RECOGNITION
JOURNAL



TBM'S OVER JAPAN

DECLASSIFIED DECLASSIFIED

RESTRICTED
MAY, 1945
NUMBER 21

WAR DEPT.
NAVY DEPT.

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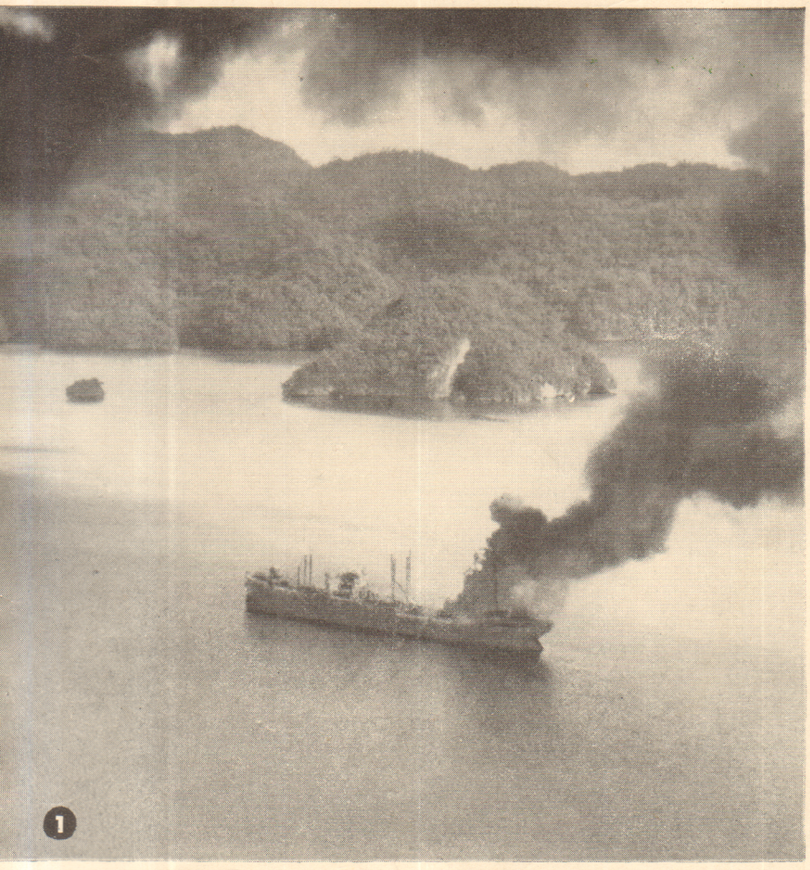
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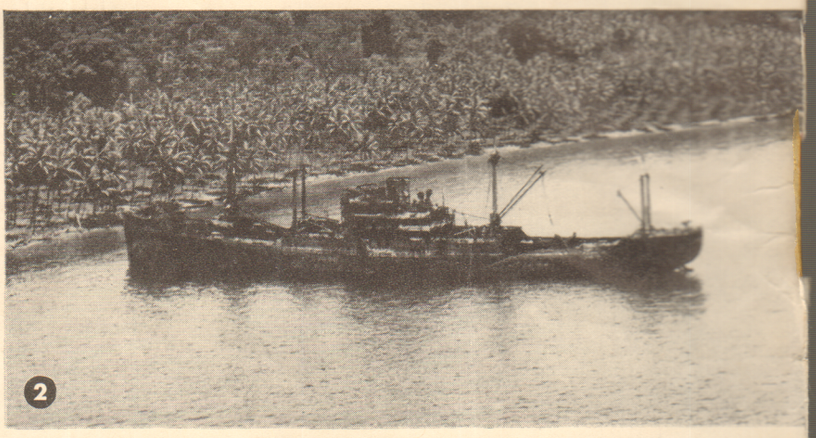
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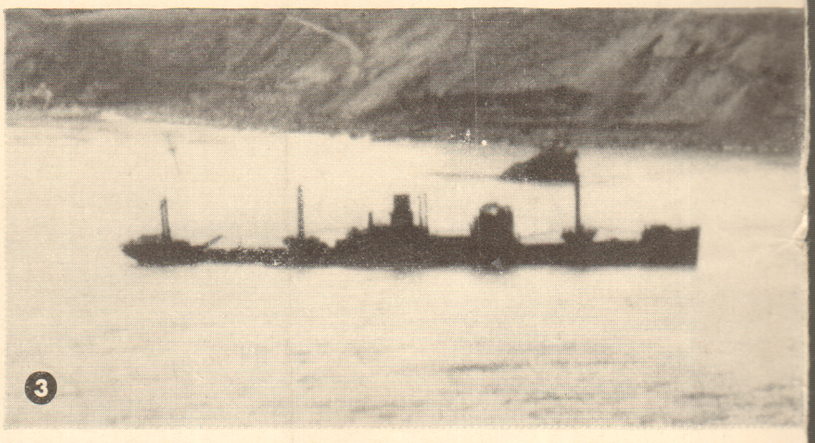
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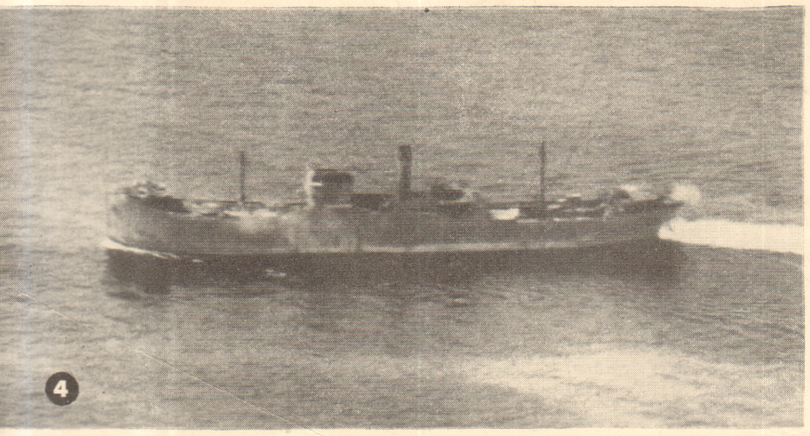
