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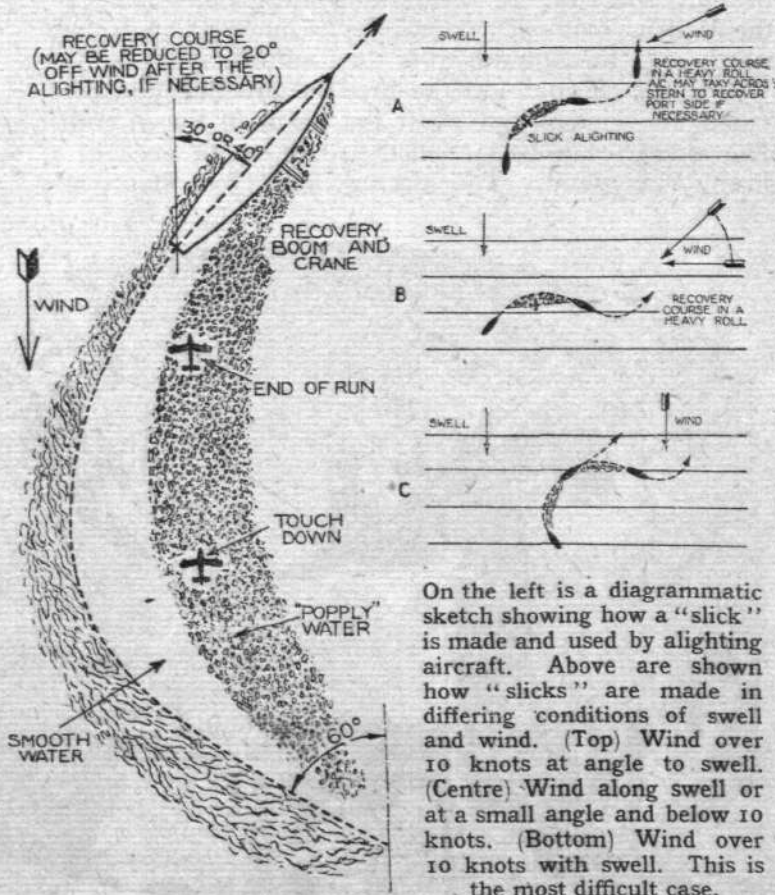
Catapult Training

Five-day Course for Pilots, Aircrews and Catapult Operators : Making a "Slick" Landing on Rough Water

ON H.M.S. *Pegasus*—originally designed as an oil tanker rejoicing in the now famous name of *Ark Royal*, the second ship to hold this name—pilots, aircrews, directing officers, aircraft personnel, handling parties, torpedo officers, electrical artificers, crane operators, catapult officers, catapult E.R.A.s and breech workers all attend a course, each to learn his share of the process of launching sea-planes and flying boats by catapult, and recovering them after landing. Where possible, all the affected personnel of a ship being newly commissioned attend the course together in order that they may become more of a trained team than a number of trained individuals.

