Aeronautics in 1945

No. III—(*Continued from page 31, January 11th*)

Civil Aviation

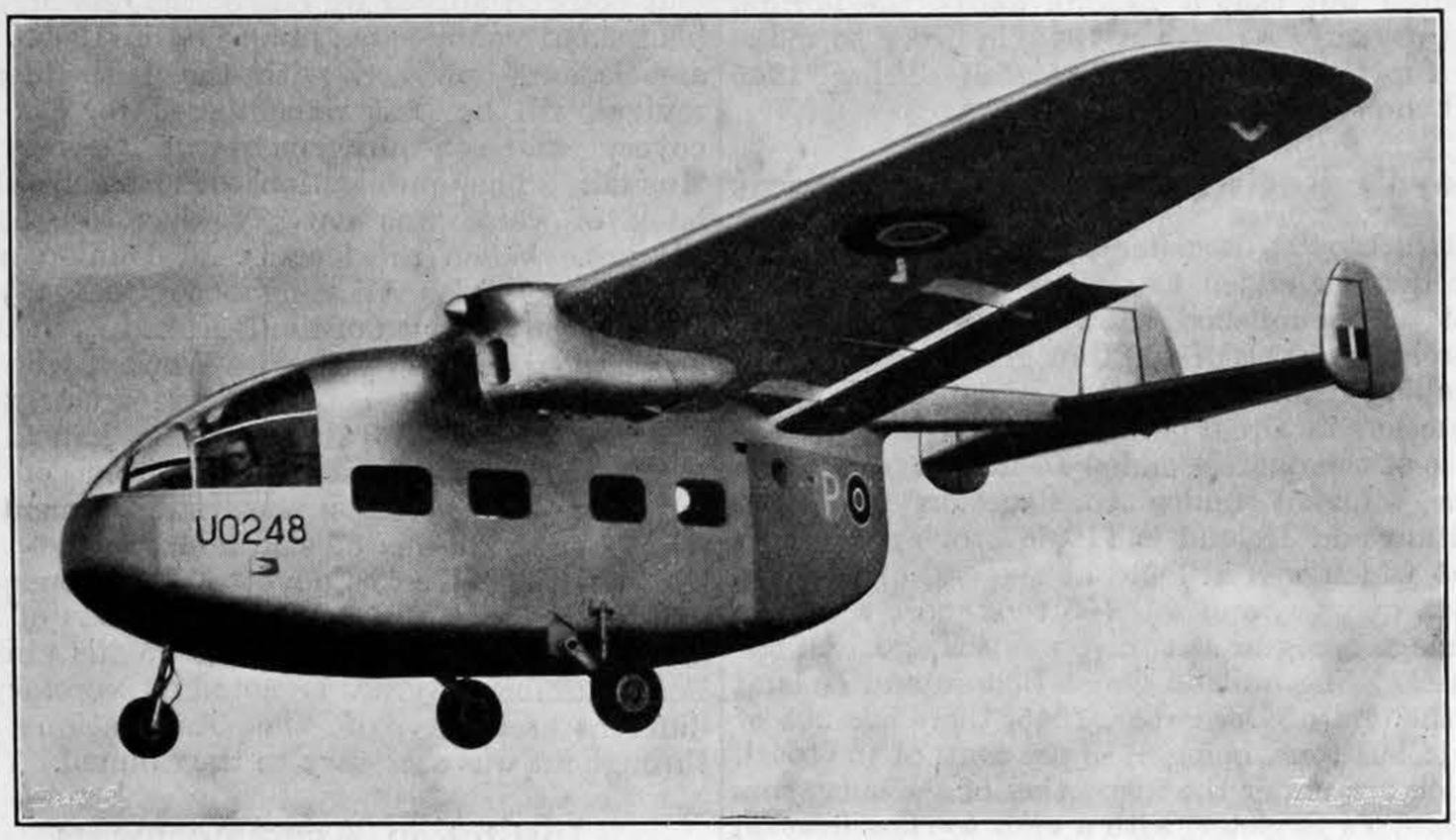
BRITISH aircraft builders, although still hampered by Government restrictions, made a good start during the year on the production of civil machines. At one time it appeared that our wartime policy of concentration upon military aircraft would result in American manufacturers, who were not subjected to a similar policy, taking an early lead in the output of civil aircraft when the wars were ended. It would now seem that British builders are fully determined to make good the lost ground and that plans drawn up during the later stages of hostilities are being put into effect rapidly and effectively. The American manufacturers at one time thought that we would have nothing to offer foreign buyers for several years. They have been somewhat surprised to discover that we already have twenty different designs of civil aircraft in production or in an advanced stage of development, ranging from single-engined goods or passenger machines to an eight-engined 110-ton transatlantic landplane. They have, too, freely admitted that, while they may be ahead of us in equipment, we are far ahead of them in sales propaganda in overseas markets.