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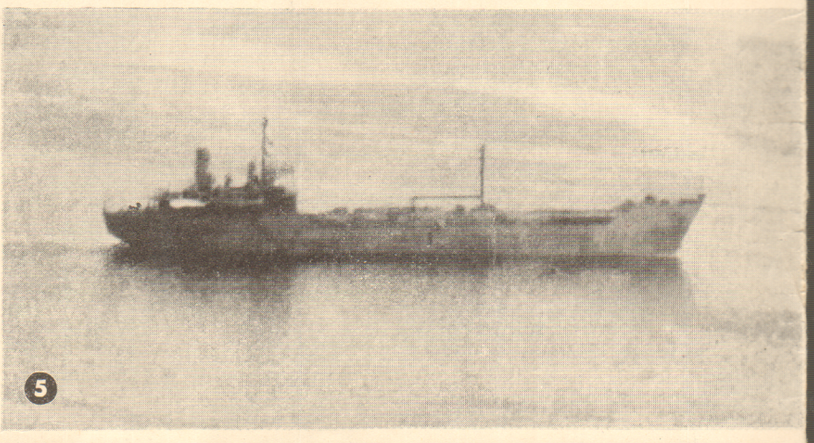
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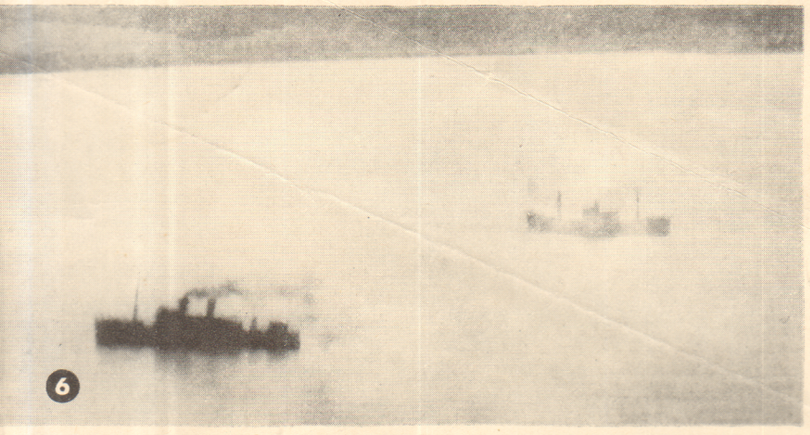
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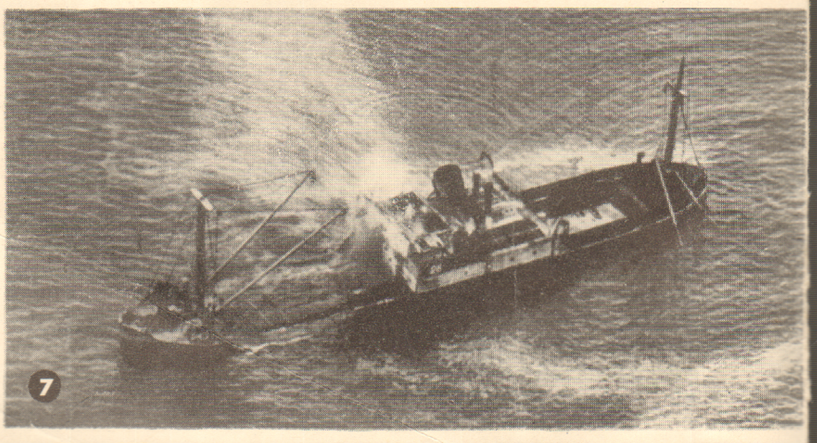
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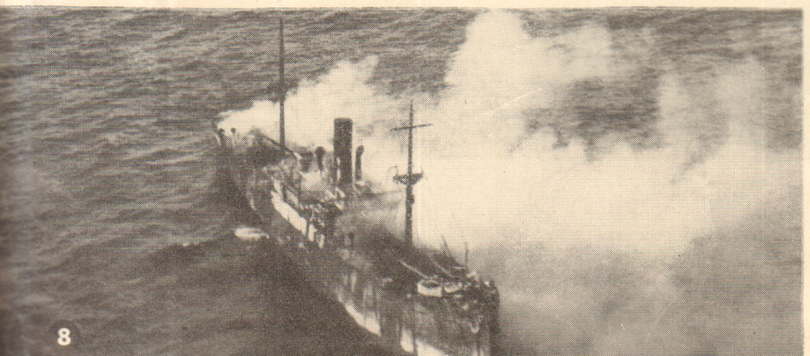
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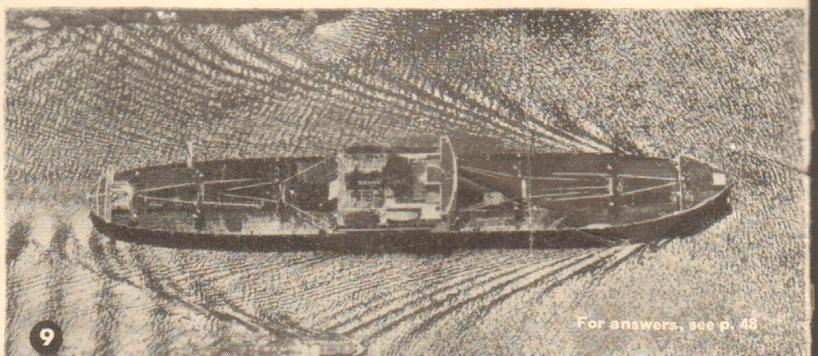
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For answers, see p. 48

