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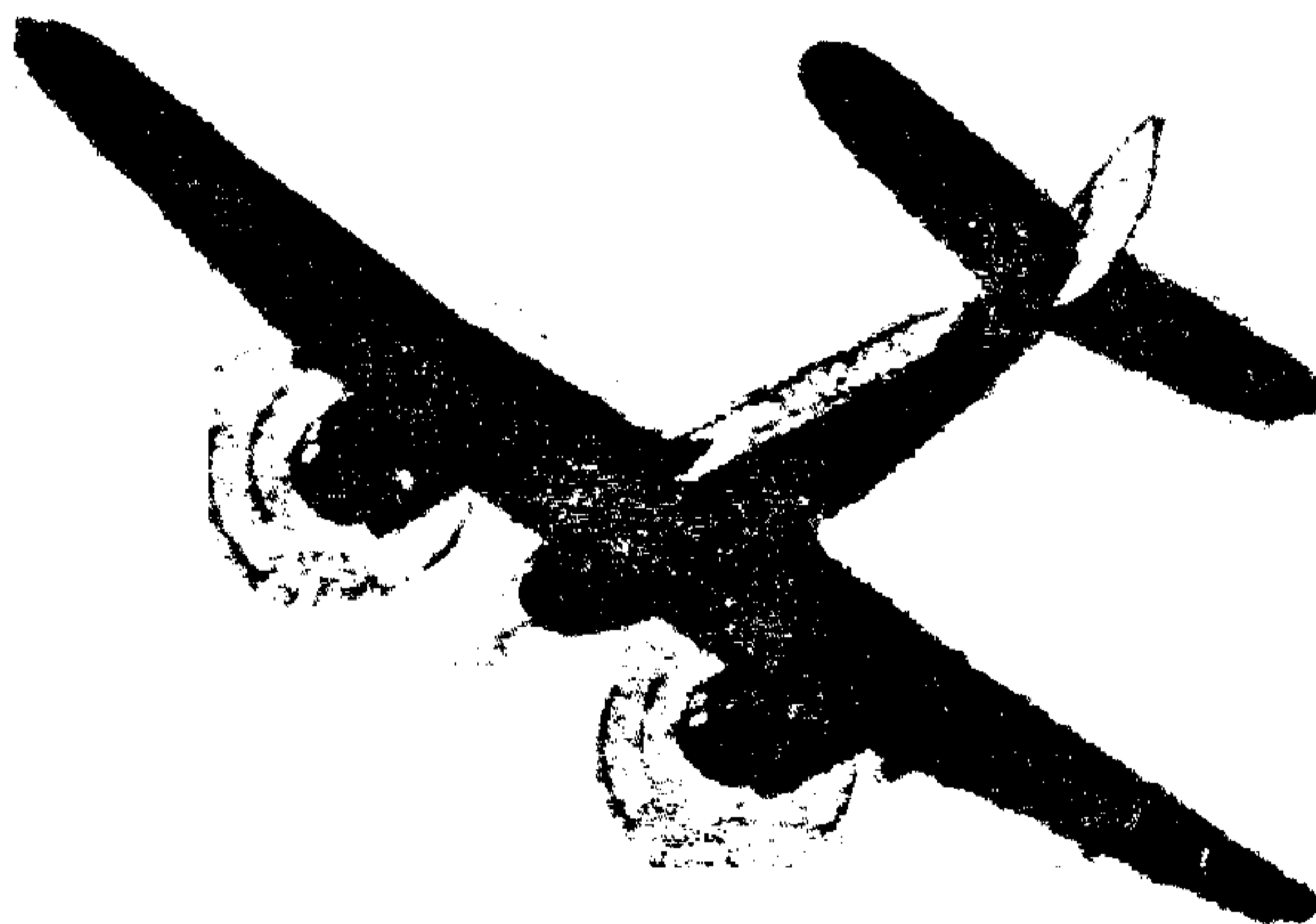
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PILOT'S NOTES