Several of the British aircraft now available for civil duties are conversions of machines designed in the first instance for the needs of war. One such is the "Shetland" flying-boat, jointly designed and produced by Short Brothers, Ltd., and Saunders Roe, Ltd. This machine, the largest British aircraft ever to have flown so far, was originally intended for service with the R.A.F. Coastal Command, but has now been reclassified as a civil flying-boat. It is driven by four Bristol "Centaurus" engines, giving a total power of some 10,000 H.P., and has a fully laden weight of 130,000 lb. Its wing span is 150ft. and its length 110ft. In spite of its size, it has a maximum speed of 267 m.p.h. Cruising at about 186 m.p.h., it has a range of 4650 miles with a pay load of 7620 lb. or, alternatively, a range of 2076 miles with a pay load of 30,000 lb. It has accommodation on two decks for seventy passengers and a crew of eleven. On the upper deck there are, in addition, compartments with sufficient capacity to hold 6600 lb. of freight and mail.

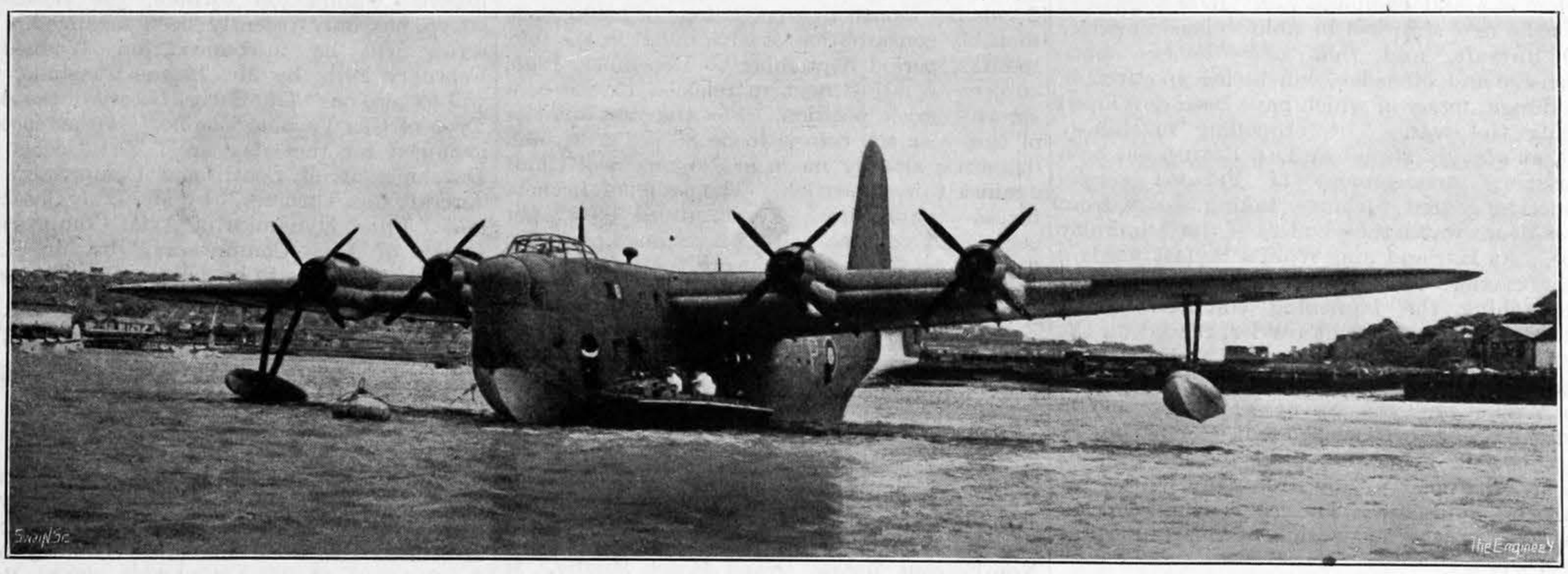
The "Sandringham" flying-boat is the Short "Sunderland" stripped of all its military gear and converted for civil use. The alterations are mainly internal. Accommodation is provided for twenty-four passengers by day, sixteen on the lower deck and eight on the upper. For night flights the seats can be rearranged as berths for sixteen passengers. Heating, ventilation, and sound-proofing of the passenger and crew accommodation have received close attention. A service lift is provided, whereby orders for meals and refreshments received at the buffet on the upper deck can be sent down to the lower deck. The power plant consists of four Bristol "Pegasus" engines of 1050 H.P. each. The all-up weight amounts to 56,000 lb. and at a cruising speed of 190 m.p.h. the range in still air is 2200 sea miles. In addition to the passenger accommodation, the flying-boat has two freight and mail compartments with a total capacity of 477 cubic feet.