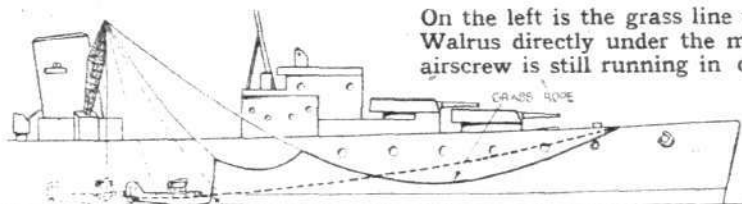
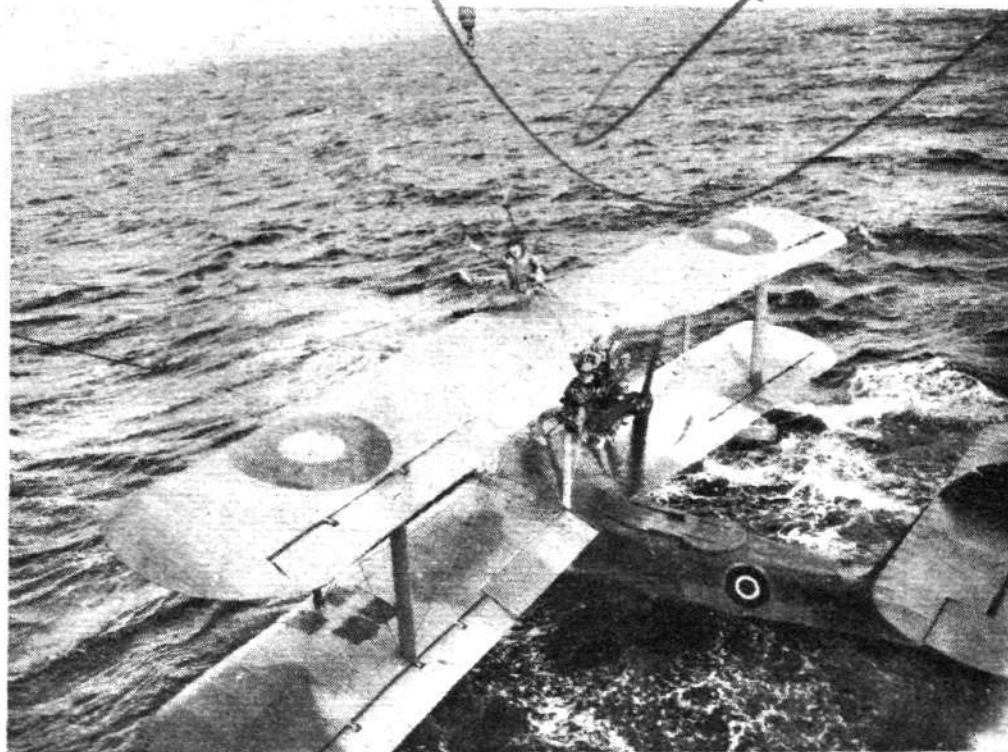
Before describing the syllabus of work done on the course, perhaps it would be as well to visualise a typical launch and recovery of a Walrus amphibian. The catapult is extended to its full goft. and the Walrus, already on the trolley, is traversed out to the back end. A shell case containing between 12-30 lb. (according to all-up weight of aircraft) of cordite is put into the breech and fired at the dropping of a flag by the directing officer. This signal is given as the ship begins to come up from any rolling motion it might have. There is a time lag of from one to one and a half seconds before the gases from the exploded cordite begin to take effect. The trolley carrying the

A Vickers-Supermarine Walrus amphibian leaving the 90ft. cordite-operated catapult of H.M.S. *Pegasus*. The trolley, which supports the Walrus at four points, can be seen to have folded forward at the end of its travel.



On the left is a diagrammatic sketch showing how a "slick" is made and used by alighting aircraft. Above are shown how "slicks" are made in differing conditions of swell and wind. (Top) Wind over 10 knots at angle to swell. (Centre) Wind along swell or at a small angle and below 10 knots. (Bottom) Wind over 10 knots with swell. This is the most difficult case.

CATAPULT



On the left is the grass line which holds the Walrus directly under the main hoist. The aircrew is still running in case of mishap.

The layout of the grass (floating) towing line and the main hoisting gear in relation to the ship and flying boat. For a tractor seaplane the towing line terminates in a floating net.

Walrus reaches its maximum speed, about 55 knots, after travelling 61ft. along the catapult. This speed is maintained for a further 10ft., and while running the remaining 10ft. it decelerates before coming to rest at the end of its run. As the braking effect comes into play the Walrus over-runs the trolley—which collapses forward—and the amphibian is then airborne.