NUMBER 21

RECOGNITION

JOURNAL

MAY, 1945

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UNESCORTED B-29's STARTED THESE FIRES IN YAWATA'S STEEL MILLS. GOOD FIGHTER COVER SHOULD GREATLY INCREASE THEIR EFFECTIVENESS

RECOGNITION OVER JAPAN

With the capture of Iwo Jima and with bases on Okinawa, the vast Pacific air arena is being steadily jammed into a smaller area by U. S. forces. U. S. land bases are now within fighter range of Japan's major cities, and a great floating air base, Task Force 58, has more than once hurled its fighters and bombers (*see cover*) against the offensive heart of the empire. Thus the U. S. air effort can now be concentrated on pulverizing Japan's crowded industries and wearing down her air power at its source.

Many U. S. airmen in the Pacific are accustomed to flying 2,000- to 3,000-mile missions completely unescorted. Because fighters up until now have automatically been hostile, there was little need to acquire the recognition sense and fire-"control" discipline essential to smooth bomber-fighter teamwork. This was the experience of the Eighth AAF over Europe (see *Journal* for December 1944). Stated in terms of "Don't shoot your friends," recognition in the Eighth didn't mean enough. It was only when the bomber crews discovered that fighter cover was saving their own skins that they learned to tell Allied fighters from German.

Additional problems will face the U. S. fliers who will have to tackle Japan. From the very first B-29 raid on Tokyo, air traffic over Japanese home islands has become steadily heavier. For the first time both U. S. Army and Navy planes will be operating on a large scale in the same area at the same time, and air crews of both services will be responsible for each other's safety.

Furthermore, the Japanese are still pumping a great variety of new designs into their air forces, and intelligence officers know that these new designs are being confused with older types. These officers can plan a smart, economical air war only if they have completely dependable reports, and such reports can be secured only by alert combat crews thoroughly trained in recognition.



Four-engine bomber Rita (*left*) is photographed for the first time parked near a Liz (*right*). This overhead view shows Rita to be of conventional design with a straight, bulky fuselage. Inboard nacelles project beyond wing's trailing edge. Span is about 107 ft.; length, 75 ft.