FOR

BEAU FIGHTER

MARK VI—TWO HERCULES VI ENGINES
MARKS TFX & XI—TWO HERCULES XVII ENGINES



RECOMMENDED BY ORDER OF THE AIR COUNCIL

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NOTES TO USERS

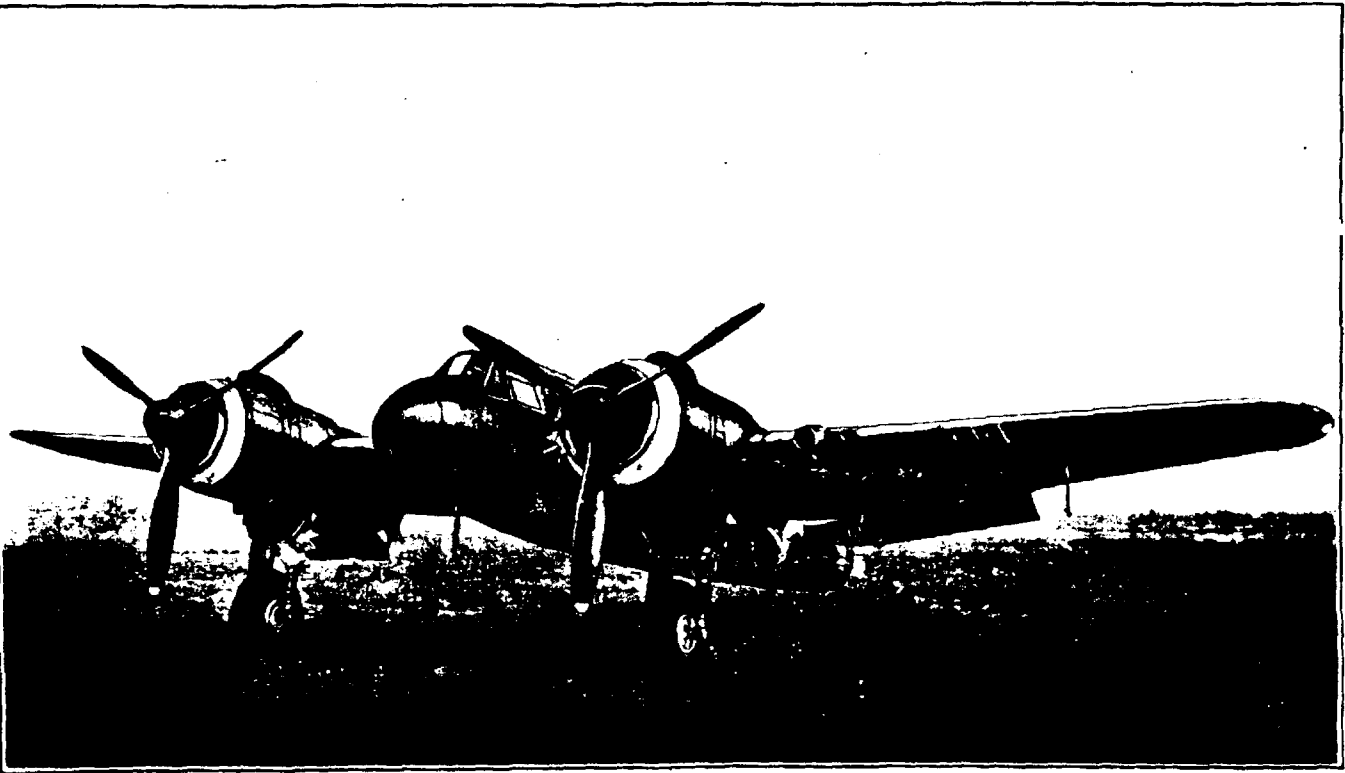
THIS publication is divided into five parts: Descriptive, Handling, Operating Data, Emergencies, and Illustrations. Part I gives only a brief description of the controls with which the pilot should be acquainted.

These Notes are complementary to A.P.2095 Pilot's Notes General and assume a thorough knowledge of its contents. All pilots should be in possession of a copy of A.P. 2095 (see A.M.O. A93/43).

Words in capital letters indicate the actual markings on the controls concerned.

Additional copies may be obtained from A.P.F.S., Fulham Road, S.W.3, by application on R.A.F. Form 294A, in duplicate, quoting the number of this publication in full-- A.P. 1721F, H & J.

Comments and suggestions should be forwarded through the usual channels to the Air Ministry (D.T.F.).



BEAUFIGHTER VI, X, XI

BEAUFIGHTER VI, TFX, & XI PILOT'S NOTES

Second Edition. This edition supersedes all previous issues.

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INTRODUCTION

Unless otherwise specified the descriptive notes, handling recommendations and data in this publication apply to all three Marks.

Beaufighter VI. with Hercules VI or XVI engines. These notes supersede all previous issues which covered the Beaufighter I and VI. (A second edition of Pilots Notes for the Beaufighter I only—A.P. 1721A P.N. 2nd edition—is now published separately.)

Beaufighter TF. X. with Hercules XVII engines. This is similar to the Beaufighter VI, but is equipped for torpedo launching.

Beaufighter XI C. with Hercules XVII engines. This is a Coastal Command reconnaissance fighter similar to the Beaufighter VI C.