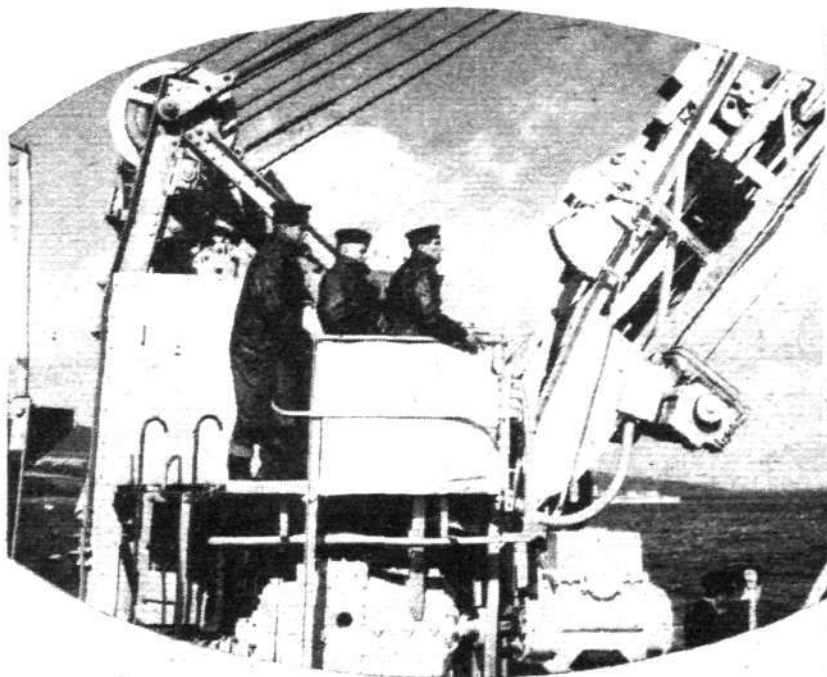
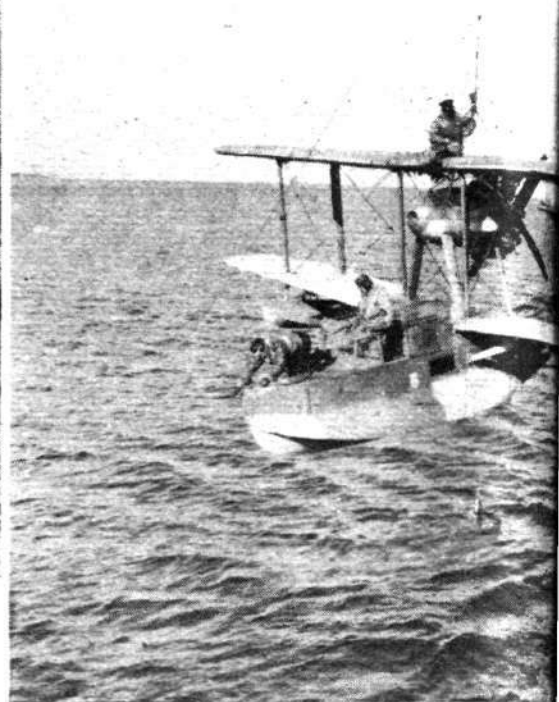
A ship's catapult can be fired in any direction provided the wind is not abaft the beam of the aircraft. The aircraft can be launched in still air or even in a strong side wind. The aircrew find their first cata-

pultings quite exciting because there is always a tendency to hold oneself over-rigid during the acceleration. After a few attempts, however, they rest their heads against the special pads provided and relax. A mis-fire is very unpleasant. The signal flag goes down and the usual time lag passes. Split seconds then seem like hours until a signal shows that it is safe to take the head from the rest.

When the Walrus is ready to alight, the ship makes a "slick" of calm water on the leeward side, and in this area

(Bottom Centre) Instruction in "Thomas Grab." The light lower half can be lowered independently for a further 16ft. This is to avoid damage to the aircraft by the heavy weight of the Ponder Ball.

