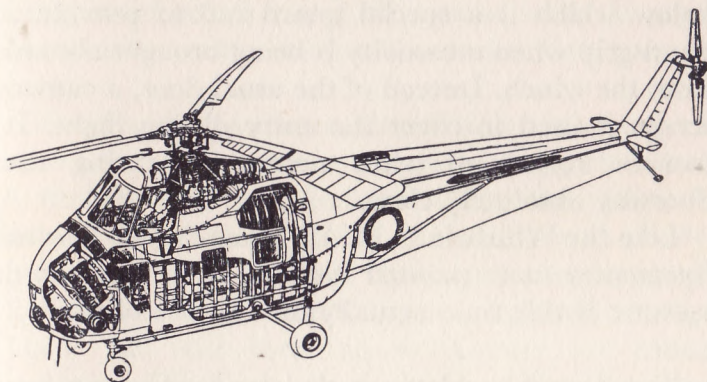
Nowadays, in the modern S.A.R. organization, there are three different types of machine. Two of them are helicopters, the Westland Whirlwind and the Bristol Sycamore, and one is a long-range search plane, the Avro Shackleton.

The Westland Whirlwind is the British-built military version of the U.S. Sikorsky S-55 helicopter. With a crew of three, the pilot, navigator and winch man, the Whirlwind can rescue and take aboard three additional people at one time, and with the more powerful engines shortly to be fitted this will be increased to five. But, be it five or three, they are accommodated in the very spacious cabin, and the fact that this is directly under the rotor head overcomes most of the problems of the flying trim of the machine when heavy extra loads are added. The cabin is connected to the cockpit by a ladder on the port side, and in two compartments behind the rear cabin bulkhead are stowed survival gear and the radio and other electrical equipment.

On the starboard side of the cabin is the very large loading door. It is through this that survivors enter the aircraft after being hoisted up on the winch, which is situated immediately above the door. The winch folds back against the side of the fuselage when not in use.

For landing on water, the Whirlwind can be fitted with twin floats. As these have wheels as well, which project below them, this version of the helicopter can also operate from the land, but the weight of the floats does mean that it can only lift a rather smaller load.

The Whirlwind, and other Search and Rescue helicopters can easily be distinguished by the fact that they are bright yellow and the word



11 *A cut-away view of the Westland Whirlwind*

RESCUE is painted in black on the tail cone fairing, just below the R.A.F. insignia.

The second s.a.r. helicopter, the Bristol Sycamore, is completely British designed. A considerably smaller machine than the Whirlwind, it equipped the first Rescue helicopter squadron in Great Britain. It carries a crew of two and it can take aboard one survivor at a time. The cabin in this case is one with the pilot's cockpit.

A hydraulic winch, weighing only 120 lbs., and which is fed by a hydraulic pump attached to the drive on the main gearbox, is installed on the side of the fuselage just aft of the large, starboard entry doorway. Its lifting arm is arranged so that the cable for the strop or rescue net hangs directly in front of the opening. An intercommunication cable which links the crew man and his pilot during a rescue operation is secured immediately beside the opening, below which is a special guard rail to provide a hand-grip when a casualty is being brought aboard from the winch. Instead of the usual door, a canvas screen is used to cover the entry during flight. It can be rolled up when necessary, leaving the doorway absolutely clear.

Like the Whirlwinds, R.A.F. Search and Rescue Sycamores are painted yellow, but the word RESCUE is this time actually on the side of the tail cone.

The Avro Shackleton is the standard long-range sea reconnaissance plane used by Coastal Command. It is a large machine (the wing span is 120 ft.) with four 2,450 h.p. Rolls-Royce Griffon engines. It has a large and semi-retractable radome under the fuselage aft of the wings, and the latest model, the Shackleton III, has a tricycle undercarriage. Machines of this type played a leading role in a recent drama over the Atlantic that hit the headlines of the world.

At five minutes past four on an August morning

in 1958, a Super Constellation airliner of the Royal Dutch Airlines took off from Shannon Airport on the west coast of Ireland at the beginning of its flight across the Atlantic to Gander in Newfoundland. It carried ninety-one passengers and a crew of eight.

Just thirty-five minutes later, at 4.40 A.M., the Constellation made its routine radio check with the Shannon control tower. The machine was then flying at 16,000 feet and all seemed well. At 5.50 A.M. another radio check call was due but it never came.

Faced with this silence, the officials at the airport were anxious, but not as yet unduly apprehensive. A limited alert was declared along the airliner's known route, and a period of waiting and slowly growing tension followed. By ten minutes to seven it was obvious that something was seriously wrong. There had still been no word over the radio and so a full alert was declared at the Shannon Airport Air Search and Co-ordination Rescue Centre.

But hardly had the search organization begun to go into action, than the alert was called off. Everyone relaxed when Gander Airport reported that they were in touch with the Constellation, and it was not until nine-thirty that it was discovered a tragic error had been made. Two Dutch airliners had taken off from Shannon within a short time of one another, and the Gander control had identi-

fied the wrong one. The Constellation was still missing.

At once the full alert was restored. Three hours had been lost. Everything humanly possible must be done to make up the time.

Called in by the Search Co-ordination Centre, Shackletons of the R.A.F. Coastal Command were on the job at once. At certain selected bases in the British Isles, two of these machines are standing by in constant readiness, day and night. With their range of over 3,000 miles, they are able to cover huge areas of sea to pinpoint a ship or plane in distress, and this ability was to be well demonstrated now.

Officially the Shackletons are at one hour's notice but nothing like that time had elapsed before the big machines had lumbered out across their runways and were airborne, heading over the seemingly endless waters of the Atlantic.

But there were difficulties in their search. Due to the long time that had elapsed between the last message from the Constellation and the alert, it was impossible to know how far it had flown before disaster overtook it. There was no means of locating the probable crash area, and so for a long time the Shackletons quartered the airliner's likely route, working outwards from its last known position. Other planes already over the Atlantic were also asked to try and make contact with the missing plane, and ships in the area, also called in by the

Shannon Control, were by this time converging on the scene.

Time went past slowly and it was not until a quarter past two in the afternoon that a Shackleton III from Cornwall first reported finding signs of wreckage about 150 miles west and slightly north of Shannon. There appeared to be no ships in the immediate vicinity, but, apart from the pieces of wreckage and the airliner's wheels floating on the surface, a number of dinghies had been sighted. And later bodies were seen in the sea.

Visibility was not good, but the sea was calm. If there were survivors in the dinghies, they should be safe enough for a while, but the first reports that came in from the search plane seemed to indicate that the dinghies were for the most part empty and that some were only half-inflated. The Shackleton had dropped smoke flares to mark the position.

The rescue ships already on their way now altered course for the new position. Among them was the Canadian destroyer *Crusader*, the weather ship *Weather Watcher*, the Cunard liner *Caronia* and the lifeboats from Fenit and Galway Bay. It would be some time, however, before any of these vessels could reach the scene of the crash, and meanwhile a second Shackleton had joined the first. They circled together for a while, trying unsuccessfully to find survivors, and then spotted four French trawlers about twenty miles away to the south. The planes headed for them at once, but

in spite of everything they could do, they could not convey to the foreign crews what it was they wanted. They had to give up, but some time later they did succeed in guiding in another trawler and, later still, one of those that they had tried to signal earlier.

But there was nothing by then that the rescue ships or planes could do to save life, for all those on board the ill-fated *Constellation* had perished. Planes kept up the vain search till nightfall. What remained of the wreckage was by this time spread over a vast area and heavy rain cut down visibility and made their task all the harder. Ships carried on looking into the hours of darkness, but no living person was found.

This was not a story of successful air rescue, but it does show very clearly the vital part which long-range search planes can play. Had the Shackleton crews spotted any survivors they could have dropped sets of the combined dinghy and survival gear which they carry, which is known as the Lindholme apparatus. They must have saved many, many hours in the actual location of the crash and, if there *had* been survivors, this time might well have been vital to the saving of their lives.

Mention of the Lindholme apparatus serves as a reminder of some of the other special equipment in use.

During the Second World War the R.A.F. Air/Sea Rescue organization gave great thought to the

question of survival equipment. The inflatable life jacket, or "Mae West," was, of course, very widely used, even in the early days, but it gave a ditched pilot little protection against the cold, as his body was right in the water. So the small single-seat, inflatable dinghy was developed for fighter pilots and formed part of the parachute pack on which they sat. Later models had a waterproof sheet which could be pulled up to the chin for protection in rough or wet weather.

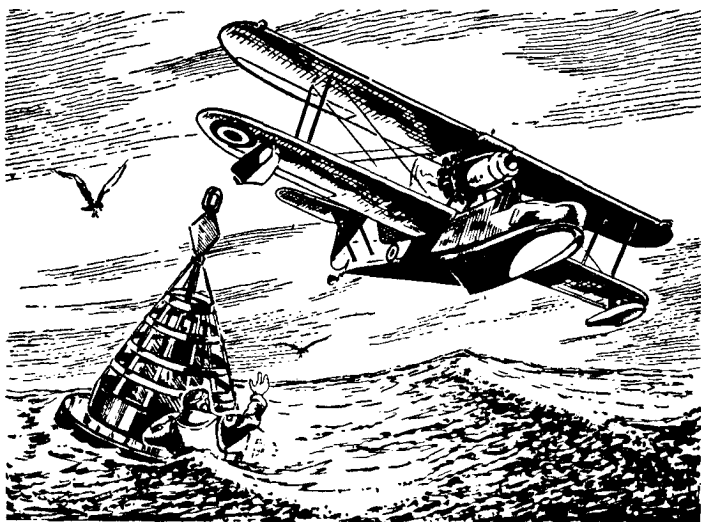
Larger machines had several dinghies, each capable of carrying six or more people, which were automatically released if the plane crashed. In addition to general survival gear, they carried paddles and a yellow signal flag.

As well as the dinghies on the planes, a large number of special floats were moored at various points round the coast of Great Britain. Each was some thirty feet long and painted bright red and orange. There were bars along the outside to give hand and foot hold to downed airmen trying to scramble aboard.

The floats or rafts—they were called by both names—had aboard a small cabin containing first-aid packs, food, rum or brandy, drinking water, apparatus to signal with, a primus stove for cooking, changes of clothing, sleeping bags, cigarettes, matches, books and papers. Quite a luxurious proposition—if it wasn't snowing or blowing a gale!

In addition to the floats, many navigational buoys were fitted out to help a downed pilot with food, first-aid packs and apparatus to signal with.

All R.A.F. aircrew nowadays are supplied with personal survival packs, fitted to their seats in the case of pilots, or easily accessible for attaching to

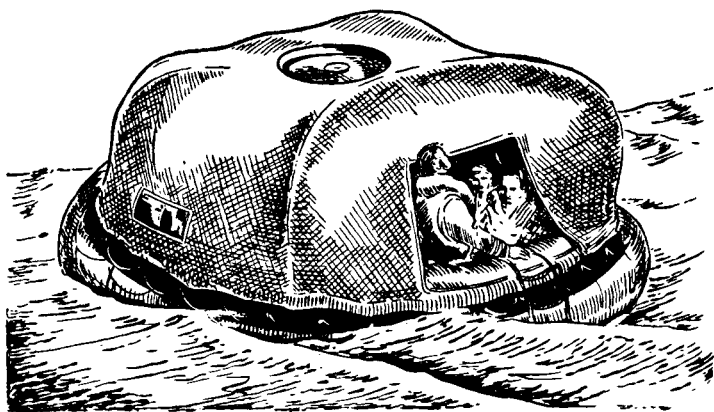


12 *Many navigational buoys were fitted out with aids for downed pilots*

their harness in the case of other crew members who may have to move about inside the machine. The packs contain a dinghy, a homing and communication device (SARAH), a means of identification and signalling, first-aid kit and emergency rations. In view of the short time a human being can live

unprotected in the waters round the coasts of the United Kingdom and in many other places in the world during the winter months, the dinghy has greatly improved weather protection in the form of an inflatable canopy and double floor.

In the old-type dinghies the canopy used to be orange and the dinghy itself yellow, to make them



13 *A modern dinghy, with inflatable canopy for protection of the occupants*

easy to spot, but in the course of time it was discovered that, when used in hot climates (the canopy then protecting the occupant from the sun as well as the wind and sea) the yellow of the dinghy tended to absorb the rays of the sun and the material from which it was made was soon rotted. So nowadays the dinghies are the same shade as slate and the canopies only are orange.

Points such as this are constantly coming to light as new and more advanced equipment is tried out, and all the time research goes on to try and eliminate snags before they can have serious results.

Large planes still have, as in the early days, multi-seat dinghies stowed in the wings, which operate automatically on ditching. Survival packs are carried either in the dinghy or stowed separately in the plane.

Mention was made just now of SARAH. This stands for Search and Rescue and Homing, which is a small device that has done a great deal to overcome the problems of locating crash survivors in foggy or misty conditions.

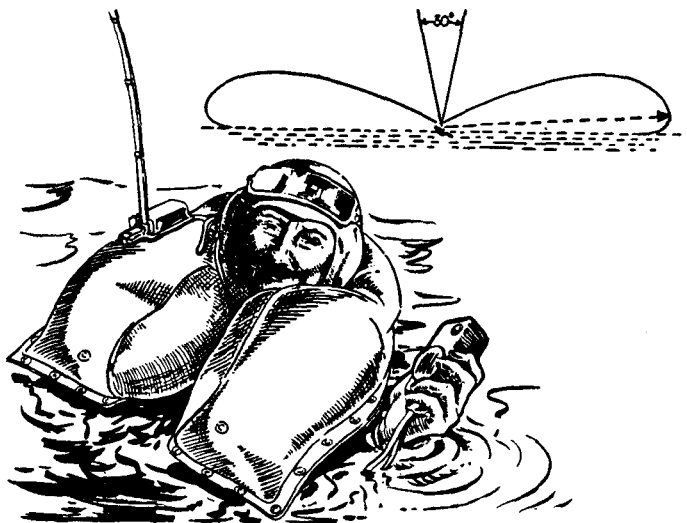
SARAH is a battery-powered transmitter and receiver of very small size, so that it can actually be fitted into special pockets in a Mae West. It automatically transmits a beacon signal which can be picked up by SARAH receivers fitted in long-range search planes and helicopters, up to a distance of about sixty miles. Even a ship fitted with a SARAH receiver, comparatively low on the water, can pick up the signal from seven miles away.

The set is fitted with a telescopic aerial, which the pilot releases by pulling a ring in the beacon, and the set then automatically starts transmitting. It will continue to do so for twenty hours without cease.

The signals are picked up by the search plane and can be seen by the crew on a cathode ray tube. From

them they can get a directional fix and head for the downed airman.

As they move towards him, the strength of the signal pulse increases, telling them that they are on the right track. However, immediately above the beacon, there is a comparatively small area of



14 SARAH in use. The angle in the small drawing at the top indicates the zone of silence which shows the rescue aircraft that it is overhead

silence, and as soon as the search plane enters this the signals stop. Then the crew know that they have reached their goal.