NOTE.—A few Beaufighter VI aircraft have been equipped for torpedo launching and are similar to the Beaufighter TF. X. except that they retain Hercules VI engines.

PART I

DESCRIPTIVE

NOTE.—The numbers quoted in brackets after items in the text refer to the key numbers of the illustrations in Part V.

FUEL AND OIL SYSTEMS

1. Fuel tanks

- (i) There are two main tanks, inner and outer, on each side as shown in Fig. 1.
- (ii) Later aircraft also have four long-range tanks—shown by dotted lines—which form, in effect, enlarged outer main tanks. The outer of these tanks displace the wing guns which are not fitted on aircraft so equipped. The tanks in each wing are inter-connected by a cross balance pipe controlled by a balance cock.

PART I—DESCRIPTIVE

2. Fuel gauges and cocks

- (i) Contents gauges (65) and (99) are fitted for all tanks. On later aircraft with long-range tanks the gauges for these (10) are on the top of junction Box No. 8 on the starboard side. A master switch (94) controls all these gauges.
- (ii) Fuel pressure gauges (on later aircraft replaced by low pressure warning lights (27)) are on the instrument panel. They are controlled by the contents gauges master switch (on later aircraft by the undercarriage indicator switch).
- (iii) The fuel cock controls are mounted on the port side aft of the engine controls. The large red handwheel (57) controls the port tanks cock and the small green handwheel (56) controls the starboard tanks cock. Each handwheel is marked TANKS OFF, OUTER TANK ON, and INNER TANK ON and they are turned clockwise from the TANKS OFF position to open the cocks. The appropriate marking is turned to the top (when a ball catch can be felt engaging) to obtain the required cock position. There is also a knob on each wheel which is at the top in the TANKS OFF position. The suction balance cock lever (54) is marked S and coloured black. The lever is moved down to open the cock.

3. **Oil system.**—There is one tank for each engine with an effective capacity of 18 gallons giving a total of 36 gallons. Later aircraft have larger tanks to allow for extra oil required when feathering propellers are fitted. Pressure (18) and temperature (29) gauges are on the instrument panel.

4. **Worth oil dilution system.**—This is fitted on later aircraft with operating switches at the engine nacelles.

MAIN SERVICES

5. Electrical services

(i) A 24-volt D.C. generator on the starboard engine in parallel with a battery supplies current for:—

All lighting circuits

Engine starters (and booster-coils when fitted)

Propeller feathering (when fitted)

Instruments

PART I—DESCRIPTIVE

Cowling gill motors

Guns, cameras, torpedo and bomb releases

Pressure-head heating

Fire-extinguishers

Dinghy release (on later aircraft)

- (ii) Early aircraft have an ammeter on the observer's electrical panel; this is in the charging circuit and gives an indication should power fail. Later aircraft have a power failure warning light or, where this is not fitted, the voltmeter in the generator circuit, which normally reads about 29 volts, indicates that power has failed if the voltage falls to about 26. A generator field switch is fitted at the forward end of the fuse box. This should normally be ON.
- (iii) An 80-volt A.C. generator on the port engine supplies current for the special radio equipment when fitted.

6. Hydraulic system

- (i) There are two hydraulic pumps, one on each engine.
- (ii) On the ground the hydraulic power lever (67) must always be ON.
- (iii) In the air, when hydraulic services are not required, the hydraulic power lever must always be OFF. This opens a by-pass and prevents the pumps overheating and consequently failing.
- (iv) A hand-pump is used:
 - (a) for ground operation when engines are not running or in the air in emergency—see Part IV (with hydraulic power lever ON).
 - (b) for emergency lowering of flaps and undercarriage through separate pipe lines, which are brought into operation by setting an emergency selector (68) ON. This selector must never be ON unless the hydraulic power lever is OFF and on some aircraft an interlock safeguards this. Until Mod. 853 is incorporated this system must not be used with the flap lever at neutral; it must be set either DOWN or UP when it is possible to lower flaps and undercarriage together only. With Mod. 853 the undercarriage can be lowered first with flap lever at neutral, and on some aircraft an interlock returns the flap lever from UP to neutral when the emergency selector lever is set ON.

PART I—DESCRIPTIVE

7. Pneumatic system

(i) A compressor on the starboard engine charges two cylinders and supplies compressed air for operating:—

Guns

Wheel brakes

Fuel jettison valves

Landing flare release (if fitted)

There is a gauge (on later aircraft two) near the equipment crate to port indicating cylinder pressure and a triple reading gauge (33) which shows the pressure in the brake circuit.

