

THE "STRANRAER"

Developed from the Famous "Southampton" and "Scapa," this Vickers-Supermarine Flying Boat Can be Used for Reconnaissance, Bombing, Torpedo Transport, and Flying and Navigational Instruction

ALMOST since the beginning of practical British aviation the name Supermarine has been associated with the production of flying boats. For several years the boats which emanated from the factory at Woolston, Southampton, were of "composite" construction. That is to say, fittings and a few components were made of metal, the rest of wood. Some very beautiful examples of the boatbuilder's art were to be found in the mahogany hulls of earlier Supermarine flying boats, and when these had to be supplanted by all-metal hulls there were those who lamented the disappearance of a type of construction in which sheer artistry of workmanship found one of its highest expressions. However, sentiment could not be permitted to stand in the way of efficiency, and these "wooden walls" had to give way to modern demands, the plane and spokes have made way for the "tinbasher's" mallet. The reason? The wooden hulls, no matter how beautiful they looked, nor how perfect their seams, would in the course of time soak up a not inconsiderable quantity of water. In a large boat this soaking might on occasion amount to several hundreds of pounds. Clearly, if this was avoidable, it was not to be tolerated, and when experiments had proved that light metal alloys could be protected against corrosion, the way was open for the introduction of the all-metal flying boat hulls we know to-day.

The Supermarine Aviation Works, like other constructors of flying boats, had their difficulties to overcome. Workmen had to be trained and a new technique had to be evolved. The earliest metal hulls had awkward corners in which water had an unpleasant habit of collecting. Modified forms of construction were introduced to avoid such corners, and in the modern flying boat hull "open" sections, that is to say, members in which no moisture can collect, and in which there is thus no inducement for corrosion to start, have helped to reduce corrosion troubles almost to vanishing point.

The first British flying boats with metal hulls had the planking as well as the frames made of Duralumin, anodically treated to enable it to resist corrosion. Of recent years a light metal sheet known as "Alclad" has become

popular for the planking. This material is in effect a "sandwich" with an inner layer of Duralumin and outer layers of pure aluminium. The aluminium affords the desired resistance to corrosion.

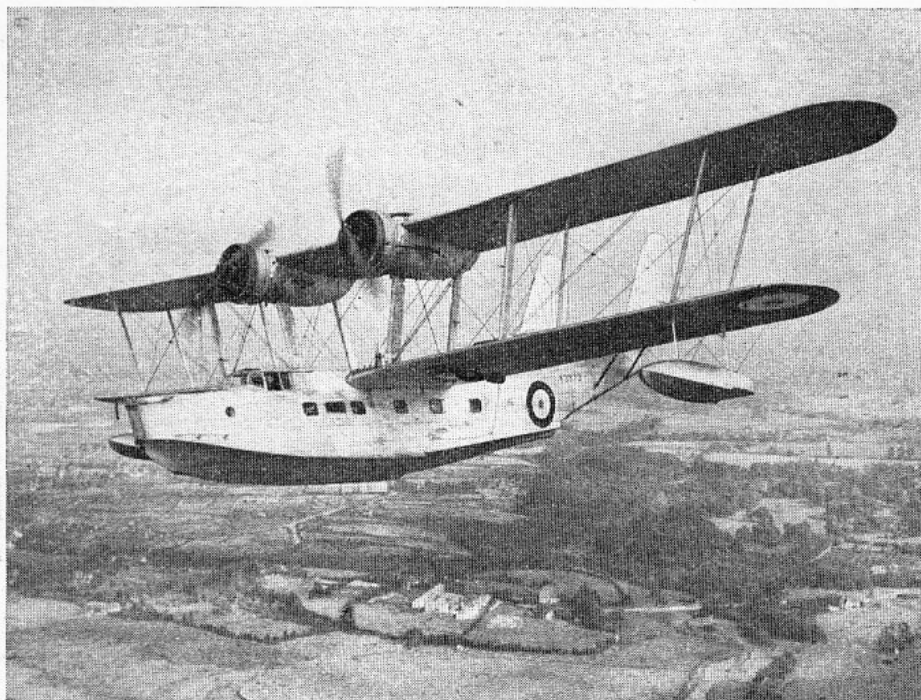
In the Vickers-Supermarine "Stranraer" hull alclad is used both for planking and frames, a form of construction evolved from such successful types as the "Southampton" and "Scapa" flying boats which have helped to make the Supermarine name famous. With the wide practical experience accumulated over a long period of years, the Vickers-Supermarine engineers have been able to incorporate in the "Stranraer" all such features as have been thoroughly proved and tested, and at the same time achieve a very high performance without sacrificing seaworthiness. Very many years ago the Supermarine Aviation Works coined the slogan "A boat that will fly