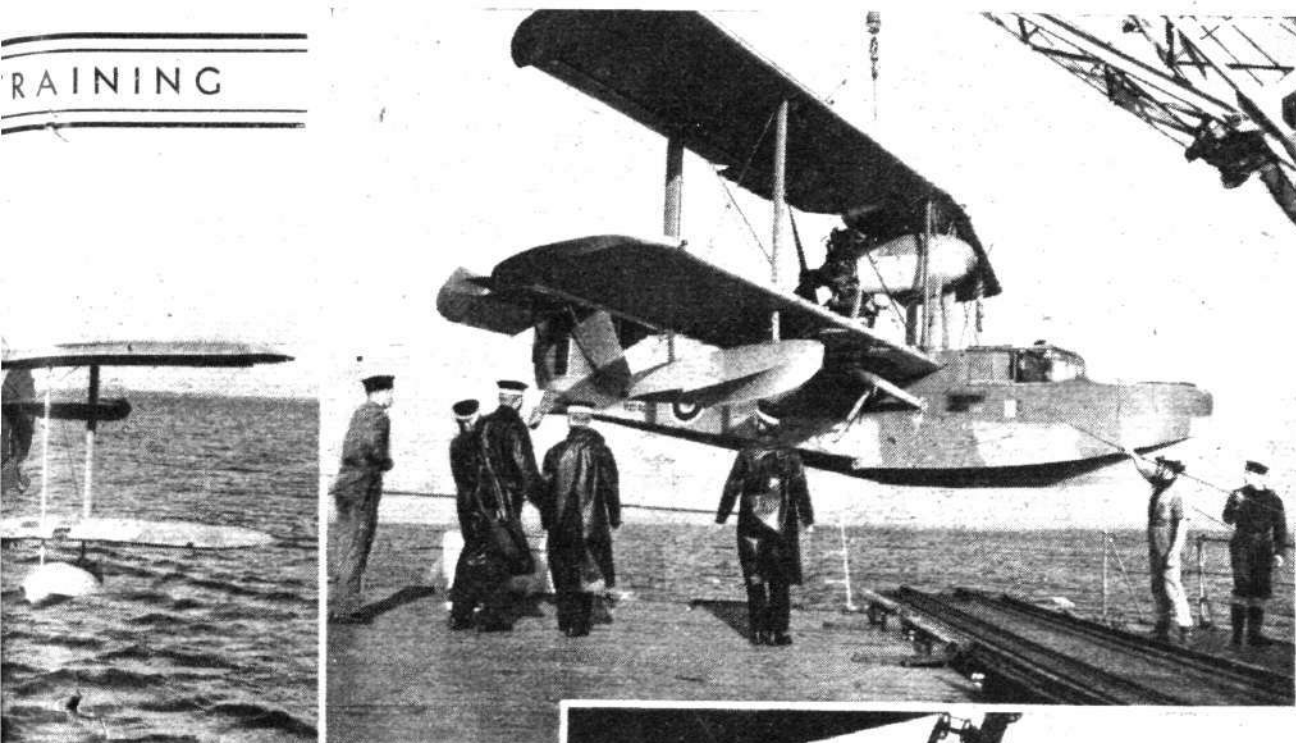
Clear of the water, with the aircrew stopped, the Walrus is hoisted inboard. The towing rope is being cast off.



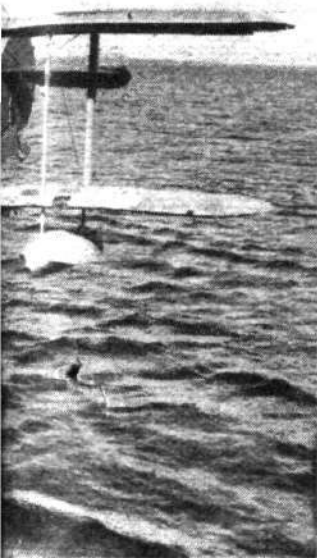
(Above) Acting Leading Airmen waiting for their turn to fly. A number of rating pilots also attend the course. (Left) Instruction in crane control. The operation is so complicated that there should be always at least two men at the controls.