Army fighter Frank, encountered in numbers during Philippine campaign, is clean and smooth in appearance. Fuselage is long and tapering in characteristic Japanese style but has more rounded contours than Oscar or Zeke. Fin and rudder are curved in outline, rather low.

LATEST JAPS

New planes are formidable, varied lot

Although Japan continues to suffer heavy losses in the air, U.S. airmen must be on guard for the reinforcements now reaching enemy squadrons. Japan's new warplanes show marked improvement in speed, toughness and firepower, and by their number and variety attest to the vigor of the Japanese aircraft industry. Fortunately, we are able to keep up with the ingenious enemy through a steady flow of reconnaissance photographs and captured matériel.

The month's haul is of particular significance. An undamaged Jack and Frank have been recovered from the debris of abandoned Jap airfields and provide us with the first clear views of these new fighters. A short-range navy interceptor, Jack (*right*) is heavily armed with four 20-mm. cannon in the wings and two nose-mounted MG's. Frank (*below*) is a trim, sturdy army design and perhaps the most dangerous fighter yet developed by our Pacific enemy.

The aerial photograph of Rita (probably Renzan) shown on opposite page indicates that the Japanese did not withdraw from the four-engine bomber class after Liz was relegated to transport duty. Now in the experimental stage, Rita may well prove a serious threat to our advance bases. Reports credit it with a maximum speed of 362 m.p.h. and ten cannon or machine guns of heavy caliber.

On page 6 are pictures of a vehicle-carrying glider which may indicate new Jap emphasis on airborne troop movements. Called KU-8, it may be designed for reinforcement of isolated positions or for launching raids behind our lines. Although the Japanese are concentrating on new designs, a new Betty model (*also on page 6*) indicates that they are sprucing up familiar types to meet fast-moving combat standards.



Fat, curved lines of Jack's turtleback fuselage are broken by the cockpit fairing. The round, radial nose projects beyond stubby wing like the end of a beer keg.



Powerful engine requires four-bladed propeller and gives Frank more prominent nose than most Jap fighters. Oval cowling is broken by air-scoop in upper rim. Low wing has dihedral from the roots, mounts two 20-mm. cannon. Two 12.7-mm. MG's fire from the upper cowling.



Japanese KU-8 has a tapering fuselage topped off by triangular fin and rudder of conventional Japanese design. The span is approximately 66 ft.; length, 40 ft. Wheels are believed to be jettisonable after the take-off and landings made on the curved skids under the nose.



Head-on, the KU-8 shows typical glider features—bulky fuselage and high, broad wing. KU-8 is the first Japanese glider designed to carry vehicles. Nose section swings open laterally to load Jap equivalent of jeep. Alternately, it can carry 14 to 16 fully equipped troops.



Betty 24 differs little in appearance from earlier models. Burly fuselage remains straight and uncluttered though new bomb-bay doors create a slight ventral bulge forward of waist-gun hatches. Betty 24 carries single 7.7-mm. MG in nose, four flexible 20-mm. cannon.