For comparatively close-range work SARAH also has a speech unit—a combined hand microphone and loudspeaker—through which the man

in the water can talk to the plane looking for him and, by pressing a button marked "Listen," hear its reply. This can be most useful if the man is injured or if there is need for him to give the search plane's crew information about sea and wind conditions to help them in landing. SARAH works on VHF, but a new and improved UHF set, known as SARBEE (Search and Rescue Beacon Equipment), is at present being developed. The next chapter opens with a story in which SARAH played a prominent part in a rescue.



PLATE 8 *The SH-19 helicopter of the U.S. Air Rescue Service*



The latest addition to the U.S. Air Rescue Service—the twin-rotored Vertol SH-21B helicopter



PLATE 9 *Paramedics of the U.S. Air Rescue Service take an injured man aboard a SH-19 helicopter*

four

Helicopter Pick-up Technique

Air rescue by helicopter can be carried out in an incredibly short time and, as should be clear by now, time may be the vital factor in saving a life. It can be done in a matter of minutes, and this is not simply the time that it takes to winch a survivor aboard. It is the total time taken from when the alarm is first received at the Rescue airfield.

To quote a typical incident—and there have been many quicker even than this—we will go to the coast of Yorkshire one July day not long ago. As fighter planes were operating in the vicinity, No. 275 Search and Rescue Squadron of the R.A.F. was standing by. Normally S.A.R. helicopters are available at fifteen minutes notice, but when standing by, the time taken to scramble can be anything from four to eight minutes.

On this day the Bristol Sycamores of No. 275 Squadron were ready for action when a call was received that a Hawker Hunter jet fighter was in trouble. The pilot had had to abandon his machine over the North Sea, not far from the town of Scarborough.

Within four minutes, *while the pilot of the Hunter was still coming down with his parachute*, a Sycamore was in the air and heading for the position the Hunter's last signal had given.

But conditions for the helicopter pilot were by no means easy. The weather was bad, with clouds down to 100 feet, so that he had to fly his machine below the level of the cliffs. Before long, however, his receiving set was picking up SARAH signals and he was able to get a bearing and close in on the downed fighter pilot. Once above him, the strop was lowered and, just fifteen minutes after entering the water, the man was out of it again.

This was a routine pick-up, but even one such as this must have a background of months of training

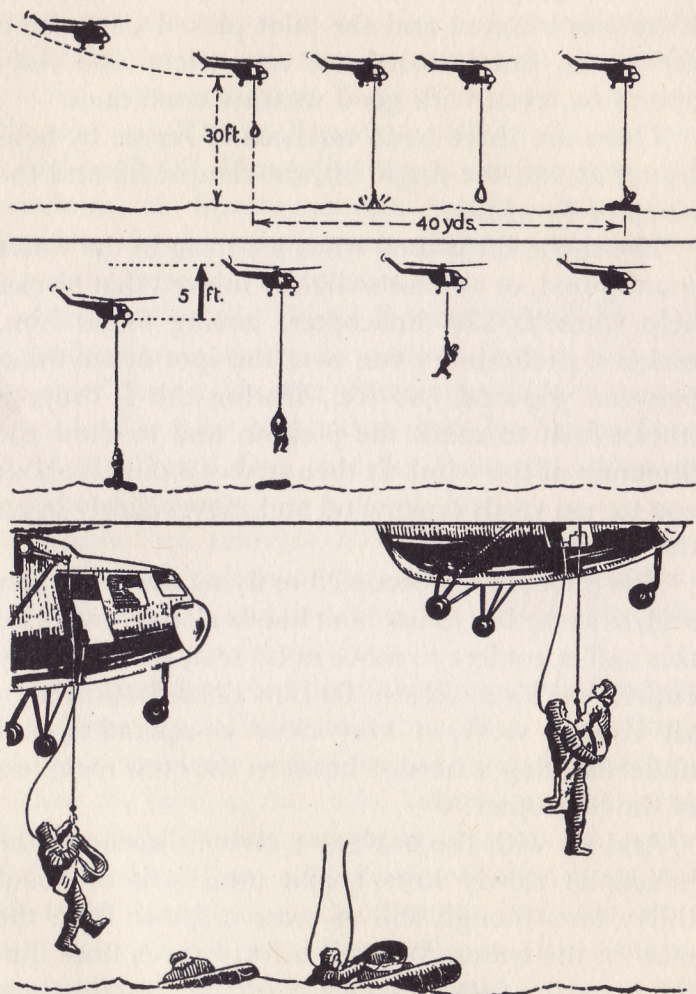
for the helicopter crew. It is very easy to say that the strop was lowered and the pilot picked safely from the water, but it can be a very tricky and risky operation, even with good weather conditions.

There are three main methods of rescue by helicopter at sea, the single lift, the double lift and the scoop or trawl net.

The single lift is used when a person in the water is uninjured, or at least so lightly injured that he can help himself. The helicopter, having found him, makes a preliminary run over the spot at anything between 300 and 500 feet. During this it drops a smoke float to mark the position and to show the direction of the wind. It then makes a circuit about 200 to 300 yards downwind and moves slowly in on the survivor upwind.

The pilot is fully occupied in flying the helicopter and, since he has to use both hands all the time to do this and is not free to move in his seat, he has to rely entirely on his navigator for directions. In this, as in all Rescue work, a very close co-operation and understanding is needed between the crew members of the helicopter.

And so, with the navigator giving directions, the helicopter slowly loses height until it is at about thirty feet, though still at some distance from the man in the water. When it is forty yards from him the navigator sets the winch in motion and the strop or sling is lowered on its cable, dipped into the water to earth any static electricity in the aircraft, and



15 The technique for the helicopter single lift (top) and double lift (bottom)

then guided gently into the hands of the survivor. He fits the strop—a simple loop of padded webbing—round his body, and then signals to the helicopter's navigator that he is ready.

Before the winch is started once more, the pilot brings the helicopter up about five feet to lift the survivor clear of the water. This action, and also the fact that the machine should, if at all possible, be vertically above the survivor before raising him clear of the sea, is a most important part of the drill. Otherwise the cable may well develop a nasty swing once it is hanging free with its heavy load, which is unpleasant for the man on the end of it and does not make flying the helicopter any easier, particularly if there is already a gusty wind. Probably one of the most exciting and remarkable stories of a single lift pick-up was the rescue of the only survivor of the wrecked South Goodwin lightship.

In the winter of 1954, one of the British-based U.S. Air Rescue squadrons was operating from the fighter airbase at Manston, in Kent. A member of the unit, Captain Joe Kusy, had made great friends with the local people. As a result, he had been asked to take part in the Christmas festivities aboard the Tongue Lightship, which was moored some nine miles off Margate on the Kent coast, and from then on he had taken a great interest in the ship and its crew.

So one can very well imagine his feelings when, early one stormy morning the following Novem-

ber, he learned that a sister lightship, the *South Goodwin*, had broken her moorings and was adrift. It was not the ship he had got to know so well but it was a similar one and he could picture the plight of the crew only too well. There was, he heard, a sixty-knot gale blowing, driving the *South Goodwin* on to the very sands she had guarded so faithfully for other ships.

In such a wind there was nothing a helicopter could do, but already search planes, both R.A.F. and American, were out, trying to locate the drifting ship and to see if anyone could still be alive aboard her. At least one Sunderland flying boat and a Grumman Albatross did find the lightship, which was by then lying wrecked on its side on the treacherous shifting sandbanks. They flew as low above her as they dared, but could see no sign of life aboard. Huge seas were breaking over the ship and it seemed doubtful if there could still be any hope for the crew.

By eight-thirty in the morning the wind, though still at gale force, had slackened off to about forty knots. This is almost twice the wind speed at which it is safe to fly a helicopter. Nevertheless, the assistant operations officer at Manston, Major Parks, decided to try it—with himself acting as co-pilot. Nobody could be quite certain that all aboard the lightship had perished, and a helicopter was the only thing that stood any chance at all of reaching it in such conditions and in such a spot, and of

making a rescue if one was needed. The attempt had to be made.

A very experienced flyer, Captain Parkins, was the First Pilot and Airman Vollman and Major Parks, made up the crew. Kusy volunteered to make a fourth because of his special knowledge of the interior of the lightship, and so joined them. He could, he said, be lowered on the winching cable to the wreck and might be able to free any of the ship's crew that were trapped inside.

Flying low, the SH-19 helicopter which had been chosen for the trip left the coast at Deal and found the *South Goodwin* about twelve miles to the east. Gigantic waves were still breaking over her, sending spray high into the air and, as the SH-19 hovered over her it was clear that it would be out of the question to carry out Kusy's plan. It looked, in fact, as if nothing could be done at all, and Captain Parkins was actually about to return to base when Major Parks, watching with Kusy down in the belly of the machine, called out, "Someone's moving down there!"

And indeed there was.

Ronald Keir Murton, who had been aboard the lightship, observing bird migration for three Government ministries, was clinging perilously, as he had been for many hours now, to the rail on the tilted side of the ship. He alone of all those on board had managed to survive. Somehow in the gale he had succeeded in scrambling up through a

ventilator to his present position, dressed in an overcoat over his pyjamas. The waves were lashing right over him, and the constant stinging of the salt spray had temporarily all but blinded him. He was quite unable to see his rescuers and, indeed, imagined that they were just another plane passing over, as he had heard others do during the last few hours.

It was not until Captain Parkins, by a superb feat of airmanship, succeeded, in that howling gale, in hovering the helicopter right over him that he realized that there was a chance of his being saved. Parkins actually brought the strop right against Murton's chest and somehow the numbed and half-blinded man clambered into it. Minutes later the twenty-two-year-old bird watcher was on his way back to land.

But Parkins' work was by no means over when he had delivered his passenger safely. Murton reported that he believed that some at least of the *South Goodwin's* crew might yet be alive below decks. He had heard tapping from within the ship earlier on.

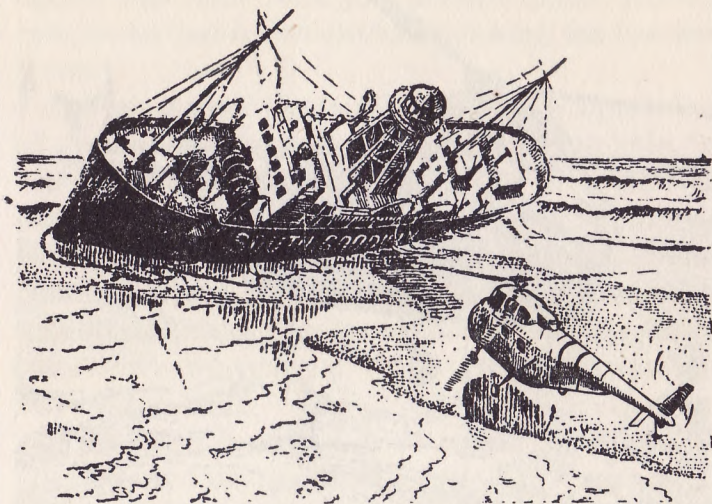
The still patrolling Albatross sent back word that the lightship was now right below the water, but as soon as the tide fell once more Parkins was off again, flying out welding cutters and later diving equipment to assist frogmen from the Trinity House rescue vessel *Patricia*, in an attempt to cut through the steel plates of the wreck from the outside.

Due to the position of the *South Goodwin* on the



16 Somehow the numbed and half-blinded man clambered into the strop

sandbanks, the *Patricia* could not approach her very closely and Parkins, and later another helicopter with Captain Kusy aboard, performed wonders in ferrying equipment back and forth between the two. At low tide they were actually able to land on small



17 At low tide the helicopter was able to land on small patches of exposed sand

patches of exposed sand, and on one occasion, to give the workers on the lightship every minute possible, did not take off till the patch of sand was no wider than their wheel tracks.

But all this magnificent effort was in vain for there were no more survivors, and eventually the *South Goodwin* vanished completely, burying herself more and more deeply in the sand.

For his gallantry, Captain Parkins, as pilot, received the Silver Medal of the Royal National Life-boat Institution—the first to go to an aircraft pilot and the first in this century to be won by an American. All the members of his crew received Commendations of Honour and a place of affection in the hearts of the whole British nation.

The second method of rescue, the double lift, is used when the person in the water is unconscious or injured too badly to be able to help himself. In carrying it out, the navigator puts on a special Air Rescue harness, by which he can attach himself to the winch cable, and he also wears a helmet linked by an intercommunication cable to the pilot.

When the helicopter is about the same height and distance away from the survivor as for the single lift, the pilot operates the winch and lowers his crew member to within about three feet of the water. The latter then gives the pilot instructions over the intercom., which bring him eventually right over the injured man.

This, as may be imagined, is by no means always an easy matter. If the weather is rough, the wind may buffet the navigator unmercifully, duck him in the water or set him swinging like a pendulum—or it may do all three.

He must be dressed so that he will not float. If he were not, he would find that his movements in the water were very restricted when he had to manipulate the injured man into the strop, but he must, just

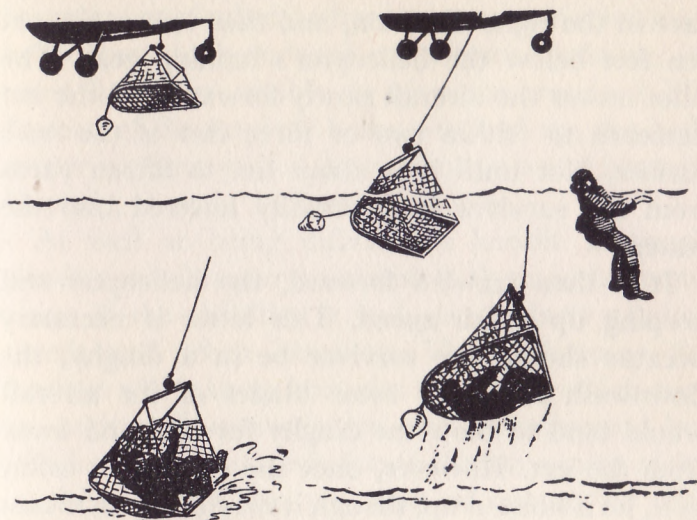
the same, have clothing which will give him full protection from the weather and from the cold of the water. It must not be forgotten that, in addition to everything else, he is working in the down-current from the rotor blades—a fifty-mile-an-hour gale!

Even the question of intercommunication between the crew member and the pilot is not one that has been easily solved, for the cable and the rest of the apparatus that is outside the helicopter must be proof against sea water, fully flexible, and in no way restricting to the navigator's freedom of movement. Many different schemes were tried out before the cable type now in use was adopted, and in the past even mirrors were used to enable the pilot to keep his crewman and the survivor in view.

Once the navigator is over the injured man, he is lowered into the water, slips the strop over the other's shoulders, and the two are then winched up to the aircraft together. There, the navigator secures himself to a static line, uses his quick-release gear to free himself from the winching cable, and pulls the casualty aboard.

The third method of rescue is, as has been said, the scoop or trawl net. In general this is likely to be quicker than the double lift, though there are certain conditions under which it cannot be used. Since it involves the lowering of a net on the end of the winching cable, into which the survivor, sometimes complete with dinghy, may be scooped, it

would be risky to use it near rocks, for lifting from a ship, or from water when there is wreckage or anything else about on which the net could get damaged or caught.