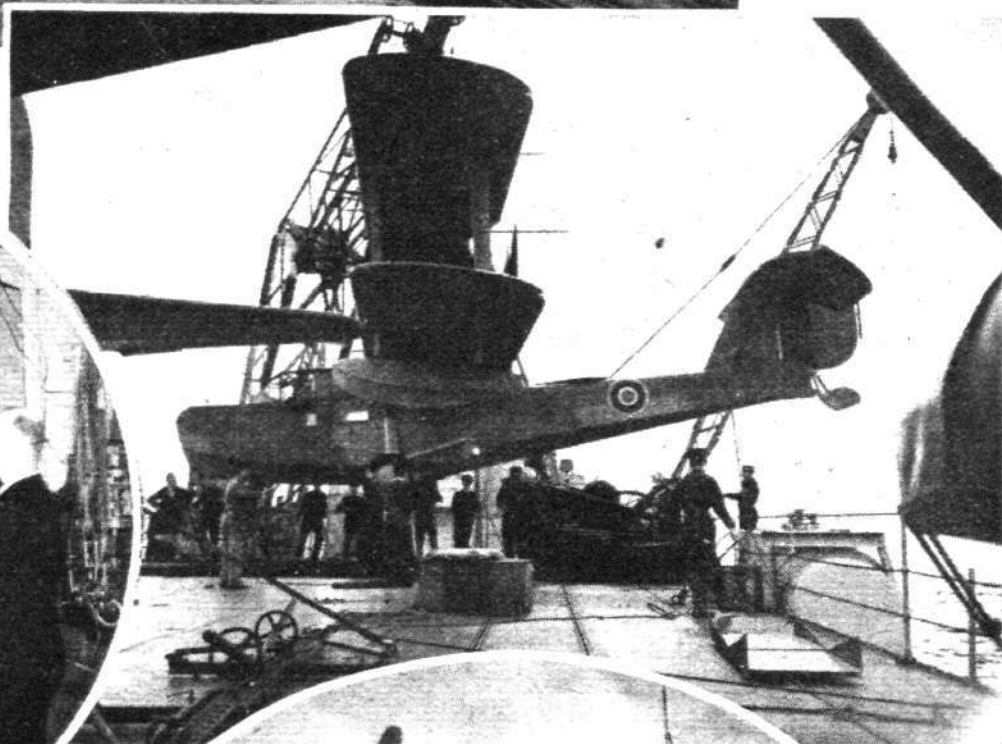
RAINING



(Left) The Walrus being handled in-board over the catapult, which can be seen on the deck in the right foreground.



(Below) Putting the Walrus back on the catapult trolley. The land undercarriage is let down and the wheels locked to give the handling party a good grip.



(In circle) Trainees learning the operation of the special ship telegraphs used to signal between the catapult control position.



(Right) Pilot and observer get aboard a Vought Sikorsky Kingfisher. The crane attachment is over the centre of gravity just behind the pilot's seat.



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of artificial calm the Walrus comes in at 60 knots to land from 6ft. in a powered stall. On the face of it this appears to be a brutal manner in which to land, but actually it has been found by experience to be much more satisfactory than a normal tail-up "seaplane" landing. The essential factor is to get the heel of the hull (or floats in the case of a seaplane) into the water first. Having landed, the pilot taxis alongside the ship

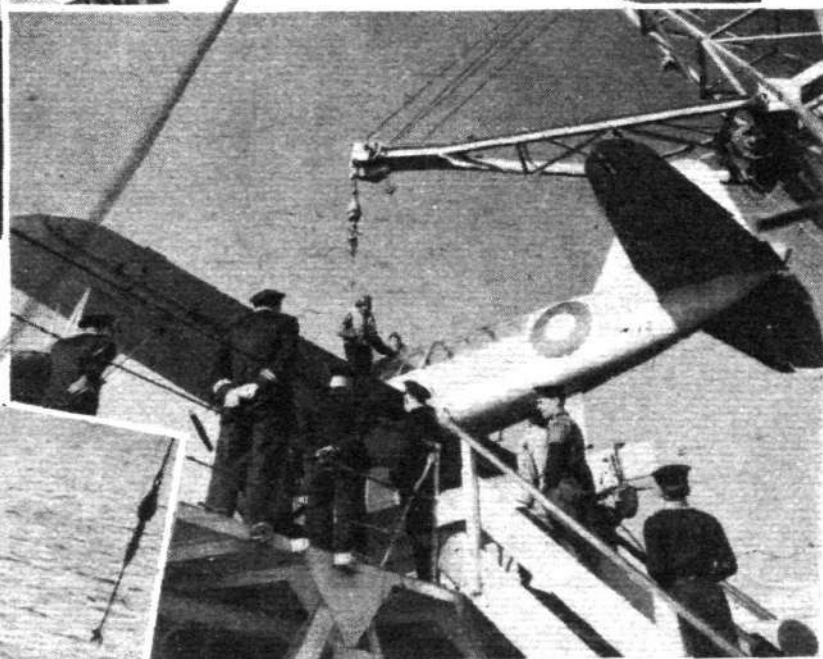
(Below) This view of the Kingfisher being hoisted out gives a clear picture of the central float arrangement.