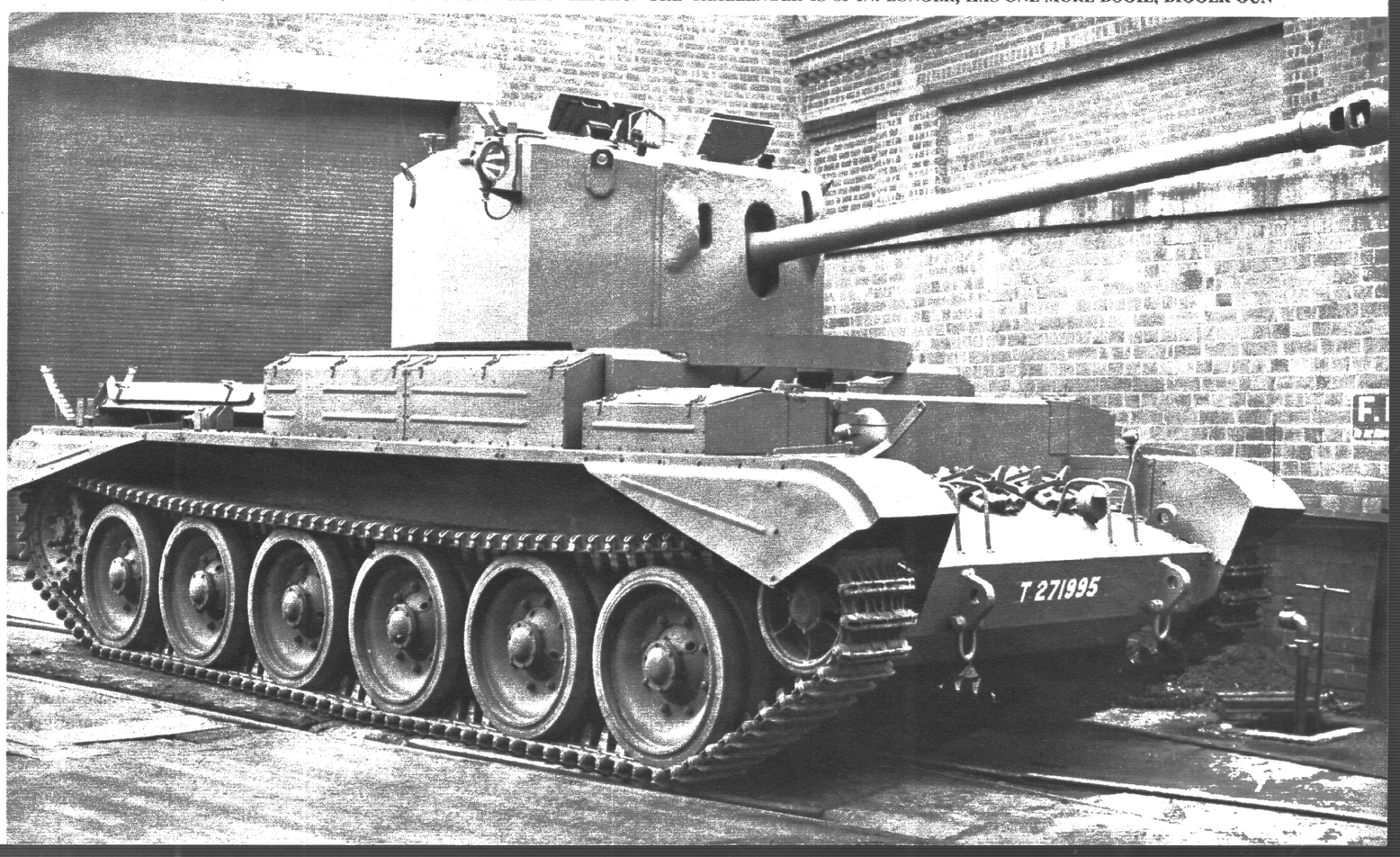
NEW COMET HAS CAST TURRET FRONT WITH BULGING GUN MANTLET, PROMINENT CUPOLA. NOTE THE FIVE BOGIES, FOUR RETURN ROLLERS

COMET AND CHALLENGER

In action with Britain's armored units are two new tanks, the Comet (*above*) and the Challenger. Placed by the British in the "cruiser" class, these vehicles are in the same weight and armament category as the U. S. M-4.

Resembling each other in hull design, the new tanks differ in main armament and turret shape. The Challenger's turret has angular sides like the Cromwell, mounts a high-velocity 17-pounder. With this gun and a top speed of 32 m.p.h., the Challenger is primarily for use in antitank roles. The welded and cast turret on the Comet, with its gun mantlet, large cupola and rear overhang, represents something new in British design. The gun, shorter than the Challenger's, is a 77.

CHALLENGER'S ANGULAR TURRET AND BOW SHOW CROMWELL ANCESTRY. THE CHALLENGER IS 30 IN. LONGER, HAS ONE MORE BOGIE, BIGGER GUN



T-34 rocket launchers perch high above Sherman tank turrets as their 60 tubes guide projectiles against German positions. Supported by vertical girders, the T-34 or "Calliope" has two layers of tubes with two banks each. Entire launcher can be jettisoned from inside the tank.



New running gear for M-4 has three small and two large return rollers, horizontal volute spring suspension for its six paired bogie wheels.



Grousers attached to M-4 track with spaced-out suspension give it over twice standard width, improve performance on marshy terrain.



BOXY M-17 "WHIZBANG" SITS MUCH LOWER OVER TURRET THAN T-34 (OPPOSITE). IT HAS 20 SETS OF GUIDING RAILS IN TWO BANKS OF TEN EACH