The Avro "Tudor" I, which made its appearance in public during the year, is not a converted military machine, but was designed from the start as a civil air liner. It has a 10ft. diameter circular pressurised fuselage, 80ft. long, in which day and night accommodation for twelve passengers is provided on long flights. If sleeping berths are not required, twenty-four passengers can be carried. The power plant consists of four "Merlin" engines driving de Havilland constant-speed propellers, the pitch of which may be reversed to give a braking action for landing purposes. The aircraft is designed to fly at an operating height of 25,000ft., at which height it should be free from weather disturbances and icing conditions. The pressurising of the fuselage is such as to ensure to the passengers and crew an atmospheric pressure equivalent to that at 8000ft. The aircraft has a maximum speed of 346 m.p.h. at 20,000ft. At that height cruising at 295 m.p.h. it has a range of 3700 miles, while if the speed is reduced to 230 m.p.h. the range at the same height is increased to 4660 miles. A still greater range, of 4890 miles, can be obtained by flying at 10,000ft. and using an output of only 500 H.P. from each of the engines. The total fuel capacity is 3460 gallons and the disposable load, *i.e.*, fuel, oil, and payload amounts to 38½ per cent. of the all-up weight. The baggage and freight capacity is 3730 lb. An order for twenty "Tudor" I aircraft, to be used for transatlantic services has been placed with Messrs. Roe by the Ministry of Civil Aviation. The construction of a larger version, the "Tudor" II, is in hand, and a considerable order for this type has also been placed by the Ministry.

Among the smaller class of civil aircraft now being produced in this country the Miles



MILES "AEROVAN"