(Below) Back on the catapult deck of H.M.S. *Pegasus*. Beaching gear is fitted to the Kingfisher to facilitate handling.



The Kingfisher on the water and engine started, the observer disconnects the hoist and slides back to his own cockpit.

until the observer can pick up the spring hook which is attached to the end of a grass line coming from a boom on the forecastle. When this has been made fast the pilot throttles back until he is being towed by the grass line. The length of this rope is such that it brings the Walrus directly underneath the main hoisting tackle of the crane.



(Above) All set. A Kingfisher about to be swung out and lowered on to the water by crane. The trolley attachments for catapulting are on the single central float.

During the time the tow-line is being made fast, the air gunner climbs on to the top plane and is ready to attach the hoisting gear as it appears overhead. This system has been devised for pusher flying-boats, but, quite obviously, nobody in a tractor seaplane could go forward to make fast the tow-line because the airscrew is never stopped until an aircraft—of whatever type—is clear of the water. To meet this need on seaplanes, a hook is fitted to the bottom of the floats and the floating grass line terminates in a semi-submerged net. The seaplane over-runs the net, and when it drifts back the hook catches in the net. The remainder of the procedure is the same. The aircraft is finally lifted inboard and loaded on to the catapult trolley or stowed in the hangar.

On the training course, the first day starts with all officers and ratings attending lectures on cranes and other recovery gear. During these lectures, model aircraft

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and cranes are used for demonstration. The different types of catapults and their superstructures are described in addition to notes on the amphibian loading gear. Later in the day practical work is done on the crane itself, and naval aircraft personnel have specialised instruction on administration and securing gear.

For the second day's work, directing officers (responsible for firing the catapult) torpedo officers (responsible for the crane), aircrews, petty officers of handling party, naval aircraft personnel, and electrical artificers attend further lectures. This time they deal with the "loading" and "off-loading" of the aircraft on the catapult and recovery of aircraft under all conditions, including night operation. On the same day, practical instruction is given to crane operators and crane electrical artificers, and also to breech workers. The breech worker is, of course, the man who puts the operating charge of cordite into the catapult breech and fires it when instructed.

A combination of theory and practice goes to make up the third day's instruction. All officers and ratings attend lectures on catapult launching, catapult drill and communication. An instructional 35 mm. sound film is shown, and then the trainees practise towed recoveries and loading on and off the catapult with a Vickers Walrus amphibian. Apart from the loading and off-loading, this exercise familiarises the various crews with the use of the specialised crane tackle used to ensure both safety and speed in operation. For this instruction, the Walrus is not catapulted but lowered over the side and towed by a line from a boom on the forecastle.

Theoretical work and simple operations having been completed, the fourth and fifth days are devoted to flying as if on service. All officers and ratings attend, and the programme includes catapult launchings; "slick" landings; rough-weather handling; use of securing gear; recoveries of aircraft by towed and direct methods; with ship under way and also at anchor; slipping Walrus from crane; night launching and recovery.

At the end of these five days' intensive training, everyone knows his job pretty thoroughly.

Correspondence

The Editor does not hold himself responsible for the views expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters.