THREE ARMOR VARIATIONS

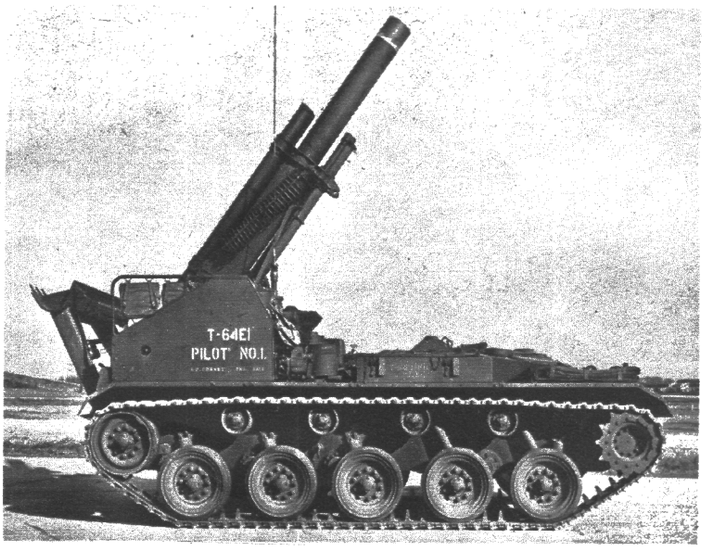
Changes improve U. S. vehicles

Now in combat with U. S. forces is a profusion of rocket-launching equipment which can be mounted on tanks, trucks and landing vehicles. Light, yet able to throw withering barrages, the T-34 and M-17 rocket launchers shown here were designed for use on M-4 tanks. However, certain adaptable U. S. rocket launchers may be seen on any vehicle. Because of this lack of standardization, men in forward areas must know the launching devices themselves as well as their rocket-vehicle combinations.

Other developments include improvements on the M-4 running gear (*below, left*) as well as the adaptation of the M-24 light tank chassis (*bottom of page*) for two SP guns. As a stopgap, grousers have been installed on M-4's to widen their tracks. A more permanent change is the horizontal volute suspension. To be built into all new vehicles having M-4 chassis, it carries wider tracks, gives better performance.

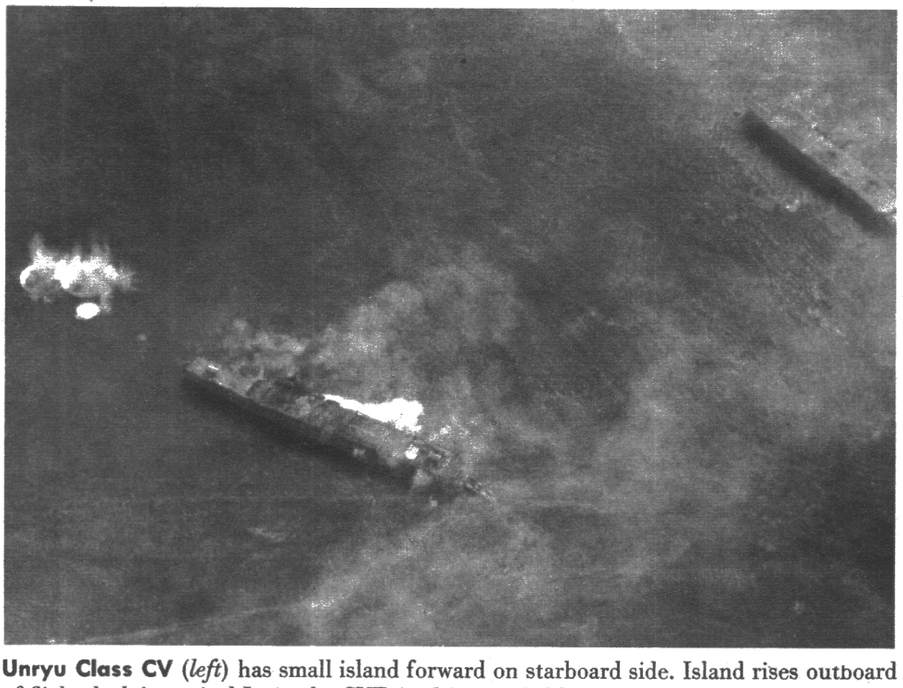


New Priest, M-37, has 105-mm. howitzer and superstructure similar to the M-7. M-24's torsion-bar suspension is chief recognitional change.



Another gun to get M-24 chassis is the 155-mm. howitzer. New combination is the T-64E1. The spade at rear is lowered prior to firing.