18 *How the scoop or trawl net is used*

Net techniques, however, are being developed all the time and they are likely before long to become standard equipment—a move which one imagines will be welcomed by the navigators! The latter's task in the double lift, however, must remain as an alternative if conditions demand it.

The net itself has a frame of light steel tubing. When not in use, it is stowed flat against the side of the aircraft. In a rescue operation the helicopter is

positioned as before about fifty yards downwind of the man in the water and at a height of about twenty-five to thirty feet. At this point the navigator unstows the net, clips on to it a drogue which will stream out behind it to make sure that it will always face in the right direction, and then lowers the net ten feet below the helicopter's landing gear. The pilot moves the aircraft slowly forward and the net descends to within two or three feet of the sea's surface. Not until it is about ten to fifteen yards from the survivor is it actually lowered into the water.

It is then trawled forward, the helicopter still keeping up a fair speed. This latter is necessary because should the survivor be in a dinghy, the downwash from the rotor blades of the aircraft would tend to blow the dinghy forward and away from the net. However, once the survivor is safely in it, he is hoisted up, though it may be by no means an easy task to get him into the helicopter if there is a waterlogged dinghy to be dealt with as well.

At the beginning of this book mention was made of the high percentage of a helicopter's total power that is needed to make the machine rise from the ground. In all the rescue methods just described, the machine is taking on an increased load, and differing wind conditions and even the temperature of the air can affect the rotor's lifting power. It can, in fact, vary from day to day and even from machine to machine, and when operating only a few feet

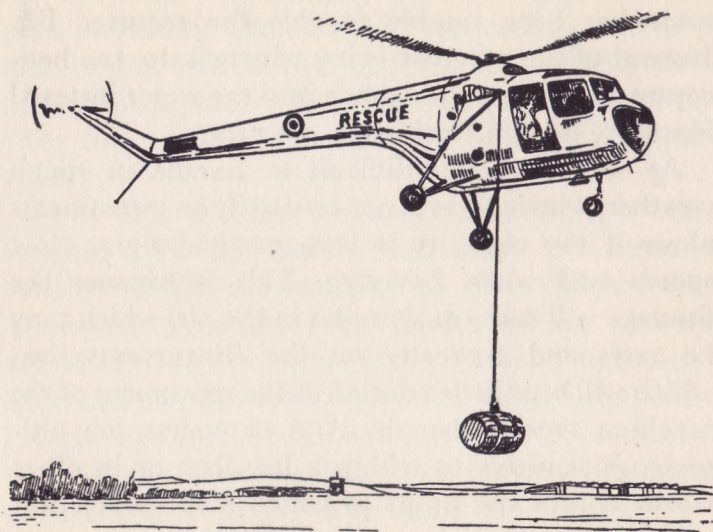
above the water there is very little room for error. The pilot must be as sure as he can be that his craft will do just what he asks of it, and at the right moment, so he has to study the atmospheric conditions very carefully. On a number of occasions, however, particularly where a comparatively small helicopter has been used on a rescue mission, its rotor has been unable to give the required lift. Instead of the survivor being winched up, the helicopter has been pulled down into the water instead! Happily, though, such cases are rare.

As well as being difficult to handle in rough weather, a helicopter is not easy to fly on instruments alone if the visibility is bad, particularly at slow speeds and when hovering. This is because the fuselage will take up attitudes in the air, which may be registered correctly on the instruments, but which will bear little relation to the movement of the machine *through* the air. And of course, no altimeter is sensitive to within a few feet, or in other words within the limits to which a helicopter has to fly on rescue work.

To overcome all these difficulties the standard of crew training must be very high. It is aimed not only at teaching skill in navigation and the actual rescue operations, but at building up a complete sense of trust and confidence between pilots and crew members, so that they can work together as a perfect team.

The first stage when they join a Rescue unit

(having qualified on helicopters already) is the carrying out of a number of practice runs over their new airfield at various set heights and speeds. Next they have to hover over a barrel at the normal winching height of twenty-five to thirty feet and pick it up by means of a hook attached to the helicopter by a long nylon rope.



19 *Barrel lifts from the sea are part of the training of an R.A.F. Search and Rescue helicopter pilot*

When this has been completed successfully, the pupils get their first taste of the sea, with practice in flying in downdraughts over cliff sides—something they may well have to encounter later in rescuing crews of wrecked ships—and hovering over boats and buoys as directed.

Next comes single lift practice from the land and then barrel lifts from the sea, a very difficult task with the barrel a free agent in water that may be choppy. Double lifts from the airfield follow, and then navigational practice, when the crew must be able to "home" on a prepositioned object, either at sea or on the land.

Finally there is the last stage of double and single lift exercises at sea, with craft of the Lifeboat Service and launches standing by to provide for victims to be "rescued" and to deal with any emergencies that may arise.

Air-to-ground rescue work is carried out in much the same way as air to sea, assuming that the helicopter is unable to land, though it is often possible to operate slightly closer to the ground than it is to the sea. Both single and double lift are used but not, of course, the scoop net. Stretchers can, however, be winched aboard by means of four webbing straps fitted to their sides, and the patient is guided into the cabin head and shoulders first in not too uncomfortable a position.

A very unusual case of ground-to-air rescue occurred in Belgium late in 1958 when, one night, the new terminal building of Brussels international airport went up in flames.

It all began in the basement of the passenger building, where a small spirit lamp was overturned and exploded. The fire spread with incredible speed and soon the control tower, the main hangar and

the meteorological offices were in the heart of flames which rose some one hundred and fifty feet into the air. Smoke billowed everywhere. All the lights went out and the telephones were out of action. *Gendarmes* cordoned the buildings, fighting to keep back the crowds of would-be helpers until the Brussels fire brigades could arrive from the heart of the city some ten miles away to take control. Ambulances were already standing by, and for a while it was not clear whether anyone had been trapped by the conflagration.

Then figures appeared on the roof. The watchers below, their faces lit by the glare, saw them waving desperately. The first of the firemen were there by now and at once they began to get their tall ladders into position for the rescue—but there was someone else on the job as well.

Regular helicopter services run in and out of Brussels, and one of the helicopter pilots there that night was Gerard Tremerie, who had flown with the R.A.F. during the Second World War. Even above the crackle of burning timber and the roar of the flames, those who were nearest to him could hear the sudden burst of power as Tremerie's helicopter left the ground. They turned and watched as the whirling rotors flashed in the glow from the burning buildings and the machine rose and then turned round towards them. The pilot knew that he was tackling probably the most dangerous and tricky task that he would ever have to undertake. Quite

apart from the peril from the flames themselves, it was impossible for him to tell what hazards he would meet from the hot air currents rushing upwards from the blaze.

However, at little more than the height of the six-story passenger building, he skirted the raging inferno and then, choosing his moment carefully, he made his run in and descended through clouds of billowing, blinding smoke to the rooftop. He hovered just above it and the watchers below held their breath as first one and then two of the trapped people scrambled aboard.

By then, the other eight who had also been caught up there had been rescued by firemen, and Tremierie could see that his job was done. He opened the throttle and the watchers breathed again as the helicopter rose once more and turned away to safety, after what must have been one of the most remarkable feats of airmanship ever recorded.

This is the first story in this book of a post-war air rescue carried out by a pilot from a country other than Britain or America. The book is, in fact, concerned mainly with the air rescue work of these two countries and that is, to some extent, inevitable. The United Kingdom was the pioneer of air rescue as we know it today, and since the Second World War America has carried out the lion's share of rescue work all over the world. With the U.S. services spread so widely over nearly all the globe, their planes have been available to almost every

nation, and they have been the only country with money enough to finance a full-time rescue service on a gigantic scale. Quite recently, however, they have found it necessary to make drastic cuts, and it may well be that other countries will find that they have to think more about fending for themselves to meet the new situation. Several of the bigger European countries have, as has the United Kingdom, carried out air rescue with their own units, but in the main the planes have had to do double duty and have been diverted from other uses when the need has arisen.

Civilian pilots all over the world, too, have given their services and even their lives time and again on rescue work, and of course the flying doctors of Australia are famous—though perhaps their work does not come strictly into the category of air *rescue*.

But organized air rescue services do depend, regrettable as it may be, on the spending of such huge sums of money that few can afford them. A certain amount of improvisation is almost inevitable. In peacetime, as has been said, there has been only one exception to this, and the next few chapters will describe the work of the odd-man-out, the biggest air rescue organization ever known, that of the United States of America.

five

The United States Air Force Air Rescue Service

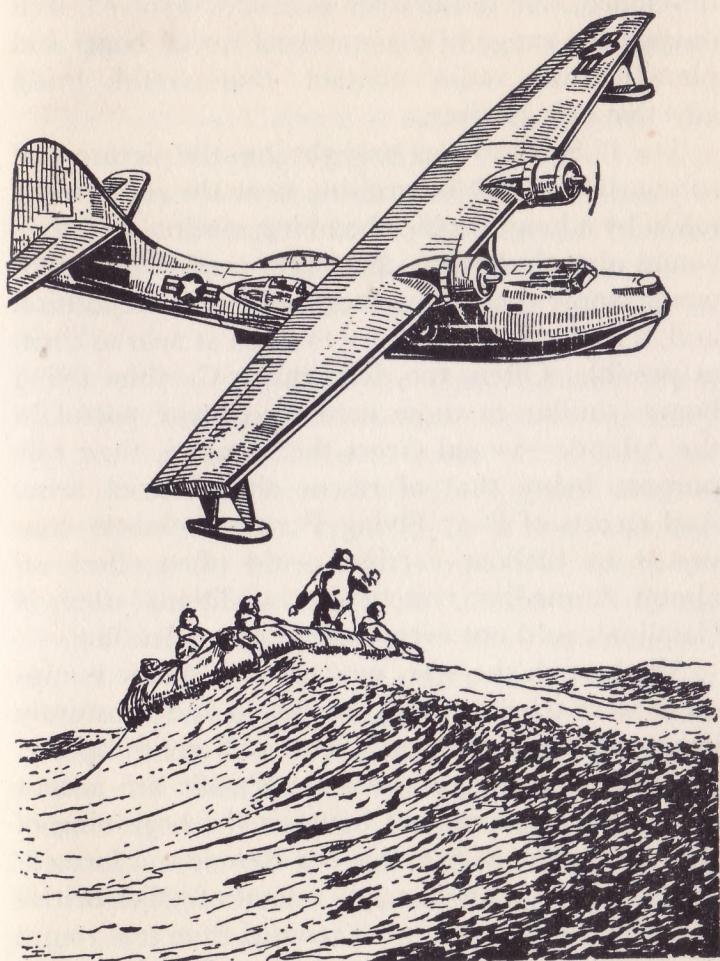
In America there was not, as there was not in Britain, any official air rescue service before the Second World War. But with the very large land areas of the North American continent, rescue by air from the land was, even in the early days, a much bigger and more pressing problem. There were vast tracts of forest, mountain ranges, rivers

hundreds of miles long which could flood extensively, cutting off whole townships, and in the north of the U.S.A. and Canada huge areas which were snowbound every winter. In any of these places men were at times stranded and, needless to say, there were always volunteers to fly to their aid if—and this, of course had to be the deciding factor—there was any place where a normal aircraft could land.

But the flyers were volunteers. Rescue was organized when and where the need arose. As in Britain, it was the last war that brought the U.S. Air Rescue Service (A.R.S.) to the fore and to official recognition.

With the entry of America into the war, hundreds of U.S. bombers and fighters came to the United Kingdom. Soon they too were flying across the North Sea and the Channel, adding their numbers to those of the R.A.F., and adding as well to the numbers forced down in the sea. Very soon American Rescue squadrons were formed, and these joined forces with the Air/Sea Rescue units of the R.A.F., using the same policy of fast boats and spotting from the air as soon as an S.O.S. had been received.

However, America had a very different problem to face with the war in the Pacific. In the North Sea, planes were always within a maximum of 200 miles of friendly shores. Communication between flying crews and their home bases was comparatively easy. In the Pacific other techniques had to be



20 *A long-range escort Catalina flying boat circling survivors in the Pacific during the Second World War*

developed, due to the huge distances involved, well outside the range of the standard rescue boats and plane-to-base radio contact that could bring effective help in time.

The U.S. Navy was brought into the picture and submarines would be cruising near the route to be taken by a long-distance bombing mission, and they would also circle near the target area. Every pilot would know the submarines' approximate position and, if in trouble, would try to ditch as near to them as possible. Often, too, long-range Catalina flying boats—similar to those used on convoy patrol in the Atlantic—would escort the bombers, their sole purpose being that of rescue should need arise. And escorts of B-17 Flying Fortress bombers converted to lifeboat carriers could often effect an almost immediate rescue in conditions when a Catalina could not even contemplate a landing.

All through the war, new types of rescue equipment were tried out and developed and constantly improved. And the Services as well grew rapidly. Accurate rescue figures for the Pacific are almost impossible to assess, but between the beginning of 1941, when the R.A.F. Air/Sea Rescue was formed, until the early part of 1945, a total of 5,658 British and Allied flying men were rescued from seas round the United Kingdom. Not a bad record!

It was in the Korean War, which followed the end of the Second World War, that the U.S. Air Rescue Service really came into its own.

A.R.S. saved the lives of close on 10,000 fighting men and 996 of these were rescued from behind the enemy lines.

One such was Captain Kenneth M. Stewart, the pilot of a Mustang long-range fighter, who was forced to bail out when his machine was damaged by gunfire. He landed in the dusk in the Teadong river, but fortunately other members of his squadron were able to report his approximate location to Air Rescue.

The night was a dark one when it finally came, with low clouds and no moon, so that it was lucky that no question of search arose. If it had, not much could have been done till daylight, when it might have been too late. But as it was, knowing fairly accurately where the downed pilot would be, Captain John Najarian of U.S. Air Rescue, with his crew of three, was able to take off in an Albatross amphibian with a fighter escort of Mustangs to protect him in case of trouble.

And trouble there was as the formation of planes neared the river, for the enemy ground batteries opened up on them for all they were worth. A Mustang dived down and silenced one of the batteries while the others busied themselves dropping napalm bombs to try to give the spotters light to work by. However, Najarian knew that it was extremely unlikely that they would actually see Stewart from the air and he wasted no time in looking.

Amidst a hail of bullets from both banks of the river and in the dim and spasmodic light of the burning bombs, he brought the Albatross down on the river. This lay in a narrow valley, added to which the water was only six feet deep and the draught of the Albatross was five feet six inches! And sand bars abounded.

Half a mile upstream, where he had managed to struggle into the reeds to hide himself, Captain Stewart gave a signal with his flashlight. Still under heavy fire, the Albatross pilot taxied towards him. Bullets were whistling about them as they pulled Stewart aboard.

No one was hit, but they still had difficulties enough to overcome. The napalm bombs had burned themselves out and the Mustang pilots did not dare to drop any more for fear of hitting the Albatross, which they could not see. All around was blackness, broken only occasionally by a flash of gunfire. Slowly Najarian brought his machine out into the stream again and if he wondered how they would ever get off once more he did not show it. Then in the gloom he spotted a low ridge of land against the dark night sky.