"A boat that will fly rather than an Aeroplane that will float" was the slogan coined by the Supermarine Aviation Works many years ago. In the "Stranraer," the latest Vickers-Supermarine Flying Boat, a very high performance has been combined with excellent seaworthiness.

rather than an aeroplane that will float." In other words, they started with a seaworthy hull and made of it the best aircraft which the knowledge and experience of the day made possible. In the "Stranraer" this seaworthiness has been retained, and it may be pointed out that the machine has been operated in gale conditions with satisfactory results. Moreover, the machine will maintain level flight with either of its two Bristol

"Pegasus" engines out of action, so that safety and reliability may be assumed to have been attained in a very high degree.

The "Stranraer" is a twin-engined biplane flying boat, in which the hull, as already mentioned, is of all-metal construction, and the wings have alclad spars and ribs, with a covering of doped fabric. The two Bristol "Pegasus" engines are placed in nacelles under the upper wing, a position which has the advantage that the airscrews are well clear of spray when the machine is taking off or taxiing. Two alclad petrol tanks, each of 250 gallons capacity, are placed in the centre section of the top plane. The relative positions of engines and tanks are such that direct gravity feed is possible under most conditions, but fuel pumps are used to assist so that during certain manoeuvres an adequate supply is ensured.



The "Stranraer" (two Bristol "Pegasus") making an overland journey.

In this cockpit is also the front gunner's station, with gun ring and bomb controls. A hinged watertight door is provided in the nose for bomb sighting.

Adjoining the front cockpit is the pilots' cabin, with dual controls, sliding roof and hinged windscreens. Protection is thus afforded the crew in all weather conditions without impairing the view in any essential direction.

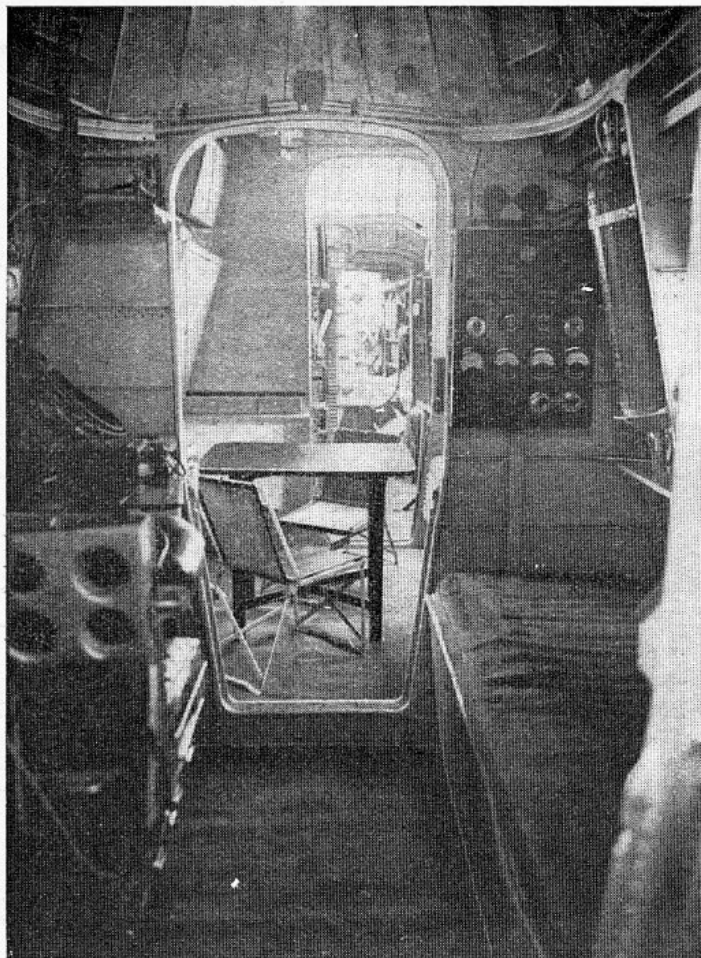
Behind the pilots' cabin is the compartment for the navigator and engineer, and aft of that again the W/T operator's station. A table is provided for the navigator, on which he can spread his charts, etc., and the compartment is well lighted.