SHORT "SHETLAND" FLYING-BOAT

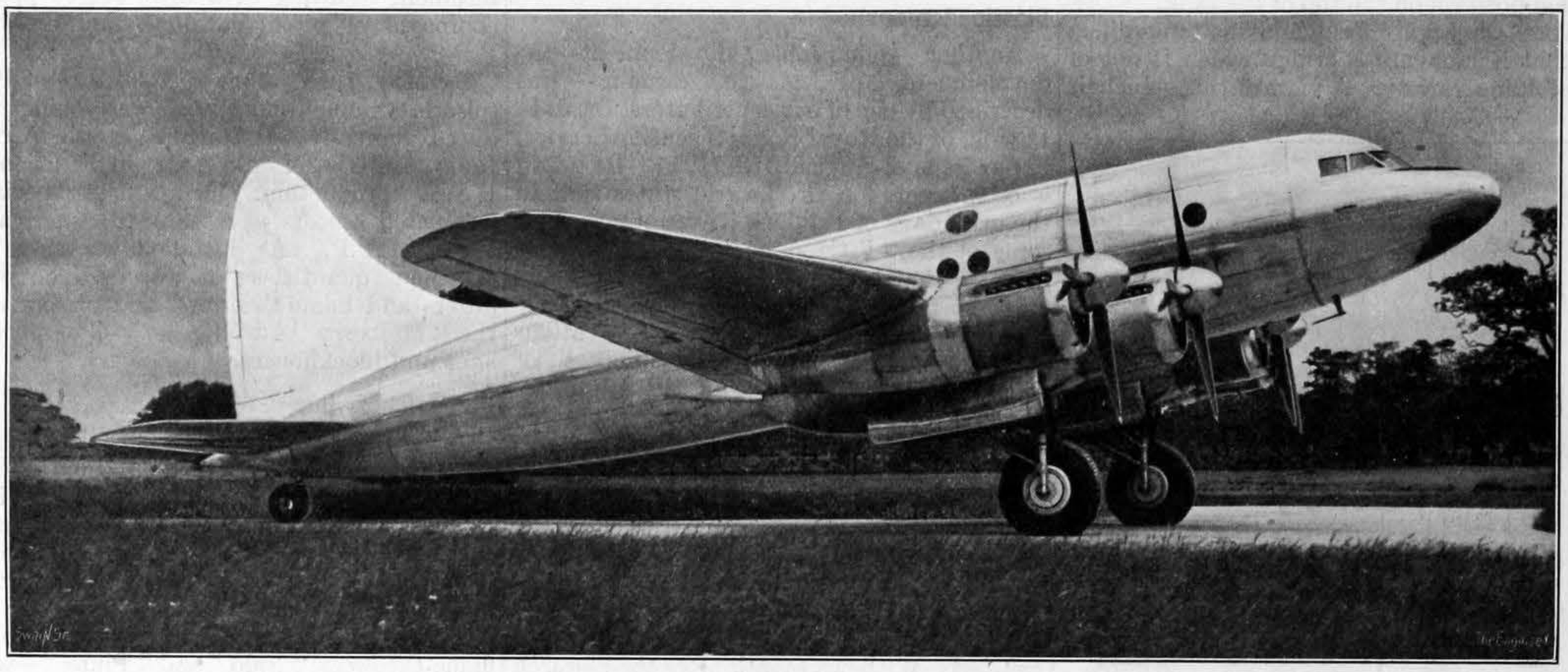
" Aerovan " deserves special mention. This aircraft was designed during the war as a vehicle transporter and has now been modified for civil use. It is capable of carrying a load of 1 ton and at a cruising speed of 110 m.p.h. has a range of 450 miles. The fuselage is of plastic-bonded wooden construction and its after end is hinged to provide a 5ft. square entrance for freight. When the aircraft is used as a passenger carrier the passengers enter through the cockpit door and then through a second door in a partition between the cockpit and the cabin. Accommodation can be provided for from six to ten passengers. The wings are of wooden construction and are fitted with Miles external aerofoil flaps and slotted ailerons. The tail unit is a metal boom carrying three fins and rudders. The power plant consists of either two " Gipsy Major " or two " Cirrus Major " engines. Various alternative special arrangements of the accommodation can be provided. In one, the aircraft can be arranged as a flying caravan with living, sleeping, and cooking accommodation for two people. In another form it can be fitted up as a travelling showroom or shop and can be provided with tanks for 200 gallons of liquid goods in addition to solid cargo.