It was literally all he could see, and with this as his sole guide he opened the throttles of the amphibian wide.

One can only guess what must have been his thoughts as the Albatross gathered way until it was rushing over the water into the almost impene-

trable blackness. The promontory loomed closer and at the last possible moment the pilot pulled back on the stick and lifted his plane clear just in time.

As they say in Air Rescue: Mission Completed.

Due to the enormous number of United States Air Force units stationed overseas, the American Air Rescue Service is nowadays even more of a world-wide organization than the R.A.F. Search and Rescue. Like the latter, it is intended primarily for military duties, but the same general rules apply about the work it carries out.

Until comparatively recently it consisted of twelve groups, made up of thirty-nine squadrons. Now, but one group of nineteen squadrons remains and, though it still covers the same vast sea and land areas as before, its forces are inevitably more thinly spread.

Headquarters of the service is at Orlando Air Base in Florida. There is a Deputy Commander with his headquarters in Germany, who controls the squadrons in Europe, the Mediterranean and the North Atlantic, and another in Hawaii with the Pacific area under his care, reaching as far westward as Japan. The northernmost squadron in the world is at Thule, in Greenland, and others are in Labrador, Iceland, Scotland, the Azores—a cluster of islands 1,000 miles off the coast of Africa—Libya and Morocco. There is one, too, the 2157th Air Rescue Squadron, at Ramey Air Force Base in

Puerto Rico, and three full-time and five reserve squadrons in the United States themselves, the latter manned by week-end pilots.

U.S. Rescue, in fact, reaches from the scorching sands of Saudi Arabia in the Middle East to the Yellow Sea in the Far East; from the North Pole to the tropical jungles of South American countries. When one thinks of the vast stretches of land and water over which they fly, the mountain ranges, hot, dry deserts, the frozen northern wastes, the steaming jungles and the endless miles of stormy sea, it is no wonder that the men of the service have to be adaptable. Aircraft, small boats, ocean liners, and people on land can, in that huge territory find themselves in trouble in any one of a thousand ways. The U.S. Air Rescue Service is there to help them, wherever or whoever they may be.

In the first twelve years of its existence, A.R.S. found and saved from certain death well over 7,300 people, and over 246,300 hours were flown in seeking and rescuing military and civilian flyers who had been forced down, victims of other accidents, survivors from floods, earthquakes and other natural disasters in practically every country outside the Iron Curtain. But A.R.S. has *aided*, in one way or another, during the same period rather more than 44,500 people and, it should be added, this astonishing total does not include, because the figures can only be guessed at, the many hundreds or even thousands of passengers aboard planes in trouble in

the air which A.R.s. flyers have found and guided safely to the end of their journeys.

Such a case occurred which involved four of the huge Fairchild C-119 troop and freight transport planes, sometimes known as Flying Boxcars. These are twin-engined monsters with a wing span of 109 feet and with the tail carried on twin booms running back from the engine nacelles on each side of the stubby-looking fuselage.

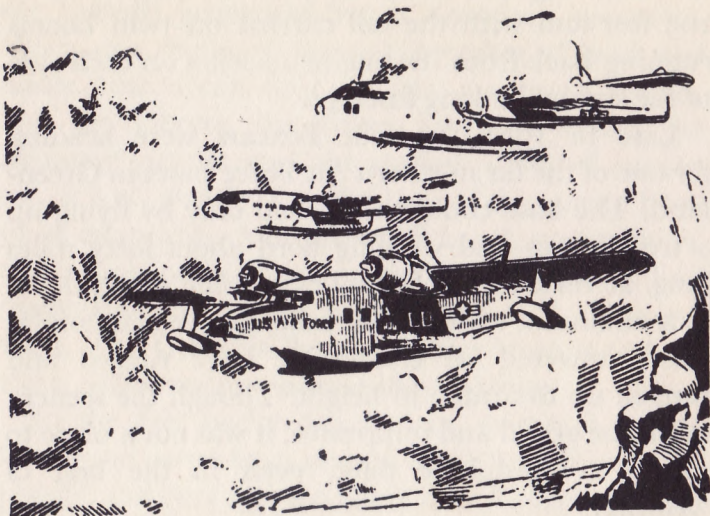
Late in 1954, the four Boxcars were heading for one of the far northern Air Force bases in Greenland. The base could be reached only by flying up a treacherous and winding fiord about forty miles long. It varied from five miles in some places down to a minimum width of one mile, and the mountains which towered on either side were rugged and ranged up to a mile in height. Though the scenery might be grand and impressive, it was not a place to attract a landplane pilot, even in the best of weather.

However, the Boxcar pilots were not particularly worried by the thought of it until they had passed their journey's point of no return and were actually approaching the coast of Greenland. There, with the abruptness so typical of the area, fog and mist suddenly blanketed them. Disaster seemed certain, for the four machines would never be able to negotiate the unfamiliar fiord in visibility that was little better than zero.

Here was a job for the Air Rescue Service and a

call for aid was sent out by the Boxcars. A Rescue alert crew of an Albatross was scrambled and met the big transports at the mouth of the fiord.

So far, no particular difficulty, but then came the really tricky part. Navigating solely by radar, the



21 *On each run, two of the Boxcars were escorted to safety*

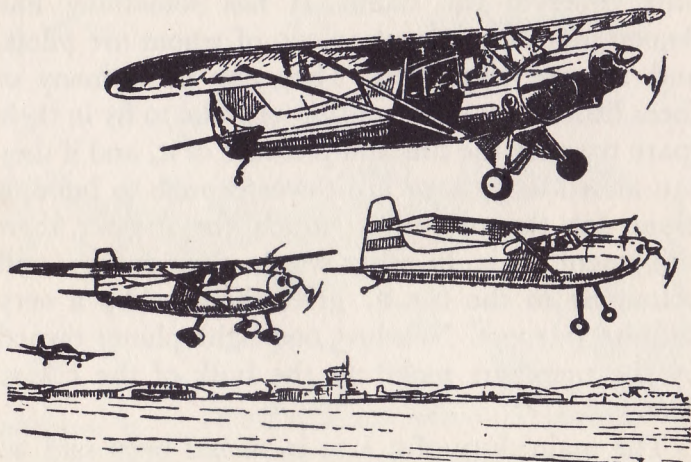
rescue plane made two runs back up the fiord to the base, on each one of which it escorted two of the Boxcars to safety. The skill needed by the Rescue crew, not only in navigating their own plane, but in keeping the other machines on their tail on each run, seems a near impossibility—but it happened. Without such help it is almost certain that the Boxcars and all aboard them would have perished.

In America there is one special aspect of Air Rescue that is not found anywhere else in the world, at least not on the same organized scale. This is the help the Rescue men themselves receive in the search side of their job from an organization known as the Civil Air Patrol.

The C.A.P. has been called by a Commander of A.R.S., Air Rescue's "strong right arm," and it fully deserves the name. It has something like 80,000 members, about 12,000 of whom are pilots, and all are volunteers. They are men, many of them little more than youths, who like to fly in their spare time for the fun and pleasure of it, and if they can afford to own, or are clever enough to build, a plane for themselves, so much the greater their enjoyment. It is, in other words, their hobby, and belonging to the C.A.P. gives their hobby a very definite purpose. Nearly 5,000 light planes owned by the members make up the bulk of the C.A.P. fleet.

The main duty of C.A.P. is, as has been said, to help A.R.S. in searching for lost survivors of crashes or anyone else who is stranded and in trouble. Obviously, with such a huge fleet of aircraft at their disposal and such keenness in the members, they can relieve the Rescue pilots of many thousands of hours of flying when a search is in progress. But perhaps their greatest value lies in the fact, that, generally speaking, C.A.P. pilots will be doing their job over their home ground. They will be flying

light aircraft that can operate from very low altitudes and fly comparatively slowly, both great advantages in search work, and the pilots will be looking, so to speak, in their own backyards. They will be likely to know every detail of the land already, and can save time by flying straight away to the most likely areas according to the information they have been given.



22 *Pilots of the C.A.P. set out on a rescue mission*

A.R.S., of course, welcomes this help from the flyers of the C.A.P., and in the past many of them received official help in their training. Unfortunately, with the general cut in the Air Rescue Service, this was one of the things that had to go, though there are many flyers still in the C.A.P. who went through the various courses. There is a Civil Air



PLATE 10 *Crewman of a U.S. Air Rescue Service helicopter releases the sling for lowering to an injured man*



PLATE II *A U.S. Air Rescue Service paramedic descending
by parachute*

Patrol wing for each of the forty-nine states, and each year the Air Rescue unit in their particular areas used to put them through their paces. Men from Rescue staged a mock incident—perhaps a downed flyer in one of the Florida swamps—and the appropriate C.A.P. unit went into action, their every move watched by Air Rescue Service observers.

Not that they lack real-life practice, and perhaps one operation can be taken as typical of the many undertaken by these unpaid but enthusiastic and fearless flyers. It is one which also shows the working of the Air Rescue organization as a whole, for it was a combined effort.

The first sign that anything was wrong came when a call was put through to the Alert Room of the Air Rescue Squadron at Hamilton Air Force Base. A small civil plane with three people aboard had been reported missing in Utah.

The probable scene of the accident was a long way from Hamilton, though this was the nearest Air Rescue unit, and this was where the Civil Air Patrol came into the picture. As soon as he had alerted his own base, the duty officer at Hamilton put through another call to the Red Rock C.A.P. Squadron at Moab, in Utah itself. It was night there, but the minute it was light enough, half a dozen light planes from Moab were in the air, piloted by men who knew every detail of the territory over which they were to fly.

Meanwhile, back in Hamilton, the crews of three SA-16 Albatross amphibians, and the Pararescue crew (the name just about explains itself, but for details of their work see Chapter seven) of a Douglas SC-47 had been briefed and the equipment likely to be needed had been taken aboard the plane. At the same time a SH-19 helicopter was being sent to the probable crash area from Boise, in Idaho.

But quickly as the Hamilton Rescue Squadron acted, only half an hour after its machines had set out on their long flight over the Sierra Mountains, Ed Shoup, a C.A.P. pilot from Red Rock, and his observer sighted the wreckage of the downed light plane in a canyon. Ground rescue teams set out at once from the advance base the Patrol had set up, and on arrival they found that the pilot and one passenger of the crashed plane were alive. The fact that they were, and that they remained so, was solely due to the promptness and efficiency of the C.A.P., and it was nothing to the discredit of A.R.s. that its junior partner got there first. In a case like this one, that was its proper function.

C.A.P. in fact carried out the entire rescue, and the moment the situation was under control the Operations Officer at Moab was able to send a signal for the recall of the two amphibians, the SC-47 and the helicopter, long before they had completed their journey. In this way a great deal of time and useless effort was saved.



23 C.A.P. flyers know every inch of the ground over which they fly—and sometimes this means the difference between life and death for a lost airman

This story shows the Civil Air Patrol at work in a way that no listing of facts and figures about their activities could do. Things like human courage and endurance play such a large part in all the work of Air Rescue, that perhaps the truest picture of the organization as a whole can be given by picking out further true incidents to illustrate, each in its own way, different aspects of its work. One side, that of escort duty, has already been covered in this way in the story of the Greenland fiord.

The flooding of the Kan and Missouri rivers in Kansas in 1951 provided S.A.R. with a chance to show their paces in a different way and they were certainly not found wanting.

Hundreds of farms and villages were isolated and at once Air Rescue Service planes were on the scene, coming from all parts of the country. Lifeboats and life rafts were dropped and, a little later, tons of food, clothing, medical supplies and other necessities were parachuted from the sky to small communities that were stranded above the level of the floods. And meanwhile, of course, helicopters had been busy, picking up survivors from out of the flood waters themselves and from the roofs of buildings, trees and anything else to which they had managed to cling. Just how many lives were saved then it is impossible to say. Nobody had time to count, but it certainly ran into thousands.

Very much the same kind of thing happened in Holland, where the old 9th U.S. Air Rescue Group,

flying SH-19 helicopters, picked up hundreds of people stranded when flood waters broke through the dykes in 1953. The pilots were able, too, to carry out the unusual task of chasing cattle too stupid and frightened to realize that they could safely move



24 *An SH-19 of the U.S. Air Rescue Service carries out a rescue during the Kan and Missouri river floods in 1951*

from comparatively shallow water on to areas of dry land. And one helicopter from the 66th Squadron rescued the entire 115 inhabitants of a village in a series of flights ranging over seven hours.

U.S. Air Rescue Service units never quite know what is coming next. It may be a flight over the Rocky Mountains, over desert, or a call for help at

sea. The Albatross can meet most needs, for it can come down on both land and water, and it can carry a heavy load over a long distance. Where it cannot operate, a helicopter usually can. But if even a helicopter cannot, there are the specially trained parachute jumpers.

Very few rescue jobs are carried out with the *apparent* ease with which Rescue men do perform them. Such smooth and easy-seeming working only comes from constant practice, training and then retraining all the time—that and the ever-present spirit to do better and so be up-graded as a crew member. Everything must be tried in the worst possible conditions so that these same conditions can be overcome smoothly in an emergency. Landings and take-offs must be practised by day and by night, cross-wind and with the wind, by instruments alone and under every condition of loading.

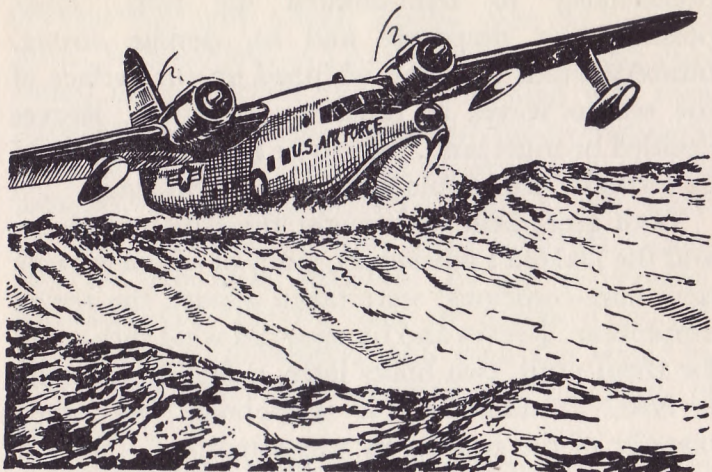
For instance an Albatross amphibian pilot must learn to recognize the best landing areas from above the water before he tries to land. He must be able to assess the depth and the state of the surface—not simply whether it is calm or rough, but just how high the waves are and the strength and direction of any currents there may be. And when he does get down, he must have a thorough knowledge of seamanship, for he may be required to guide his craft on the water in the most difficult conditions.

Captain Kendrick U. Reeves, for instance, certainly knew what he was doing when he flew his Albatross to the help of a British Dakota which had been forced down in the Mediterranean Sea in 1952. Most of the thirty-two passengers, among them women and children, were in the water and hanging precariously to semi-inflated life rafts. Their position was desperate and so, despite strong, blustery winds that had whipped up the surface of the sea to waves at times ten feet high, Reeves decided he must land, though he knew that it would be virtually impossible for him to get off again.