BOMB HURTLES TOWARDS AN UNRYU CLASS CV ALREADY STRADDLED BY A SCORE OF NEAR MISSES. NOTE FORWARD TAPER OF FLIGHT DECK

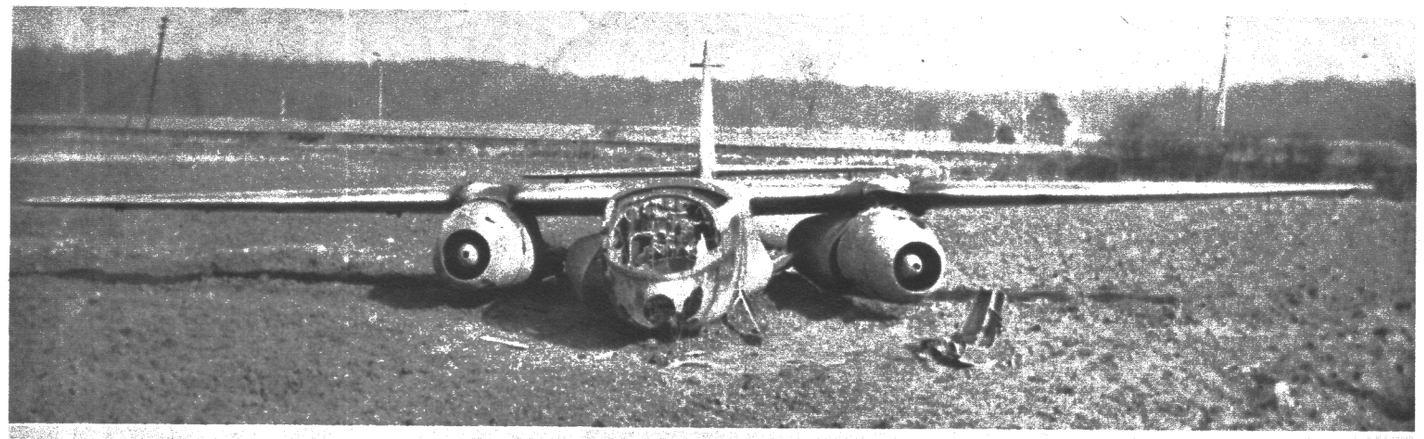


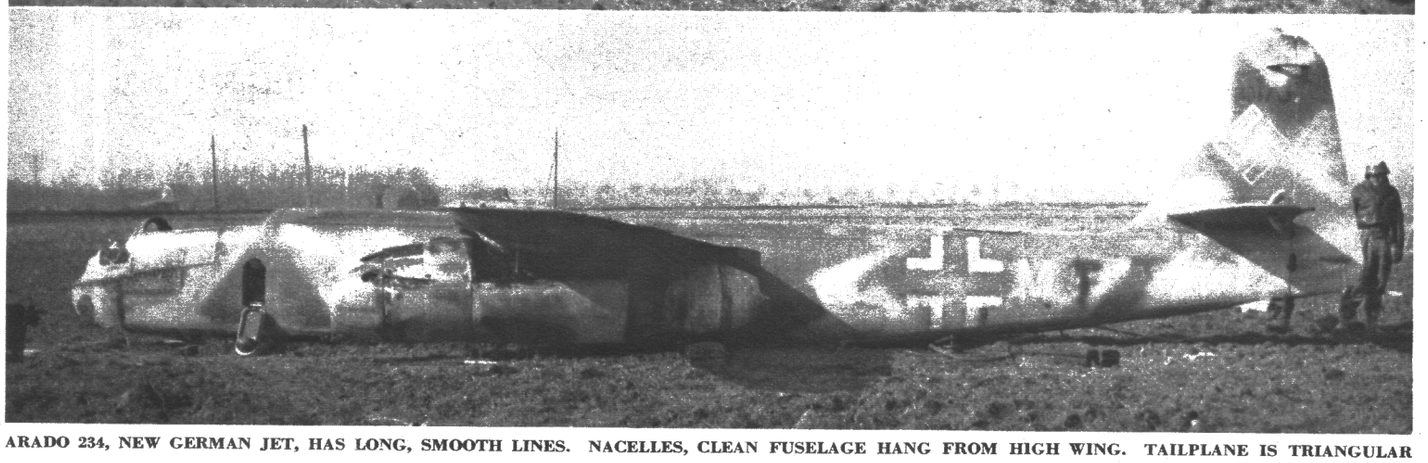
Unryu Class CV (*left*) has small island forward on starboard side. Island rises outboard of flight deck in typical Jap style. CVE (*right*) is probably converted from merchant hull.