Two aft gun stations are provided, one just aft of the rear spar frame, *i.e.*, just behind the wireless operator, and the other in the extreme stern of the hull.

The "Stranraer" is a fairly large aircraft, and as it is intended to operate over considerable ranges ease of control is very important. Great care has been taken in the design of the control surfaces, and trimming "tabs" are fitted both to the elevator and to the two rudders. The rudder "tabs" are used for course-keeping when one engine is pulling more than the other. The extreme case is, of course, one engine completely

In the hull, which is of the two-step type, there is ample accommodation for the crew, even to the extent of enabling the machine to operate as a self-contained unit on a long cruise, for example. In that case, provision can be made for cooking and sleeping on board.

In the extreme bow cockpit is carried the purely marine operating gear, mooring tackle, boat hooks and so forth.



The interior accommodation of the "Stranraer." On the left, is a view looking towards the pilots' cockpit and forward gun station. The navigator and engineer are accommodated in the compartment aft of the pilots' cockpit. On the right, a view looking towards the tail.

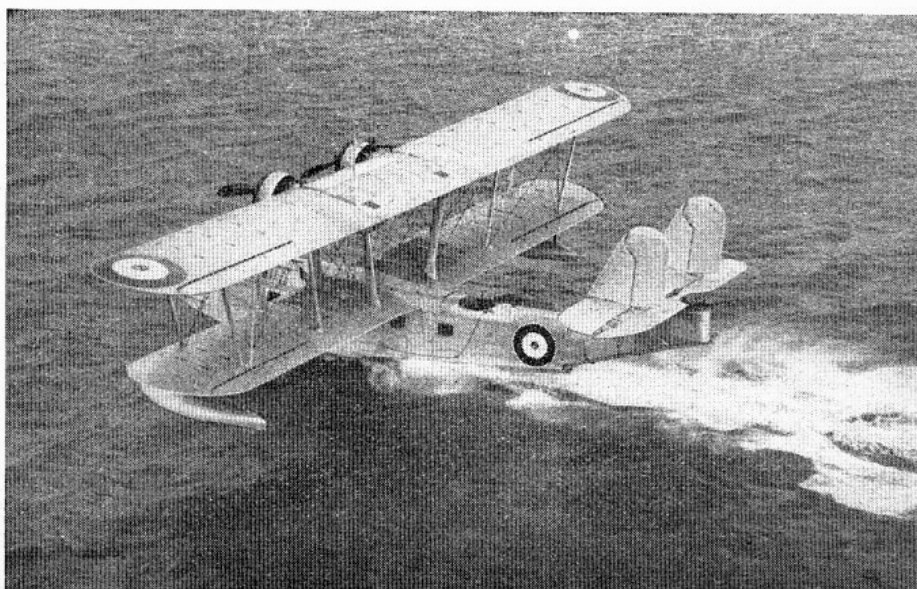
A bird's-eye view of the "Stranraer" alighting on the water.

stopped. By the use of the "tabs," and due to the very powerful rudders, the machine can be turned "against" the running engine.

Of special equipment which the "Stranraer" carries may be mentioned two folding drogues, a collapsible dinghy, an engine ladder, and a platform from which to carry out work on an engine, and a spare airscrew. When the machine is used for extended cruises provision is made for sleeping accommodation, food and water storage, cooking table, etc. A special derrick can be supplied, by means of which an engine can be changed while the aircraft is afloat.