With great skill he brought the Albatross down and the Dakota's passengers, many of whom were by now semi-conscious, were taken aboard the rescue amphibian. Reeves and his crew did what they could for them until, two hours later, a British destroyer arrived. It launched a whaleboat, but when transfer of the passengers was attempted, the only result was damage to the Albatross. So Reeves ordered that two of his own life rafts be inflated and these, with the passengers aboard, were successfully towed to the destroyer.

By now, with the wild heaving of the seas, both Reeves and his crew were seasick, but he refused to abandon his damaged plane. He stayed with it during the whole of the three days which, due to a series of mishaps, it took to tow the Albatross back to Benghazi on the north coast of Africa. Reeves was awarded the Cheyney Medal for this exploit.

Another instance of a rather similar kind occurred when a fishing boat was in trouble and sinking off the island of Hawaii in the Pacific. An Albatross crew located it and the pilot managed to get his machine down in spite of heavy seas. The rescue of the five members of the fishing boat's crew re-



25 *The Albatross was taxied forty-five miles through the gale to harbour at Hilo*

quired a considerable feat of seamanship in itself. But once this had been carried out, it was quite obvious that, with the extra load, it was far too rough for them to be able to take off again. So the pilot of the Albatross taxied his machine forty-five miles through the gale to dock at Hilo. Forty-five miles in such conditions would have been a full-time job for the crew in a boat of comparable size to

the Albatross, and which had been built for the job. In the amphibian, it must have been a nightmare.

Yet another pilot of an Albatross, finding that one of his propellers had jammed in reverse pitch after landing in the open sea, *backed* his machine for twenty-five miles to the shore. Seamanship indeed!

It would be impossible to give a full picture of U.S. Air Rescue both at home and abroad in the space of one chapter. All that has been covered here is an outline of its working with some examples from real life. Later chapters cover in a great deal more detail other aspects only mentioned so far. They will help to build up the complete picture.

The Planes and Equipment of the U.S. Air Rescue Service

In the U.S. Air Services during the Second World War and immediately after it, there was, as in the R.A.F., no plane specially designed for Rescue. In an emergency, almost any type of aircraft—bomber, fighter, transport or light plane—was pressed into service. And even after the U.S. Air Rescue Service became an officially recognized

force, it was a question of modifying those machines already available.

These were, not unnaturally, mostly obsolete war planes. During the first ten years of its life, A.R.S. used in one way or another no fewer than eighteen types of machine, ranging from the tiny L-13, which could be converted to a flying ambulance with space for two litter patients, to the huge, twin-motored Curtis Wright C-46s with a loaded weight of 45,000 lbs., and from the twin-boomed Fairchild Packet to the Consolidated Catalina flying boat. In the far north the hard-working Noordwyn C-64A monoplane was equipped with floats or skis to match the conditions there, while during the Korean War the tiny Sikorsky H-5 helicopter, fitted with a rescue hoist and amphibious pontoons, lifted men from the sea and from behind the enemy lines until eventually it was replaced by the more modern SH-19.

One of the earlier machines that took less converting than most was the Douglas C-47 cargo and troop-carrier, military version of the DC3, and affectionately known to A.R.S. crews as the "Gooneybird". It is still in use, though being rapidly replaced, and it is often employed to carry supplies and equipment to advance bases of operation. The normal crew consists of a pilot-commander, co-pilot, navigator, flight engineer and radio operator. The Gooneybird can also be used as a "drop" plane for teams of Rescue para-

chutists, or for dropping the A.R.K. rescue kit (something like the Lindholme Apparatus of the British Search and Rescue) to sea survivors. The C-47 is probably one of the most remarkable transport machines ever produced—the Dakota is one version of it—and some 10,926 were built altogether, though not, of course, all for the American Air Rescue Service!

At least part of the reason why so many types were tried out by Air Rescue was that they were looking for the ideal, and it has taken many years of research and development to produce the answer. Even today there is still room for improvement, though the machines now used have achieved remarkable and at times seemingly impossible results.

Taking the helicopters first, the U.S. Air Rescue Service has standardized the Sikorsky SH-19, which in all but minor respects is the same as the British Whirlwind. It has a range of 370 miles and can lift eight walking casualties or six litter cases to safety.

The normal SH-19 crew is made up of a pilot-commander, co-pilot, and either one or two aeromedics—flyers specially trained in first-aid—or pararescue men. The equipment carried aboard varies, depending on the area in which the helicopter is to operate, but usually it consists of emergency equipment, medical kits and signal devices.

The hydraulic-electric hoist is fitted with a sling

attached to 100 feet of steel cable. The standard A.R.S. planes can be recognized by wide bands of yellow edged with black on wings and fuselage of normal aircraft and on the fuselages of helicopters.

In addition to their purely military work, SH-19s have flown many hundreds of hours to assist civilians stranded by floods in Europe, Japan and North and South America, by earthquakes in Africa and Greece, and by avalanches in Switzerland. Two A.R.S. SH-19s were the first helicopters to fly the North Atlantic from the United States to Europe in 1952.

Here is the story of a remarkable rescue by a SH-19 and its crew.

Lieutenant Thomas H. Rothwell of the U.S.A.F. had been on target-towing duty some fifty miles north-west of San Francisco Bay, when his plane, a Lockheed T-33 jet, caught fire. He bailed out and landed in the sea, while the pilots of the other jets, who had been firing at the target he was towing, sent out a call to A.R.S. at Hamilton airfield.

When he had come down safely, Rothwell inflated his Mae West, released an orange dye marker and prepared to make the best he could of the situation—which was not a comfortable one. The water was very cold and the waves at times were up to fifteen feet high. As they threw him around unmercifully he was hard put to it to avoid swallowing great mouthfuls of the bitter salt water. The stinging spray lashed into his eyes and altogether he would not have had a very happy time of it,

even if rescue operations had gone smoothly—which they did not.

Quick as they were in getting away from Hamilton, Captain John D. Heller, the pilot, and his crew, Captain Leroy Kohl and Airman First Class Vester L. Wrigley, met strong headwinds, as they set out over the Pacific in their SH-19 helicopter. It took them something like an hour and a half to reach Rothwell.

By then the pilot's condition was serious, buffeted constantly as he had been by the angry sea and weakened by the cold. Two Albatrosses which had arrived on the scene before the SH-19 were circling above him, but it was too rough for them to be able to land.

Heller brought his machine down to about twelve feet above the unfortunate Rothwell, and under his captain's orders Wrigley lowered the sling. As it came down, Rothwell just managed to grab it, but could do no more. He was quite unable to pull himself into it so that it would support him properly, and it was too late now to lower one of the helicopter's crew to help him. This would have involved winching up the sling and Rothwell was already clinging to it desperately. The only thing was to try to pull him up as he was and hope that he could keep his hold.

But the winch refused to function.

Heller and his two companions tried everything, but to no avail. And then Rothwell, in moving one

of his hands, somehow managed to knock the hook connecting the sling to the hoist cable. The two parted company, Rothwell fell back into the water, and the sling floated away out of reach.

Then, to pile disaster on disaster, a dinghy that was dropped next refused to inflate.

There was only one thing for it after that, Heller decided. He would have to bring the helicopter right down to the surface of the sea, waves or no waves.

Very cautiously, and with uncanny skill when one remembers how such a machine handles in stormy weather, he brought her lower and lower, till the seas were whipping white spray about the landing gear and the bottom of the fuselage.

Wrigley was ready and, holding on with one hand, he leaned far out from the SH-19's open doorway and at last managed to grab hold of the almost unconscious Rothwell. However, it was more than he could manage to pull him aboard and finally he slipped from Wrigley's grasp.

Once more Heller manipulated the machine into position for another try, and this time Wrigley managed to slip a rope round the jet pilot's shoulders. Heller opened the throttle and slowly the helicopter began to rise. But somehow the rope slipped until it was in danger of strangling Rothwell—and so down they had to come again.

A third time the SH-19 dipped and Wrigley tried something different. He secured the rope round



26 *Very slowly the helicopter laboured up with its human burden dangling by one arm*



PLATE 12 Crewmen of a Douglas Rescuemaster release an A.R.K. kit to survivors in the water below



PLATE 13 *The newly developed MA-1 kit, officially called the "A.R.K." (air rescue kit)*

Rothwell's wrist. It was now or never. Rothwell could not survive much longer.

Slowly, very slowly, the big helicopter edged up once more with its human burden dangling by one arm thirty feet below it. But what was to be done then? With the winch out of action, there was no chance of getting Rothwell up into the cabin. The only possible thing was to find a ship of some sort to which he could be lowered.

Heller radioed to the Albatrosses, which were still standing by, and was given a bearing. Twenty minutes later, a twenty minutes during which the rope on Rothwell's wrist slipped alarmingly, he was lowered gently to the deck of the Navy sea-going tug, U.S.S. *Chickasaw*.

Mission completed—but perhaps a brief word should be said in conclusion. This story was exceptional in two ways. First, in the courage and skill of the rescue crew, but also because it is a rare thing for a helicopter's winch to fail and equally rare for a dinghy to fail to inflate. Here was a chance in ten thousand, a rescue where both failed together, but the U.S. Air Rescue Service was still able to pull it off.

A comparatively recent addition to the U.S. Air Rescue Service fleet of planes is the Vertol SH-21B helicopter. This is completely different from any of the other helicopters, either in A.R.S. or the R.A.F. Search and Rescue, in that it has two rotors arranged in tandem, one at each end of the oddly-

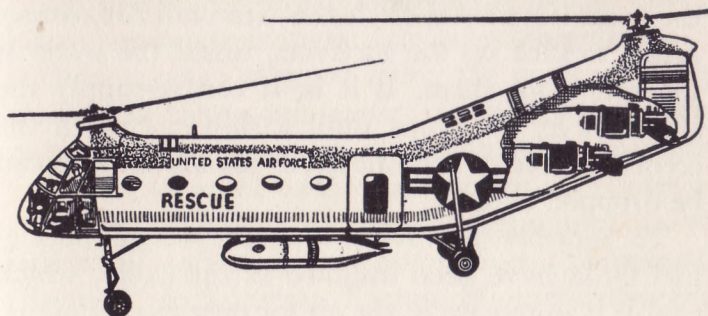
shaped "bent" fuselage. It has a remarkable weight-lifting capacity, for it can take twelve litter patients or twenty seated survivors in its cabin.

The fixed wheel landing gear has provision for the fitting of pneumatic floats, which make possible landings on soft snow, swamp land, water or, of course, on normal hard surfaces as well. The engine is a single 1,425 h.p. Wright (contrast this with the 520 h.p. of the British Sycamore) and when fitted with auxiliary tanks carried below the fuselage the SH-21B can stay in the air for seven hours—over twice as long as the SH-19—and so can play a much more effective part in the search side of Rescue work.

But, startling as these figures are for a helicopter, a greatly improved version, the YH-21D, is undergoing tests and may soon come into operational use. This will have two General Electric gas-turbine engines mounted in the tail section, in place of the single piston engine of the SH-21B, and the fact that there are two engines will, alone, give a greater sense of security to crews undertaking long searches over the sea or mountainous country. The all-round performance will be a great improvement on that of the SH-21B, and the very short warm-up period needed for a turbine will mean that the machine can be up and away in less than half the time required for the piston engined version. And a final and most important advantage is the provision of an automatic pilot, which will enable it to be flown "hands off," something which is impossible in other

helicopters, which will make it far less tiring for the pilots.

The lifeboat-carrying versions of the old Flying Fortress and Superfortress have now been replaced by a machine which has entered the service of the U.S. Air Rescue Service comparatively recently, the Douglas SC-54 or Rescuemaster. This machine is basically the same as the DC-4 passenger plane and the military C-54 Skymaster cargo and



27 *The installation of the two gas-turbine engines in the Vertol YH-21D, the latest development of the SH-21B*

troop-carrier, but for Rescue work it has been more than merely adapted, as so many aircraft used to be. Instead the basic airframe was stripped right down and the plane re-designed internally from scratch, so that it became, in effect, a new type which will supplement the work of the Grumman Albatross amphibian. With a greater range and endurance than the latter, it can operate farther afield from its base, and its higher speed and the additional safety

provided by its four engines make it particularly suitable for long-range patrols of a precautionary nature—in other words, standing by in the air during aerial exercises over the ocean, which is something that makes up a large proportion of the total in the Air Rescue Service activities.

The Rescuemaster carries four rescue kits, which means that it can save the lives of one hundred and sixty people in one operation. And after dropping the packs it is able to circle the area until Albatrosses arrive to pick up the survivors, unless the water is too rough for them. If it is, it can re-supply the survivors by air drops until a ship can reach the scene. In case of extreme need, pararescue men can be dropped as well.

To increase the Rescuemaster's range, special fuel tanks have been installed in the cabin, which enable it to remain in the air for over twenty hours. The fuselage is crammed with the latest electronic and communication equipment for navigation and search and rescue work, and an automatic pilot is carried as well.

For the comfort of the crew there is a galley and two bunks for those off watch, and for northern operations in the extreme cold there are floor-level heaters. De-frosters are fitted to the special transparent scanners or lookout blisters positioned along the sides of the machine to enable the crew to search the ground directly under the aircraft from a height as low as 700 feet.

As the Rescuemaster may have to land in many places other than properly prepared airfields and in any sort of conditions from snow to fog, of special importance are the new anti-skid brakes. These have small generators in each wheel hub, which detect a skid at its outset and relay the information to an hydraulic metering device. This in turn automatically releases the brake pressure as the skid develops, and re-applies it when the skid is checked.

Another recent development on the Rescuemaster is an ingenious pneumatic flare-launching chute.

Over a range of 3,300 miles, the crew normally carried is pilot-commander, co-pilot, navigator, radio operator and two pararescuemen-observers.

Finally we come to the real Jack-of-all-Trades of the U.S. Air Rescue Service, the Grumman SA-16 Albatross twin-engined amphibian, nicknamed "Dumbo" by its crews. Though primarily designed for coming down on lakes, rivers, coastal waters and the open sea, and for normal landing on firm ground, the machine is often modified by A.R.S. by the addition of a special sprung skid under the keel and small skis under each wing float, so that it can land or take off on ice or snow. In the northern territories, it quite often has to.

It is also able to take off from small fields and other even more hazardous situations by the use of four JATO (Jet-Assisted-Take-Off) bottles which can be fitted, two on each side of the hull. Reversible-pitch propellers help to make the landing run a short

one, either on land or water, and help a great deal with manoeuvring on the latter. So, altogether, the Albatross can carry out a rescue almost anywhere and can search effectively with its electronic and human observer eyes over its 2,500 mile range. For greater distances, long-range tanks can be fitted externally under the wings.