(ii) Two vacuum pumps, one on each engine, operate the flying instruments, and a change-over cock (34) enables either pump to be selected. On early aircraft only, there is a vacuum gauge.

AIRCRAFT CONTROLS

8. **Primary controls.**—These are conventional and the pedulum type rudder pedals are adjustable for reach by a handle below the instrument panel.

9. **Trimming tabs.**—The elevator tab control (85) with its indicator (82), rudder (84), and aileron (97) tab controls with integral indicators, operate in the natural sense.

10. **Undercarriage control.**—The lever at (69) is set UP to retract and DOWN to lower, the main and tail wheel units. The lever should be left in the DOWN position on the ground.

11. Undercarriage safety locks

(i) A spring-loaded pin locks the lever in the DOWN position while the aircraft is on the ground. The pin is withdrawn when the aircraft is airborne and, if required, the lock can be overridden by depressing the knob on the lever.

(ii) Locking pins, inserted by hand in the knuckle joints of the inboard radius rods, provide an additional safety measure. These pins, which have red flags attached to them, must be withdrawn before flight.

12. **Undercarriage indicators and horn**

Three indicators (13) show the position of each main wheel and the tail wheel. Indications are:

- | | |
|---------------------------------|-------------------------------|
| Wheel locked up . . . | UP on red background |
| Wheel locked down . . . | DOWN on green background |
| Between locks or indicator off. | Black and white dazzle lines. |

The indicator switch (31) is interlocked with the ignition switches. A warning horn sounds if the throttles are less than one-third open when any wheel is not locked down.

13. **Flaps controls and position indicator.**—The lever at (69) is set UP to raise and DOWN to lower the flaps. When an intermediate position is required the lever should be returned to neutral as soon as the desired setting is reached. The position indicator is to the left of the flap lever.

14. **Dive brake controls.**—When dive brakes (which consist of flaps above and below each wing operated by suction and pressure generated by venturi tubes) are fitted the operating lever (70), controlling the valves in the venturi tubes, is mounted on a box former by the engine controls. This lever is set back to OPEN the brakes and forward to CLOSE them; it must be operated smartly and no attempt must be made to set the brake flaps in an intermediate position. A balance pipe is fitted between the two venturi systems.

15. **Wheel brakes.**—The pneumatic brakes are operated by a lever (8) on the handwheel. For parking, a spring-loaded catch retains the lever in the ON position. When twin brakes are fitted by Mod. 802 a pressure of 85/90 lbs./sq. in. gives as much braking power as can safely be applied.

NOTE.—On certain aircraft there is a lock fitted to the tail wheel to hold it central while taking off and landing. The control for this is a push-pull handle to the right of the pilot's seat. To free the wheel pull up. To lock, press the small knob on handle then push down.

ENGINE CONTROLS

16. Throttle and mixture controls

- (i) The throttle levers are gated at CRUISING and climbing (RATED) positions. The mixture lever (Hercules VI only) is interlocked with the throttle levers so that it returns to NORMAL if either throttle is closed or opened beyond the cruising gate.
- (ii) With Hercules XVI & XVII engines the mixture lever is not used; mixture regulation is automatic and an economical mixture strength is obtained at or below $1\frac{1}{2}$ lb./sq.in. boost. If the lever is fitted, it is locked by a warning plate. For weak mixture cruising the throttle lever should not be opened beyond the gate or white line.

17. Propeller controls

- (i) *Speed controls.*—With 20" propellers the extreme aft position of the levers (66) gives positive coarse pitch. On a few Hydromatic constant-speed propeller installations the aft position of the levers also selects positive coarse pitch. On most hydromatic installations, however, the aft position gives about 800 r.p.m. under governor control for use to reduce drag with a failed engine. With both Hydromatic types the throttle should be closed before the propeller lever is pulled right back.
 - (ii) Later aircraft have fully feathering propellers with shielded feathering push switches fitted aft of the cowling gill controls. Unless large capacity oil tanks are installed, a warning plate is fitted stating that except in emergency feathering should only be carried out during the first four hours of any flight, as after this there may be insufficient oil left to enable the propeller to be unfeathered subsequently. With fully feathering propellers the aft position of the lever does not lock the propeller in P.C.P.
- 18. Two-speed supercharger controls.**—The two-speed supercharger (BLOWER) controls (76) and (78) are mounted aft of the throttle and mixture controls. There are two positions only to which the levers should be moved, forward to fully supercharged marked S and back to

PART I—DESCRIPTIVE

medium supercharged marked M. On some aircraft S gear is locked out of operation at the engine end; the lever is left disconnected and can be moved freely. When not locked, S gear should be exercised periodically, whether used or not.