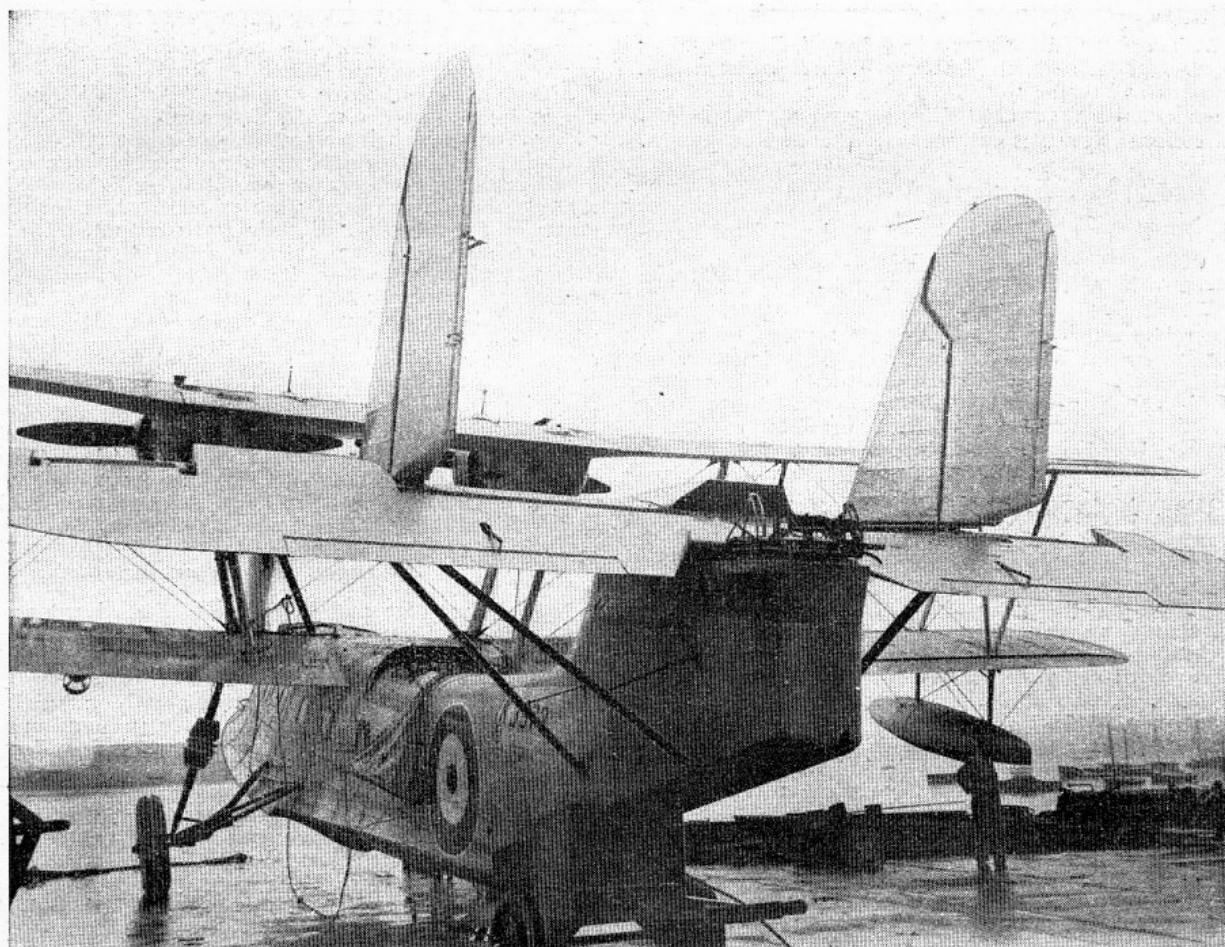
Not carried on board, of course, but intended to be available at any base from which the machine may operate is a launching chassis. This is of non-magnetic material to avoid interference with the compasses, and consists of port and starboard units. Each is attached to the hull at two points and to the wing at one point by quick-release pins. A small auxiliary wheel is fitted to facilitate manœuvring on the ground.

Owing to the fact that the inter-plane strutting is so arranged that there is a clear space on the roof of the hull and on top of the lower wing roots, it is possible to carry externally some heavy and bulky object such as a torpedo or a spare engine. The extra drag will not improve the performance, but the ability to carry, on occasion, a heavy load in this position may often be found of considerable advantage.



The standard engine type fitted to the "Stranraer" is the Bristol "Pegasus" IIIM, which is a medium supercharged type, but the Pegasus X can be fitted without modification and gives improved performance, although the range is then slightly reduced.

Reference has already been made to the fact that the petrol tanks are carried in the top centre section. Two oil tanks, each of 19.5 gallons capacity, form the leading edge of the top centre section. Oil coolers are incorporated with the tanks. Hand starting and automatic starting by compressed air are provided. Openings are provided in the engine nacelles to give access to all parts likely to need periodic attention.



Stern Defence : The rear gunner's cockpit in the "Stranraer." Note also the control "tabs" on rudders and elevator.