The crew is made up of pilot-commander, co-pilot, navigator, flight engineer, radio operator, and a pararescue team. It can carry ten to fifteen survivors, depending on the number of crew already aboard, weather conditions, and the size of the place of take-off. In conditions where a landing is impossible, it can air drop the A.R.K. rescue kit to provide temporary shelter for forty sea survivors. And again, when an Albatross has succeeded in getting down, and take-off, even with the assistance of JATO is impossible, the machine has been used to provide a safe, floating platform, shelter and medical care until other means of rescue can arrive. Its strong construction has stood up on occasion to the most incredible buffeting from wind and weather.

Recently the original Albatross SA-16A has been modified to become the Grumman SA-16B. The new version has replaced the old and, though the SA-16B is very similar to its sister machine in appearance, it has a greater wing spread and larger tail surfaces. The modifications have added something like half-a-ton in weight, but in spite of this the cruising speed is higher and the cruising

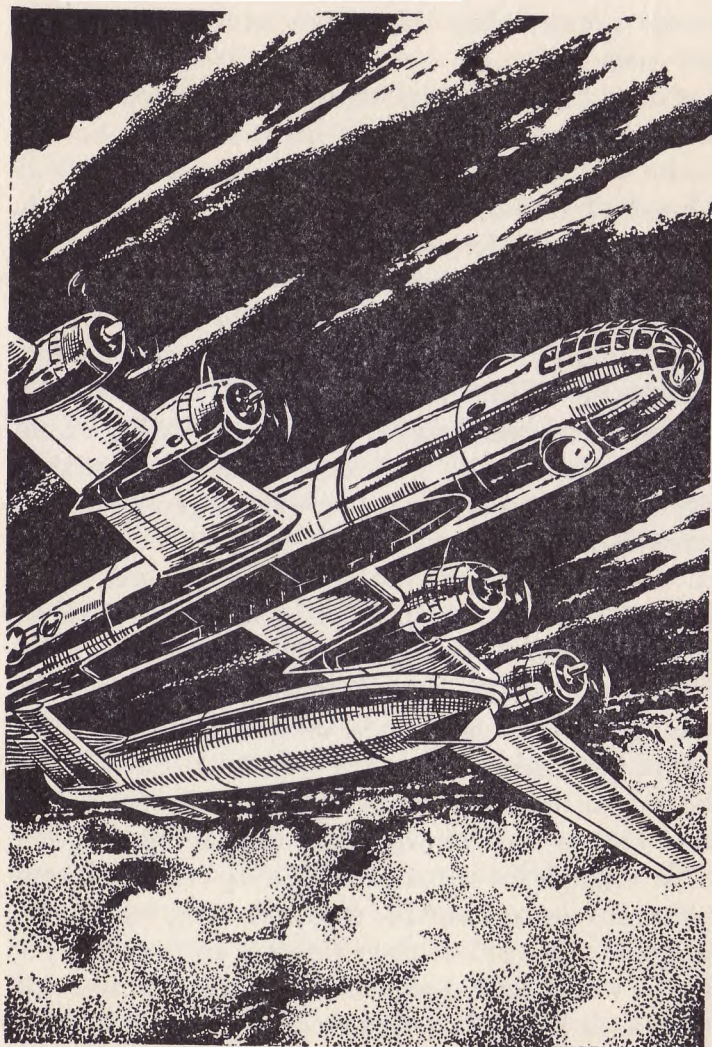
range greater. Big things are expected from the SA-16B.

Some of the special equipment carried by the U.S. Air Rescue Service in addition to the normal radio, radar, and so on, has been mentioned briefly already, but many of the items deserve a closer look.

The aerial lifeboats, for instance, up to thirty feet long were, until recently, dropped down to survivors at sea, supported by three 48 foot parachutes, and later by a single gigantic 100 foot parachute. They were equipped with enough supplies and comforts for twelve men to live on for two weeks on full rations and were of shaped plywood construction. Two five horse-power engines gave them a range of 500 miles.

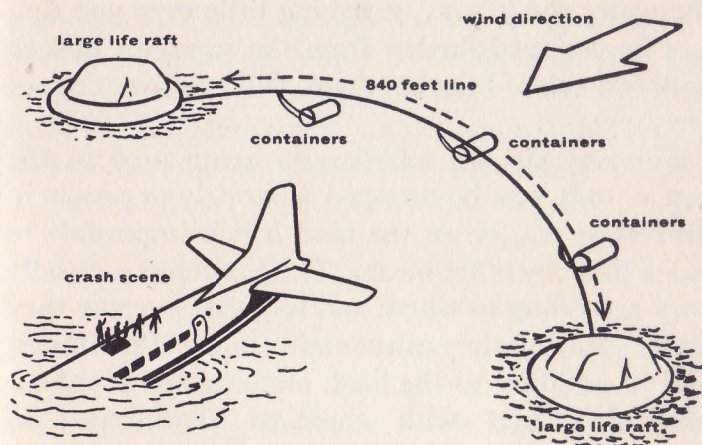
Since they weighed something like a ton and a half, great care was needed in dropping them so that they did not land on top of the survivors. Apparatus similar to a bomb-sight was used for aiming, but in high winds, even with the sight, the whole operation was very difficult. Though the boat must miss the survivors and their raft, if they had one, it had at the same time to be dropped close enough for them to be able to reach it if they were in an exhausted state. It was, of course, dropped up-wind of their position in the water, so that it would drift down towards them, but it would be of little help if it passed by out of their reach.

The MA-1 kit carried today by the Rescuemaster and the Albatross of A.R.S. in place of the bulky life-



28 *An aerial lifeboat being dropped from a modified Superfortress of the U.S. Air Rescue Service*

boats is appropriately known as the A.R.K., which is short for Air Rescue Kit. It consists of two 20-man inflatable life rafts and three survival kits in separate containers, which can be dropped to survivors in the open sea. The two rafts are connected by 840 feet of floating line, along which the three survival kits are spaced at equal intervals. Like the



29 *How the A.R.K. drifts down to surround a crashed airliner*

lifeboats, the A.R.K. is generally dropped upwind of the survivors, the rafts being automatically inflated as they leave the aircraft.

Since the rafts float high in the water and the survival kits are practically submerged, any wind there may be causes the rafts to drift past the survivors on each side, the survival kits lagging

behind, until the men in the water are encircled by the floating line. All they have to do is to catch hold of the latter, haul the rafts to them and then pull in the survival gear. Tests have proved that the A.R.K. can give complete protection in all but the most extreme arctic conditions.

The lifeboats could accommodate only fourteen people. By reason of the way it works once it has hit the water the A.R.K., weighing little over 300 lbs., can be dropped farther from the survivors and so with less risk of injuring them, and can take aboard forty people.

Survival kits, in addition to being used in the A.R.K. unit, can be dropped separately to people in distress at sea, or on the land if it is impossible to reach them by other means. Their contents naturally vary according to where and for what purpose they are needed, but they can contain among other things, and in addition to the food, clothing and blankets, survival jackets with chemical shark-repellent, dye markers for staining the sea yellow to enable the search aircraft to spot them easily, smoke and light flares for the same purpose and for enabling the searcher to gauge wind speed and direction if he wants to land, matches, and a .30 calibre carbine with cartridges if a survivor on land is likely to want to shoot his own food!

There may also be an automatic code keyer, which can be connected up to high-frequency transmitters—perhaps in the survivors' crashed

aircraft—and which will send out continuous distress signals over a pre-set frequency. This is something that might well be needed if the search plane which dropped the survival kit lost contact with the survivor for some reason, so that he had to be found again.

Another item, called rather formidably the AN/URC-4, is a small transmitter/receiver, which sends out and receives high-frequency signals over a limited distance, on which a searching aircraft can home if a survivor is lost in a fog, dense jungle or other similar conditions which make him difficult to see from above, much like the British SARAH.

Perhaps the most spectacular rescue technique and the one which, of all of them, demands the highest training, is pararescue—the jumping from a plane under almost any conditions of weather to save a life. To paramedics—U.S. Air Rescue Service personnel, it may be remembered, with special training in advanced first-aid and

survival techniques—this is just part of their job. Doctors who have seen them in action have said that “To do more than these men can do, you would have to parachute in a whole hospital.”

Some idea of the toughness of pararescue training can be gained from the following account of two of the men who jumped to a crashed U.S. Navy patrol bomber on the Greenland polar icecap, way up beyond the Arctic Circle. In that terrible cold there was little chance that anyone could have survived the crash. A landing, even by helicopter, was impossible, but the slim chance that even one of the bomber's crew might be alive was enough for Sergeants Elliot Holder and Robert Christensen. To them, as to all men who carry out air rescue, there is always a survivor until it is *proved* that there is not. So down they went.

A howling, biting gale nearly dragged Holder to his death over a 1,900 foot precipice when he landed, and he and Christensen soon afterwards found that they had, indeed, jumped in vain. There was nothing they could do for the bomber's crew, but now the secondary problem arose as to what they could do for themselves. There was no hope at all of their being picked up while the gale lasted—and last it did, for eleven days, with winds at times of over 100 miles an hour. On the twelfth day the wind at last dropped and the two men were picked up by helicopter very little the worse for their adventure!

A few years ago, shortly after midnight on February 13th, with the temperature twenty degrees below zero, two other paramedics jumped from their Air Rescue SC-47 near Goose Air Base in Labrador. Below them was the burning wreckage of a giant B-36 six-engined heavy bomber which had crashed



30 *Flames from the burning B-36 heavy bomber lit the dark night sky*

shortly before, and flames from it lit the dark night sky and threw long, moving shadows over the snow in which it lay. Round the wreckage the heat had melted it, but the two paramedics landed in such deep drifts about three hundred yards away that it took them three hours to struggle through to the scene of the crash.

But it was certainly worth it, for there were fourteen survivors and the two men set to work at once to treat the injured. They worked on through the rest of the night until, at dawn, helicopters came to ferry them all back to Goose Base.

Pararescue was again at work under arctic conditions when a crippled jet fighter crashed into the freezing waters of Cook Inlet in Alaska. It was a solo effort this time.

The jet pilot was in a sorry plight, and quite unable to help himself, but A/IC Howard C. Griffus of the U.S. Air Rescue Service was at hand to jump, while a helicopter hovered overhead. It would have been more comfortable for Griffus to carry out a double lift, so that both he and the pilot could be hoisted up on the winch together, but this would have been a comparatively slow process and it was clear that, if the pilot's life was to be saved, seconds counted. And so, without a thought for himself, Griffus manipulated the now unconscious man into the helicopter sling and gave the signal to hoist away.

A second helicopter was by now circling the spot, but it had no hoist or other means of lifting the pararescue man from the numbingly cold water. All it could do was to keep him in sight until an Albatross arrived and landed and picked him up.

No one of these three short accounts can give any real picture of what the men involved faced, but they do at least show Pararescue well and truly in

its element. Such men form what has been called an élite corps within the framework of the U.S. Air Rescue Service, but they do not come by their distinction easily. They must be precision parachutists, highly trained in first-aid, and experts on survival under any conditions, for as often as not their job only begins when they reach the ground.

A man who wishes to become a paramedic must, in the first instance, go through a very stiff series of tests, both physical and mental, the latter to test his intelligence, coolheadedness and ability for quick thinking in an emergency and his general suitability as a *person* for the job. Not every applicant, however keen, has the right temperament (though keenness counts for a lot), and the examiners must be sure that he comes up to their very exacting standards in every way.

Once this first stiff hurdle is over and the man has been accepted, he is sent to the Army Airborne school in Georgia. Here, instruction in the technique of parachute jumping is given. Five "live" jumps make a man a qualified parachutist, though his real experience will be gained only later when he is on the job, and he may have to plan and carry out landings under the most difficult conditions imaginable. But now at least he knows the rules.

After the parachute school the trainee goes next to the School of Aviation Medicine to go through the Air Rescue Specialist school on a four week's course. During this he must learn not only how to treat



PLATE 14 *A Grumman Albatross of the U.S. Air Rescue Service takes off from the snow at Beluga Lake in Alaska*



The JATO bottles used to assist take-off in difficult conditions can be seen quite clearly in this picture of a U.S. Air Rescue Service Albatross



PLATE 15 *A U.S. Air Rescue SH-19 helicopter hoists survivors to safety from a wrecked Army tug*

injuries and certain illnesses, but he must in addition be able to find out just what those injuries are, so that he can treat all but the most serious and complex in the correct way. Those that are beyond him he must learn to describe accurately over the radio so that a doctor at the other end can give instructions as to what has to be done. And these instructions a paramedic must then be able to carry out.

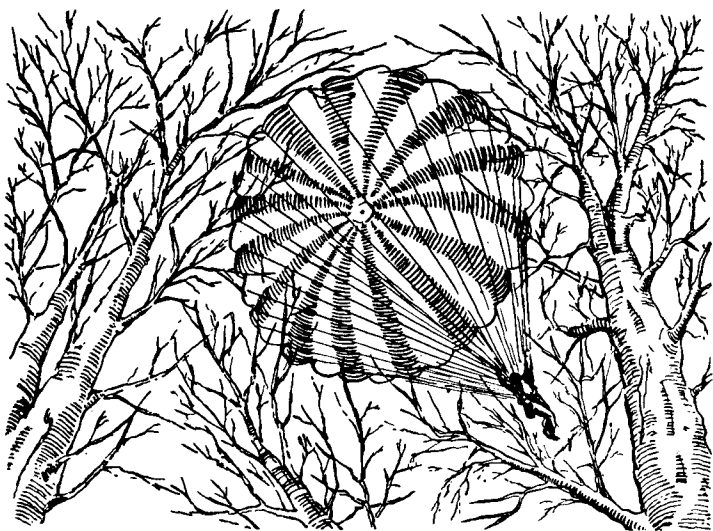
Since he has to use a radio he must understand its working, and lastly he must know all the normal drill of the Air Rescue man—the helicopter lift and double lift and so on.

Most of the present pararescue men have also been through a course at the Survival School, which included coastal survival (survival in the water), desert survival in the Mojave Desert in California, and they were taught how to survive and travel under mountain and arctic conditions in the Rocky Mountains. This school has now been closed, but the value of its training is well shown in the case of a paramedic who jumped high on a mountain side to go to the aid of a man who had broken his leg. With all his practised skill he treated the man's injury and got him down the mountain to where a ground rescue party could take him over and rush him to hospital. And the paramedic had to go with him for, when he first landed, he had broken his own leg!

A paramedic may have to jump so that he has to

land among trees, in water, in a narrow, rocky valley, on a mountainside as in the case above, or in a swamp. Into everything, as they say, but the kitchen sink.

He may, in fact, have to go down in an area where fog or mist allows him only the briefest glimpse of



31 *A paramedic may well have to make his jump into trees*

what lies below. In most cases the mere fact that a jump rather than a helicopter landing is being made means that there are more than the usual difficulties ahead, and accuracy is of the most vital importance if the jumper is to escape injury to himself. A pilot parachute can be dropped first to estimate the strength and direction of the wind, and of course, a

standard parachute can be steered within certain limits by an expert jumper if he pulls on the lines that support him to spill some of the air out of the required side of the 'chute. Experiments in this art are going on all the time, and a new type of highly steerable parachute, specially developed for para-rescue work, is being introduced.