In addition to these and other civil aircraft now being produced on a routine basis in this country, some noteworthy projects are in hand or in course of development. For example, the Blackburn Aircraft Company is understood to be designing a very large flying-boat with six engines and an all-up weight of 138 tons. It will, it is said, have a wing span of 202ft. and a length of 148ft. Its top speed is expected to be over 300 m.p.h. at sea level and its cruising speed at 15,000ft. 269 m.p.h. The cabin will be pressurised and, with 160 passengers and over 30,000 lb. of freight, the range will be 2500 miles.

The Avro Company is reported to be building a large jet-propelled air liner. It is stated to be designed for high speeds and to be intended to carry forty passengers over a range of 4000 miles.

In this country as well as in Canada and the United States signs are evident that aircraft designers are, quite apart from the adoption of jet propulsion, alive to the possibilities of development along other than the orthodox lines of the immediate past. There is a revival of interest in the tailless type of aircraft, more or less after the style of the Hill " Pterodactyl " of pre-war years. One such machine is the Handley Page " Manx," the prototype of which has already been built and flown for research purposes. This two-seater aircraft is fitted with two 140 H.P. " Gipsy Major " engines, each driving a pusher propeller. The rudders are mounted on the swept-back wings. The machine is credited with a cruising speed of 150 m.p.h.

The Miles " Libellula " type of aircraft represents another attempt to break away from orthodoxy. The first machine of this type was flown in 1942. It was a tandem-wing aircraft, the forward pair of wings being set high just behind the pilot's cockpit and the rear pair low at the rear end of the fuselage. A rudder and vertical fin were mounted at the outer end of each rear wing, the elevators being arranged on the same wings near their junction with the fuselage. A pusher propeller at the rear end of the fuselage was driven by a 130 H.P. " Gipsy Major " engine. In a later version the forward wings are low and the rear high and swept back. In this design the power plant consists of two " Gipsy Major " engines mounted on the rear wings, one on each side of the fuselage, and driving tractor propellers. The rudders and vertical fins are, as before, arranged at the tips of the rear wings, and there is an additional fin rising from the top of the fuselage at its rear end. Development of this " dragon fly " class of aircraft is being continued.



AVRO " TUDOR I " AIR LINER

British War Devices in 1945

No. II—(*Continued from page 33, January 11th*).

" Shark "

" SHARK " was the code name given to equipment designed by the War Office and manufactured by Dorman, Long and Co., Ltd., for the rapid rehabilitation of ports. In a recent issue (December 21st, 1945) an illustrated description of the equipment and the method of manufacture appeared. The equipment consisted of sectional dock caissons, made up in units consisting of steel interchangeable tanks, 30ft. high, 40ft. long, and 7ft. wide, with provision for the attachment of hinged timber flaps. As a replacement for damaged lock gates, the units were towed across the Channel and floated into position at high tide. A caisson was formed by bolting together the necessary 7ft. widths and attaching the flaps to each end unit. Special preparation of the damaged dock cill was necessary, but after this preparation had been effected, it was possible to allow shipping to enter or leave a tidal basin by floating out the caisson at suitable states of tide, the lock being re-established as required. This equipment was used successfully at Calais.

As with other big wartime productions, the need for this equipment was sufficiently urgent to require exceptional measures to be taken for its manufacture. A complete mass production plant was specially laid out, with a target of production of one " Shark " unit per day. With the aid of numerous subcontractors, Dorman, Long and Co. met this requirement. Since, however, the enemy was unable to effect destruction on the anticipated scale, it was not found necessary to complete the full number of units originally ordered, production being stopped after about one-third of the contract had been completed.

Bridge-Laying Tanks

In our issue of June 22nd we published some further details of equipment used in the invasion of France and Germany—mobile tank bridges carried on and laid by tanks. Various types of bridge-laying tanks were developed to assist armoured divisions to keep moving and to form part of the Royal Engineers' equipment for assault operations. A photograph reproduced in a Supplement to our issue of January 4th, 1946, showed a " Valentine " tank, with a " scissors " bridge mounted in place of the normal turret. In all the bridge-laying tanks developed, the object was to be able to lay a bridge across an obstacle without the need for any personnel to be exposed to fire.

As is implied in the name, in the "scissors"