FAULTY FILMS

Repeated Use of a Familiar "Shot"

I NOTE with sympathy the reactions of your correspondents to the large number of technical howlers in aeronautical films.

My own protest concerns the repeated showing of a shot in which the same unfortunate German aircraft meets its doom. The incident appears to date from the Battle of Britain. No doubt readers of *Flight* are familiar with the scene—the German, presumably a Heinkel 111, is shown from astern through the sights of a fighter; after a few seconds it is subjected to a violent explosion which reduces it to a cloud of dust.

This Heinkel has been met in countless films, including various M. of I. and similar productions, and, while admitting the entertainment value of such a spectacle, I feel that others, like myself, are growing a trifle weary. ROY T. SMITH.

Studios Working Under Difficulties

IN his letter of November 12th, your correspondent, S. W. Greenwood, brought up the subject of accuracy in aeronautical films.

This is a subject in which I happen to be very interested, for having a film-star sister, I have visited Denham studios several times, and was present on the set during some of the shooting of "The First of the Few."

In this film (and I say this with first-hand knowledge) a great deal of trouble was gone to to ensure accuracy, but it was definitely a case of not quite enough trouble, i.e., cockpit covers and ejector exhausts which Mr. Greenwood mentions.

I would like to stress, however, that British film studios are finding the bugbear of security measures and lack of labour and materials very trying.

Taking all this into account and allowing for a considerable amount of mistakes which I will not attempt to deny, I really think that Mr. Howard's film was a very courageous effort for such a detailed subject.

For the benefit of Messrs. Fisher and Greenwood, I prescribe the films "Captains of the Clouds" and "Eagle Squadron" as examples of what can be done out of the immediate war zone.

It may interest readers to know that Mr. Michael Powell, director of "49th Parallel" and "One of Our Aircraft is Missing," may be going to make a film of the Hurricanes in Russia shortly, under the technical advice of Wing Cdr. Ramsbottom-Isherwood, commander of the expedition.

E. C. KERR-TRIMMER.

TRANSATLANTIC AIR MAIL

Exporters in a Difficulty

IN your issue of October 29th, page 464, you referred to the overburdening of the transatlantic air mail service and the fact that some mails in such instances would be sent by sea.

We, as exporters throughout the world, were very concerned in this bit of news, as we send very important documents by transatlantic air mail with copies by sea mail, as we cannot run the risk of having them lost, thereby causing considerable delay to us in receiving our payments, and to our customers in claiming their goods. We are also caused considerable expense and inconvenience in obtaining duplicate sets if originals should not arrive.

We therefore took this matter up with the Post Office, and we were advised by them that they could make no suggestion how we could overcome this difficulty; in fact they went so far as to reply to our suggestion that we might mark certain envelopes which contained these important documents "By transatlantic air service only, not by surface route," that even if we did this there could be no guarantee that these letters would be carried by air, as they would be mixed up in postal bags containing other types of mail, and it would be too late to sort these out after decision had been made to leave some of the mail behind because the load was too much for the aircraft available.

The point now arises as to whether there are other exporters in a similar position to ourselves, and we feel sure there must be, with whom we might come to some agreement and possibly also with the Post Office, whereby a bag could be made up comprising only such important letters, clearly marked, so that if any mail had to be excluded at the last moment the Post Office could ensure that bags so marked could at any rate be put on board without fail.

With this view in mind, we are asking you to co-operate with us if possible, and to put us in touch with other exporters or other concerns interested, so that if there are a sufficient number of us we can act together for our own security, and to facilitate the Post Office arrangements. R. N. DIXON.

Rabone, Petersen & Co., Ltd.

Back Numbers Wanted

READERS fortunate enough to have back numbers of *Flight* for which they have no further use are asked to send to this office the following copies for fellow-readers:—

R. G. B.: August 28th, September 11th, 1941, and April 30th, 1942. O. R. O.: July 11th, 18th, 25th, August 8th, 15th, October 24th, 1940. L.W.: September 17th and 24th, 1942.