But of course, even with this, much practice is needed. Competition between the pararescue teams of the American Air Rescue Service squadrons is keen. Yearly contests are held in which the men compete against each other in water, tree and open field drops. They have to try to land from a given height on extremely small target areas—strips of canvas on the ground, or a dinghy in the water, and the standard of accuracy is, as might be expected, extremely high.

Nevertheless, the real competition comes when the pararescue men are up against the forces of nature when they are on the job. Then everything may be against them, but again and again they win through. Take, for instance, a case which occurred one mid-winter in the Sawtooth Mountains of Idaho.

High up in their cabin on a mountain pass, Mrs Gene Jackson and her baby were both critically ill. The situation was a desperate one for, by the time word of their plight was got through to the Air Rescue Service Squadron which was at McChord Air Force Base, Tacoma, a blizzard was blowing. Icy winds swept the mountains, bringing with them

snow that piled great drifts in every hollow of the rocky slopes. The Jacksons' cabin seemed completely cut off from the outside world, for the storm was too wild and the snow falling too thickly for it to be possible for a plane to take off.

But the Air Rescue Service was not to be beaten and mobilized a ground rescue team to attempt the seemingly impossible task of reaching the lonely cabin. They set out and battled on upwards, floundering shoulder high in the deep drifts. But, well trained as they were, they found that the equipment they had to carry—a portable radio, food, medical supplies—hampered their progress. Even without it their pace would have been painfully slow.

The storm grew worse and the drifts more formidable and at length the men were forced to admit that they were fighting a losing battle; the sheer depth of the snow was too great. If it had been physically possible to go on, they would have gone, but reluctantly their leader radioed back to base that they would have to give up the attempt.

Then suddenly the sky began to clear a little and the snowfall eased, but enough had fallen for this to make little difference to the men on the mountain-side. But back at McChord Base, where their news had been received with dismay, things began to hum. There was a chance now, if only a slim one, that a plane could get through. In such weather, for it was still blowing pretty hard, a helicopter was out

of the question, and in any case it was extremely unlikely that one would be able to land. Pararescue was the obvious answer.

Quickly a doctor, paramedic Staff Sergeant John E. Robins and their pilot assembled and soon their plane was rising into the murk above the airfield and heading for the mountains. The winds and the tricky air currents above the steep slopes threw the machine about without mercy, bucking it like a wild horse, but the crew steadied themselves in their seats and buckled on their harness.

The pilot, fighting with the controls, could yet spare one eye for the ground below. Sometimes clouds and the storm blotted it out altogether, but there were breaks every now and then when he could see the ground. Soon the searching eyes of Robins and the doctor were added to his and they reached the area of the pass where they knew the cabin to be.

Suddenly the pilot tensed and gestured downwards. There, half-buried in the gigantic drifts, was the lonely cabin. There was no sign of life about it but there could be no doubt that they had reached the end of their journey.

Carefully the pilot circled, studying the wind direction, and then made his run in. Armed with their medical and other supplies and their portable radio, Robins and the doctor jumped and landed safely. Then they fought their way through the snow to the cabin to find that they were only just

in time. With luck they could save the lives of Mrs Jackson and her child, but it would be a near thing.

They set to work at once and at length the crisis was past. The patients were made as comfortable as was possible, but better medical facilities were obviously needed. The easing of the storm had continued and the two men now reckoned that a helicopter might be able to reach them—if it had somewhere to land.

They radioed their request back to their base and then, taking it in turns, while one kept an eye on Mrs Jackson and the baby, the other went outside the cabin and began to beat down and flatten a small area of the surrounding snow. It was heavy work and they relieved each other at frequent intervals, but at least it kept them warm!

At length they judged that they had prepared a firm enough surface, and they marked its boundaries with some old boards. These, they knew, would stand out clearly from the air against the surrounding whiteness.

Then the whirling rotor of the helicopter was above them, descending slowly and carefully on to the chosen spot. Within minutes it was off again and Mrs Jackson and her baby were on their way to hospital.

Another mountain jump, in better weather conditions but even more hazardous, was carried out by Staff Sergeant Charles Chapman and Sergeant Walter Atkins of the U.S. Air Rescue Service stationed on Ladd Field at Fairbanks in Alaska.

The men they set out to rescue were Bud Branahan and his three passengers who set out on a hunting trip in Branahan's Grumman Widgeon.

The Widgeon, a smaller, civil version of the Air Rescue Service Albatross, was flying through a canyon in the Brooks mountains, towards Loon Lake, where the pilot planned a landing. But before it could get there down-draughts caught the heavily loaded plane and it crashed on a narrow, sharp-edged ridge that ran between two mountain peaks. On one side of them the ground sloped away pretty steeply, but on the other, to the north, after a short distance there was a sheer cliff going down some 2,000 feet. A spot in fact, to turn a pilot's hair white!

To make matters worse, three of the men in the plane were badly injured, two with broken backs, and the pilot with his jaw broken in four places. The fourth man, whose name was Guse, came off comparatively lightly with only a torn knee ligament, but he was badly shocked.

Somehow Branahan and Guse got their two companions out of the wrecked Widgeon and made them as comfortable as possible. Luckily the plane had not caught fire so Branahan then went back to it and sent out a call for help over the radio.

Back at Ladd Base A.R.S. went into action as soon as the message was received, and an Albatross with Chapman and Atkins aboard set off at once. In the fine, sunny weather there was little difficulty in finding the wreck, but to get down to

it was another matter altogether. The site was well over 5,000 feet above sea level and the rarefied air up there would mean that parachutes would fall a good deal faster than they would at ground level. The narrow ridge, with its 2,000 foot drop on one side, was not the easiest place to aim for—quite apart from the fact that its surface was a mass of huge boulders and sharp, jagged rocks.

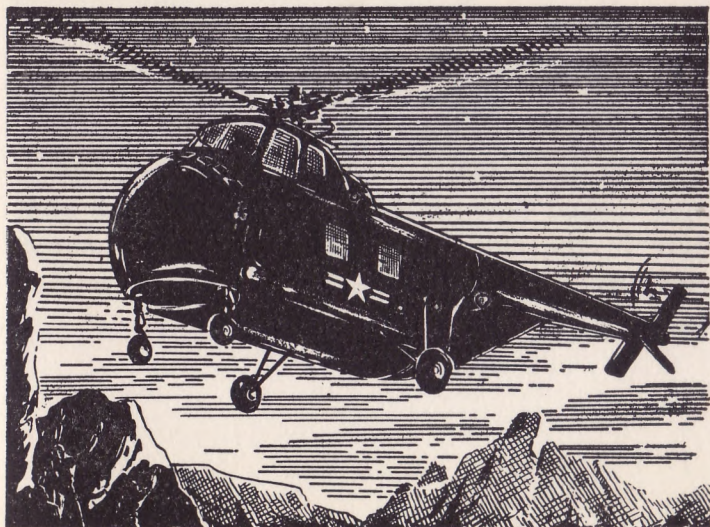
When the men on the ground realized that a jump was contemplated, they ignored their own plight and begged the two parachutists again and again over the radio not to attempt it.

However, Chapman and Atkins decided otherwise. A spotter 'chute was sent down first and showed that there was practically no wind. The two men picked their spot carefully and followed the 'chute on the next run. Almost before they knew it they were on the ground.

They landed on the side of the ridge nearest to the precipice and about a quarter of a mile from the wrecked Widgeon. This had been the only place that they could see that gave them any chance of coming down uninjured, but even so Atkins bruised his legs badly on some boulders.

All the medical skill that the two paramedics possessed was needed to tend the seriously injured crew of the Widgeon, and it was obvious that three of them, and especially the two with broken backs, needed skilled hospital attention and needed it quickly. A helicopter was the only answer.

It was asking the near impossible to expect one to come down in such a spot, but with the Air Rescue Service on the job this was achieved. Shortly before sunset Captain Gardner flew out from Ladd Field and set his machine down on the narrow ridge. Dr Charles Blackner was with him and the first of the injured was taken aboard the helicopter.



32 *On the last two trips, Captain Gardner had to land in that terrifying spot in total darkness*

At such a height and in that rarefied air, it was only possible for the helicopter to take one person at a time. But, unbelievable as it sounds, Captain Gardner made three trips altogether between the mountains and Loon Lake, on the last two of which

he had to land in that terrifying spot in total darkness. On the third trip much of the helicopter's fuel had been used up and so, with its load lightened, the doctor was able this time to go with his patient so that he could take charge of things once more at the other end.

Gardner offered to come back yet again for Guse, the only remaining member of the Widgeon's crew, but Guse, not seriously injured, would not let him. Instead he spent the night on the mountain with Chapman and Atkins while his three companions were being ferried from Loon Lake to hospital.

But at dawn Gardner was back for him, and as Guse looked down when the helicopter rose once more in the still mountain air, he saw the two sergeants calmly preparing their breakfast as they waited till their own turn came.

The United States Air Force is stationed at many points on the Pacific islands from Hawaii to the Philippines, and that means that the U.S. Air Rescue Service is there too. Many have been the advances in aircraft design and in navigational instruments in recent years. But there is still a frighteningly large number of miles to cover over

the water, and the engines of even the most modern of planes are not completely proof against failure. Nor is it unknown for them to get lost, and ships can get into trouble too. So A.R.S. is kept busy.

The Deputy Commander A.R.S. (Pacific), stationed at Wheeler Air Force Base in Hawaii, has under his command an area of operations of millions of square miles, which is a lot of ocean for his few squadrons to be responsible for.

Much of the time of the A.R.S. crews in the Pacific is spent on escort work, helping to guide disabled or lost aircraft to safety, and such flights are not regarded as anything out of the ordinary—as a rule. The 79th Air Rescue Service Squadron, at Anderson Air Force Base on the island of Guam, however, had one such trip that made the crew involved in it sit up and blink. They had intercepted a civil cargo plane that was in need of an escort and, over their radio, they asked how many people there were aboard. This is a perfectly usual inquiry, so that the crew of the Rescue plane can tell from the answer they receive just what they may be faced with if further troubles develop and the machine they are keeping an eye on is forced to ditch.

The reply, when it came, was far from usual.

“We have 1,808 passengers,” radioed back the freighter!

It was not until the two planes landed safely at

Guam that the rescue crew discovered that 1,800 of the 1,808 were monkeys.

Another squadron, the 31st, is based at Clark Air Force Base, sixty miles north-west of Manila, on the island of Luzon. This is the most northerly of the main Philippine Islands which, taken all to-



33 *A typical U.S. Air Rescue base in the Pacific*

gether, form part of a group with the East Indies. Its climate is tropical.

The Americans at Clark share the area in which the base is situated with the Negritas, a miniature and primitive Philippine people who fought as guerillas against the Japanese in the Second World War, and it is to a great extent due to the work of

the Air Rescue Service that the local population and U.S. Forces get on so well together. Many of the rescue flights have been made to aid Filipinos, as when several crews from the squadron skirted a typhoon to search for the Philippine freighter s.s. *Lepus*, which had sunk in the storm off Luzon. Eleven members of the ship's crew were rescued by drops made with the A.R.K. packs.

Another time a small Filipino girl, stricken with polio, was taken by the Air Rescue Service from Puerto Princesa to Manila for treatment, and the list of such cases could go on for a long time. But perhaps one of the most outstanding flights was the expedition to the aid of a seriously wounded native policeman in Palanan.

Palanan is a little village near the north-eastern tip of Luzon. There is no radio or telephone there, and no postal service. Also there is no doctor, and when the sole policeman, by name Mendez, received a serious gunshot wound in the stomach, there seemed to be little chance of saving his life.

The only thing possible was done and a runner was sent off with a message along the narrow track through a pass in the Sierra Madre Mountain range, heading for Ilagan, which was the nearest place of any size where help might be available. The fact that it took him three days to cover the forty miles of his journey gives some idea of the kind of country round about.

But even at Ilagan there is no hospital, and a call

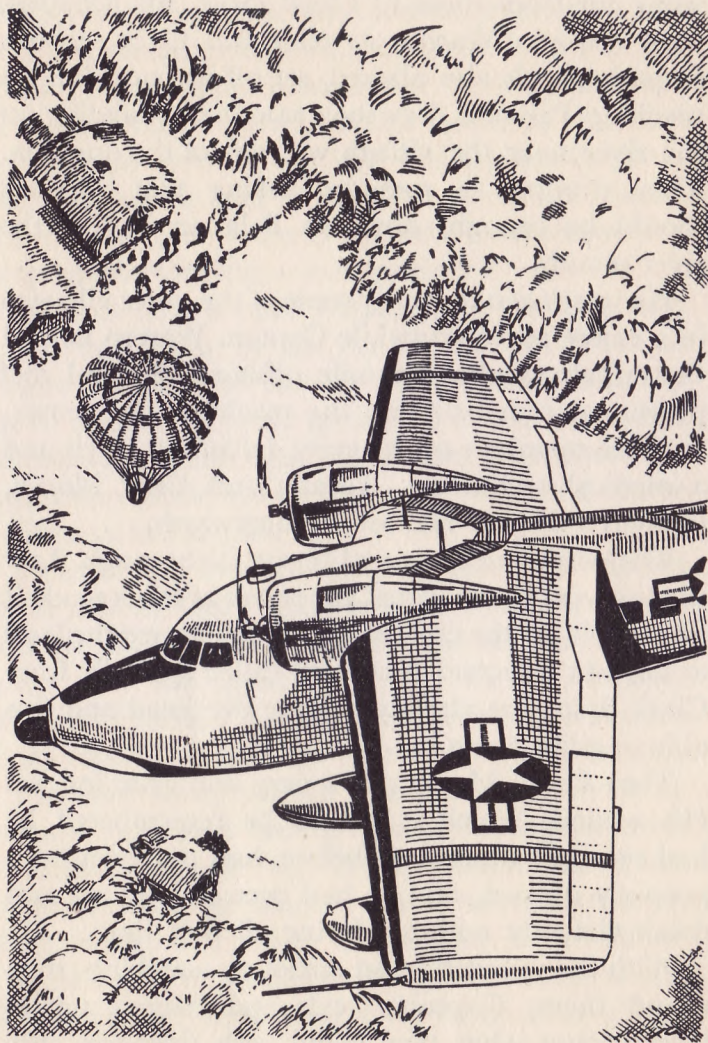
went out from there to Clark Field. An Albatross with Captain Warren as pilot and flight surgeon Captain Geyls also aboard, set off at once, but on reaching Palanan they soon saw that a landing on the river near the village was out of the question. They dropped a message, asking that Mendez should be brought down to Palanan Bay at the river mouth.

He was taken down by some of the other villagers in a canoe and meanwhile Captain Warren landed the Albatross about a mile offshore. A coral reef prevented him bringing the machine any nearer, so three members of the crew, including Geyls and a medical technician, Airman 2nd Class Moran, inflated a life raft and set off shorewards.

The wind had risen and it was fairly rough. Low as they were in the water, the waves at times made it impossible for the crew of the dinghy to see the land at all, but a second Albatross, called specially from Clark Base, was already circling overhead and was able to guide them in.