19. **Carburettor air-intake controls.**—The air-intake shutter levers (74) are outboard of the two-speed supercharger controls. The levers have red and green knobs for port and starboard engines respectively. The levers are set forward for cold air and back for hot air.
20. **Cowling gills controls.**—The two cowling gill motor switches (79) are aft of the supercharger controls. They have three positions marked OPEN, OFF, and CLOSED. The knobs must be depressed when setting the switches to OPEN or CLOSED: when the required gill setting is obtained the switch should be returned to OFF and the knob pulled out. Red warning lights by the switches indicate when the motors are in operation. On later aircraft a visual gill position indicator is fitted on the port sill tube.
21. **Carburettor cut-out controls.**—The carburettor cut-out controls (51) are in a box with a spring-loaded hinged cover fitted to the top of the front spar on the port side. The controls are red and green for port and starboard respectively.
22. **Starting magneto switches.**—These are mounted on the engine nacelle structure. On later aircraft booster-coils are fitted instead of starting magnetos; they are brought into operation by the engine starter buttons.
23. **Starter controls.**—The pushbuttons (22) are on the instrument panel and on aircraft with engine starting master switches (24) fitted, these must be ON before the pushbuttons will operate the starters. When these switches are OFF the pushbuttons operate the booster-coils only, for hand starting.

OTHER CONTROLS

24. De-icing controls

- (i) *Propeller de-icing*.—On early aircraft only, the control is mounted on the starboard sill tube and is marked OFF and ON. When the knob of the control is rotated in a clockwise direction the speed of the electric-driven ejector-pumps is increased.
- (ii) *Windscreen de-icing*.—A hand-pump (83) is fitted on the starboard side under the instrument panel. On later aircraft the pump is near the rudder trim tab control.
- (iii) *Pressure-head heating*.—The switch is on the right-hand side of the switch block above the compass.
- (iv) *Dive-brake venturi de-icing*.—A hand-pump (101) fitted to the right of the pilot's seat, with a cock (102) marked OFF, PORT, STB'D, PORT AND STB'D, is used for spraying de-icing fluid into either venturi or into both simultaneously. In icing conditions, five strokes of the hand-pump, every minute, are required for each venturi, to prevent icing up.
25. **Oxygen system controls**.—Two (on later aircraft three) cylinders supply oxygen to a standard regulator (63) with a bayonet socket on the starboard side. On later aircraft an economiser is fitted. Similar equipment is installed at the observer's station.

ARMAMENT CONTROLS (on later aircraft)

26. **Torpedo sight** (on torpedo version only).
The manual sight control (16) is on the instrument panel to port with a switch and dimmer control (6) to starboard above the instrument panel.
27. **Torpedo and bomb master switch**.—(90) controlling both bomb and torpedo circuits is on the starboard sill tube. For torpedo launching the F.46 and bantam cameras are preselected by the camera master switch.
28. **Torpedo depth setting control** (on torpedo version only).
—The control handle with integral depth indicator is under a hinged cover on the floor forward of the observer's seat.

PART I—DESCRIPTIVE

29. **Torpedo and bomb selector and fuzing switches**

(i) A two-way switch (91) on the starboard fuselage side selects either port and/or starboard bombs. On torpedo version aircraft the port switch which is painted red also selects the torpedo releasing circuit. A red warning lamp lights to indicate when the armament has been selected and goes out after release. After the bomb release button has been pressed, check that the bombs have both been released by switching OFF the distributor. If the red warning lamp remains on either or both bombs have failed to release.

(ii) NOSE and TAIL bomb fuzing switches, at (87), are fitted.

30. **Under-wing load master switch and selector**

The master switch (62) is on the fuselage side aft of the engine controls. The selector (2), PAIR or SALVO, is to port on the central windscreen frame. When the under-wing loads are carried the landing lamps are covered in and their switch is shielded to prevent its use. The port wing camera gun is preselected by the master switch on the starboard shelf below the aileron trim control.

31. **Torpedo, bomb and under-wing load release.**—The button (73) on the starboard engine throttle lever releases the armament selected; it also operates the F.46 and bantam cameras automatically when these have been preselected (*see* Para. 27).

32. **Gun firing controls.**—On early aircraft a button on the control wheel fires all guns together; on later aircraft the button fires the wing guns (when fitted) and a trigger on the same mounting (7) fires the 20 mm. guns. The G.45 cine camera is operated automatically by either the gun button or trigger, or independently by the button (5) which is also on the wheel.

33. **Gun sight.**—The reflector gun-sight (3) is above the instrument panel, the illumination socket and dimmer switch (1) being below the windscreen to port.