They found Mendez in a very bad state indeed. His wound, which it should be remembered he had received three days before, had not even been properly dressed, and he had been able to eat and drink virtually nothing during all that time.

With the villagers in an anxiously watching circle round them, Captain Geyls and Moran set to work, doing what they could with dressings and injections. But with their limited resources, all their



34 Soon a small parachute bearing the radio came sailing down

medical skill could not guarantee the saving of Mendez's life. Hospital treatment was needed quickly if he was to be pulled through, so the third member of the landing party, Sergeant Gimmer, gave a signal with his arms for the Albatross which had guided them in to drop a radio. It promptly made an approach run and soon a small parachute with the radio in its shock-proof container dangling beneath it came sailing down, much to the amazement of all but three of the watchers below.

Gimmer soon had it working and radioed the plane above that preparations should be made to receive the patient at Clark Base Military Hospital. The much longer journey to the civilian hospital in Manila, which was the more usual alternative, might in this case be more than the wounded man could survive in his present state. The Albatross passed on the information to Clark.

By now the sea was even rougher than it had been when the landing was made. The canoe in which Mendez had been brought down the river would have been swamped at once in the open water, and the cumbersome dinghy would take a very long time to cover the mile out to the plane where Warren had all this time been waiting. With help from someone who knew the bay intimately he might be able to get closer in. Such help was now available, though even with it it was a risky proposition.

But they decided to have a try and Gimmer set up a three-way radio link between his own set, the

one in the Albatross overhead, and Warren's machine. Then one of the native fishermen who spoke some English was able to give directions from the shore as to where the worst of the underwater reefs and shoals were situated.

Gimmer passed on the information to the circling Albatross which, in turn, could guide Warren. It was a terribly difficult business and depended on split-second teamwork between all the parties concerned. The misunderstanding of a single order or a delay in carrying it out, might well have meant the wrecking of Warren's Albatross, and it was no mean feat on his part to be able to manipulate it with such precision in those heavy seas.

But at length he was as near as it was possible to get. Mendez was transferred to the dinghy.

Despite the closeness of the rescue amphibian it took some twenty-five minutes of battling through the surf to reach it, during which time Geyls was once flung right over the side of the dinghy. He could not swim, but managed to scramble back on board.

Transferring Mendez to the wildly pitching Albatross was not an easy job when the little party did succeed in reaching it, but before long he was safely in the cabin and strapped down firmly on a stretcher to prevent his being thrown about more than could be helped. This precaution turned out to have been a wise move, for two attempts had to be made before, even with the aid of JATO bottles, the Albatross was able to get off the water. These

were anxious moments, but at last it was airborne and, with Captain Geyls and Moran working ceaselessly to keep their patient alive, Warren set course for Clark Field.

Within two weeks the tough little Mendez, after surviving an ordeal that would have killed most men, was back in Palanan, almost as good as new. Both he and the people of that primitive village, and indeed the people of the Philippines as a whole, will never forget what Warren, Geyls and all the others did that day.

But in addition to helping the Filipinos, flyers of the 31st A.R. Squadron figured in another and even more spectacular rescue which, due to its political side, hit the headlines of most of the world's newspapers.

Cathay Pacific is a British airline that runs a service with four-engined Douglas DC-4 airliners between Singapore and Hong Kong, going via Bangkok in Thailand. This involves passing over the South China Sea and not far from the large island of Hainan. The island itself, and the coast of China which lies inshore of it, is part of the territory under the rule of the Chinese Communist Government, and the flight has to be made along an international corridor. No foreign aircraft may pass within a distance of twelve miles from the coast or the island on pain of being shot down, so it can be imagined that the Cathay Pacific pilots give it a wide berth.

One July day in 1954 an s.o.s. was picked up by Air Rescue Service Control in Manila saying that a Cathay Pacific DC-4 with eighteen people aboard was in trouble some twenty miles southeast of Hainan. One engine was on fire and it was losing height fast.

That was all the information that Manila could give to the Air Rescue Service at Clark, and it did not seem at first that the position was very grave. The DC-4 could at the worst land at Hainan on one of the airfields there, though this would mean that the passengers and crew would risk internment. Or it could, if only one of its engines was out of action and the fire was successfully put out, reach Hong Kong on the remaining three. In any case, search planes would be going out from Tourane in French Indo China, little over 100 miles away, and from Hong Kong itself, from which the distance was under 500 miles.

From Luzon on the other hand, it was something like 850 miles and at least four hours flying time even if there was no search involved at the other end, but A.R.S. at Clark decided to take no chances. An Albatross piloted by Captain Jack Woodyard and with Captain Arnold as co-pilot took off with full tanks, followed about half an hour later by a second similar machine with Captain Baker in command.

No further word had been received from the DC-4, and as the two Albatrosses winged their way

across the South China Sea, it gradually became clear that the machine must have ditched. Otherwise somebody would have picked up some sign of it.

So Woodyard headed rather more north, while Baker, following behind, kept on his course for the last reported position of the disabled airliner. In this way, once they had both reached its probable line of flight, the two could turn, Woodyard southwest and Baker northeast, so that they would gradually converge on each other, covering the area where it was most likely to have come down.

Hong Kong radio still had no news when Woodyard tried it, but shortly afterwards Captain Baker's Albatross picked up a message which said that a raft had been sighted south of Hainan by a British Sunderland which had joined in the search. It was inside the twelve-mile prohibited area.

Though it seemed likely that the big, four-engined flying boat could do all that was needed in picking up the survivors, Woodyard and Baker decided to carry on in case they could help in some way. There might be people in the water as well as in the dinghy, or if some were missing they could help to look for them. Woodyard turned his machine on to the new course.

While all this was going on Hong Kong Radio had contacted the Communists at Canton, giving them details of the search planes—a French Privateer from Tourane, an Avro York and a Cathay Catalina flying boat from Hong Kong in

addition to the two Albatrosses and the Sunderland—and of their proposals for the continuing search. Canton replied that the Sunderland, which was already in the area, could stay, but that the others must keep clear or be fired on without warning. The brutality of this answer was something new in air rescue history. It was ignored by the Air Rescue Service crews and when later they received a directive to obey it from their own command at Clark, Woodyard's plane had landed off Hainan and it was too late.

With the help of the French Privateer, Woodyard and his companions eventually located the dinghy about four miles south of Hainan. There appeared to be two people aboard it and at first the Albatross crew were puzzled as to why the Sunderland had not already landed to pick them up. But when they flew lower they realized that the sea was so rough as to make a landing for such a big flying boat out of the question. Not designed for that sort of thing, it would have been smashed to splinters.

However, Woodyard thought that his Albatross could make it—with a bit of luck—and make it they did, after a very careful look round to assess the conditions and making use of the high cliffs of a smaller island some way away to give a certain amount of shelter.

When they got down they were about two and a half miles away from the dinghy and the seas were so high that they could not actually see it. However,

the Privateer gave them a bearing to steer by and the Sunderland also flew over with an offer to help. When half the journey had been completed Baker's Albatross arrived on the scene and took them over for the rest of the way.

At length the dinghy was sighted. With great skill Woodyard brought the amphibian alongside, and it was then that he and his crew received the first of two surprises, though it was the second that was to prove the most staggering. Instead of the expected two, there were actually nine people in the dinghy, including a small girl, but up to this point they had been hidden by the protective tarpaulin. Most of them were injured in one way and another and one, a Chinese girl, very seriously. However, the Albatross's crew managed to transfer them all safely and began to tend their wounds.

It was not until the last man came aboard that Woodyard and his companions received their second shock.

This last man was the DC-4 pilot, Captain Blown, dressed only in his shorts and covered with dye marker. He announced that his plane had been shot down by two Communist fighters. His radio operator had only been able to get through the part of his alarm message about being on fire before the set had been hit and knocked out of action. He had not been able to contact Hong Kong after that to tell them about the attack that had caused it.

Woodyard immediately sent out a warning to the

second Albatross, asking Baker to tell the other planes what the position was. He realized that they must get out as quickly as they could, for they were all now well within the prohibited area. If an airliner like the DC-4 could be attacked when it was actually outside the zone, as it had been, so much the more likely would it be for an attack to be made on his own machine, which was a military one even though it was not used as such. Blown was certain that there were no other survivors. Some had been killed when the plane was attacked, and others when it crashed. The search planes too, still combing the area, had seen no signs of any. It was time to move, and move fast.

The JATO bottles, which would certainly be needed with such a heavy load, had been mounted in place on the sides of the machine, and without any further delay Woodyard set about the tricky task of getting off the water. He taxied back to where the seas were a little calmer in the lee of the island near which they had landed, and on the way the party had a nasty scare when they spotted a formation of fighters approaching. The first thought of everyone was that they were the Chinese pilots returning in greater strength to make another killing, but as the planes drew nearer they were identified with relief as Skyraiders from an American carrier.

Because of the opposition of wind and current Woodyard had to make his take off run in a half

circle instead of a straight line, but at length the heavily overloaded plane staggered into the air and headed north for the nearest Hong Kong airfield.

Just why the airliner, which bore the clearest of markings to identify it, was attacked in the first place was never clearly established, though from later investigations it seemed likely that it had been mistaken for another plane belonging to Nationalist China. But whether this was so or not, the Communist Government, with complete ruthlessness, did their best to cover the matter up when the error was discovered by forbidding the rescue planes—except for one which could not land—to approach the scene. They made no attempt to carry out a rescue themselves from Hainan, and but for the Air Rescue Service the true reason for the airliner's crash might never have been known. None of those aboard would have lived to tell the tale.

Now we move a good many miles across the world, over the Pacific and the Atlantic, to the Middle East, but pausing a little while on our journey at the Azores. Here two pilots of the 57th U.S. Air Rescue Service Squadron recently carried out an unusual if not very difficult task, which nevertheless probably saved a number of lives. When flying above the swimming beach of the Azores Air Transport Station, the crew of one of the squadron's SH-19s noticed a large school of sharks lurking in the shallow water. Nearby and quite unaware of the

danger, some children were undressing for a swim.

By flying low across the water several times the two pilots in the SH-19 managed to drive the sharks away, and they then kept watch while the children bathed to prevent a return of the danger.

And so, continuing on our way, we cross Saudi Arabia, to Quatar.

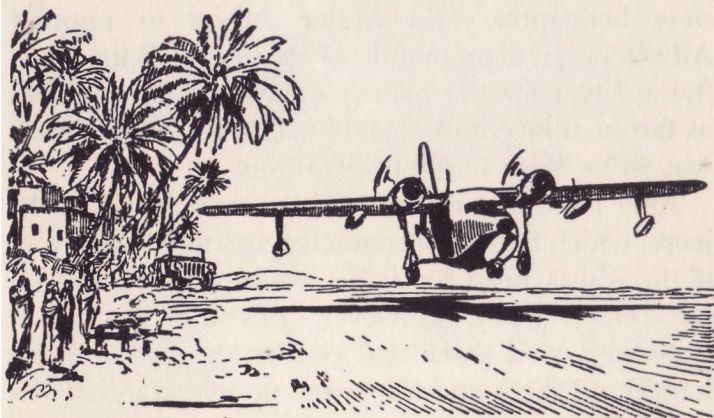
Quatar is a peninsula jutting out from the western shore of the Persian Gulf, where there are important British oil interests. To the west lie the vast deserts of Saudi Arabia and, immediately to the south, the narrow coastal belt of the Trucial Oman, which is under British protection. It is a land of hot, dry winds, scorching sands and pitiless sun. To become lost in such a region is likely to mean death from heat, thirst or a hundred other causes. It is, in other words, a land where air rescue can play a leading role, as it did in the following story.

A small party of five set out south-eastwards from Quatar on an oil prospecting expedition. They lost themselves in the shifting, undulating dunes some three hundred miles from their base.

The party had two jeeps and one truck. The jeeps ran out of fuel and oil and their water supply was getting low. There were two Englishmen in the little group and they decided to stay with the jeeps and radio back to Quatar what had happened, though they could not say exactly where they were. The other three men, natives of the country, went on in the truck to see if they could find help closer

to hand. They did not return, and the Englishmen informed Quatar.

One of the oil company's own aircraft at once went out to begin a search, and the U.S. Air Rescue unit then stationed at Dhahran rather farther up the gulf than Quatar, was notified. They sent off an Albatross piloted by Captain James Parker, and his radio soon picked up the news that



35 *Nothing further could be done, so the Albatross
returned to Dhahran*

the oil company's plane had found the truck. It was some way south of a place called Tarif, where the oil company had an airfield, but there was no trace of the three natives. Parker flew on to see it for himself, but though he circled the area, he too was unable to find a sign of the missing crew.

By then night was coming on and, as there was

nothing further that could be done until morning, the Albatross returned to Dhahran. Parker wanted to confer with his squadron commander, Major Griffing, who had already been out in his helicopter trying to get some more information about possibilities for a search in the area from the R.A.F.

As a result of what he had found out, which was not very much, Parker set out once more next morning, but this time Griffing in his comparatively slow helicopter, and Major Albers in another Albatross in command of the expedition and flying cover for the helicopter, were following him as fast as they could. They headed for Tarif, which was to be their base of operations.

After refuelling there, Parker was to fly out to the jeeps, which had been contacted again by radio, and if there was need for it he would jump down his pararescue team. However, this did not prove necessary, as a truck sent out by the oil company had found them and they were no longer in need of help.

Parker decided to fly out to them just the same and when he got there he requested the ground party to press on to the abandoned truck to see if they could pick up any clues as to which direction the three missing natives had taken. They found indications that seemed to show that they had gone north.

Back at Tarif, general opinion now seemed to be that there was no need to continue the search.



36 The helicopter crew was greeted by awed and fully armed villagers

The natives were used to a desert life and would find their own way to safety. But Griffing would have none of this. Nobody could be *sure* that they would not come to harm and that was enough for him.

But with the arrival of the helicopter and the second Albatross at Tarif, it became clear that the rather limited and primitive fuelling arrangements could not handle such a large order. So Griffing sent the two amphibians back to Dhahran, with instructions for Albers to bring only one of them back the following morning, fully fuelled. The helicopter remained overnight at Tarif.

In the morning, as soon as Albers got back, Griffing, with Lieutenant Lyall as his pilot and a native interpreter, set out on their search once more with the Albatross flying cover for them.

The interpreter suggested that they might try a string of oases some way south. At the first of them the helicopter landed and the crew was greeted by the fearsome sight of the awed and fully armed villagers preparing to defend their homes against what they thought was an attack from the skies. Through the interpreter, Griffing was able to calm them and explain his mission, but the villagers knew nothing of the missing men.

So the rescue party went on from oasis to oasis, over rolling dunes rising as high as eight hundred feet above the desert. And at last at one of the oases they were successful. Two of the men were

there, being cared for after a fashion, but they were in a very bad way after their wanderings. They were terribly weak, but were able to tell Griffing that their companion, from whom they had separated, was in an even worse condition at another oasis.

Soon all three were safely back at Tarif and being properly looked after at the infirmary. If Griffing had listened to the men who had been so sure that they would be all right the natives might well have perished. But then there was no real question of his listening. He belonged to the Air Rescue Service.