JAP CARRIERS

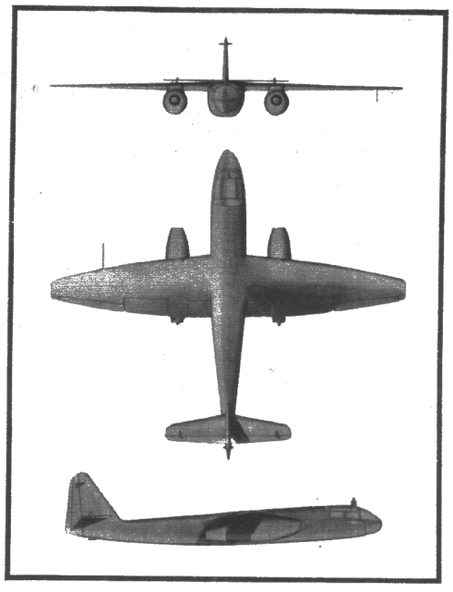
Last month, in powerful strikes against the anchorages of Japan's Inland Sea, the U.S. fleet gave Japan's new carriers a damaging baptism of fire. As a dramatic sequel to shipyard reconnaissance views (see April *Journal*), combat pictures from this attack point up Japan's stubborn efforts to restore her carrier strength. A few new CV's have joined the fleet, with more fitting out or on the ways, while an energetic conversion program is turning out merchant-hull CVE's for escort duty.

The large fleet carrier shown in both pictures is a unit of the new Unryu Class. Believed to be about 730 feet long, it has a rectangular yet somewhat tapered flight deck fringed with a heavy array of AA gun positions. An extension seen on the port side of the after flight deck may be a stack.





ARADO 234, NEW GERMAN JET, HAS LONG, SMOOTH LINES. NACELLES, CLEAN FUSELAGE HANG FROM HIGH WING. TAILPLANE IS TRIANGULAR



NEW GERMAN WARPLANES

Beaten Luftwaffe remains active in field of jet propulsion

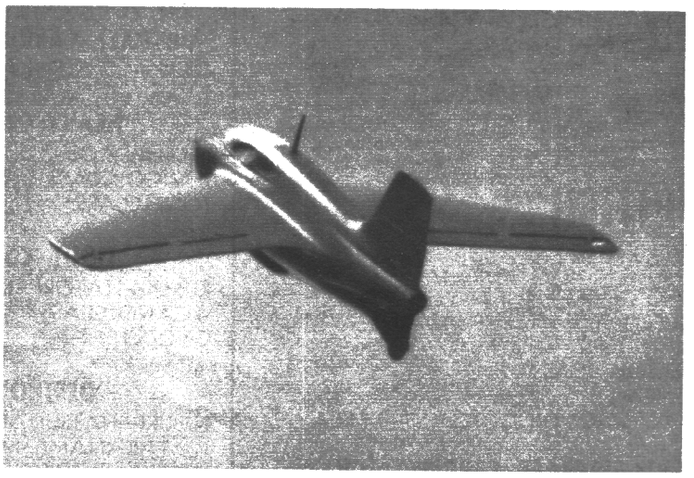
As German arms crumble on all fronts, the enemy continues his efforts to produce a "wonder weapon" that will turn the tide or at least shore up Nazi morale. Thus the Luftwaffe has thrown much of its waning energy into the development of jet- and rocket-propelled warplanes—the Me-262, Arado 234, and Me-163.

For some months we have encountered the two Messerschmitts (*below*), but the Arado 234 (*above and left*) is a significant new arrival. It reportedly exists in three versions—fighter, bomber and recco plane. The fighter model has attacked our bombers in recent weeks.

With a span of 47 feet, four inches and length of 41 feet, seven inches, the Ar-234 is large and heavy for a single-seater. When mounted, guns probably include at least four 30-mm. cannon. As a bomber, it carries a maximum load of about 3,300 lb. Speed approaches 500 m.p.h.



Twin-jet Me-262 has swept-back wing of irregular shape. Jet units are large and underslung. Sleek fuselage has long, pointed snout.



Me-163 interceptor flies at terrific speed on thrust of liquid fuel rocket. Short flight duration limits its usefulness. It has no tailplane.

WARSHIPS RECOGNITION TRAINING LIST RESTRICTED

ON THIS REVISED TRAINING LIST, WARSHIPS ARE NO LONGER DIVIDED INTO CLASS A AND CLASS B. THE DIFFERENT CLASSES WITHIN THE TYPE CATEGORY ARE NOW LISTED IN THE ORDER OF THEIR IMPORTANCE; i.e., IOWA CLASS HEADS THE ROSTER OF U. S. BB's AND ARKANSAS IS LAST.

SIMILAR DESTROYER CLASSES ARE GROUPED TOGETHER WITH THE FIRST CLASS NAME UNDERSCORED TO INDICATE THE GROUP OR RECOGNITION NAME FOR THE LOT. THE UNRYU CLASS (NEW JAPANESE CV) IS NOT LISTED BECAUSE OF THE LACK OF ADEQUATE PICTORIAL COVERAGE AT THIS TIME.

UNITED STATES

BATTLESHIPS (BB)

IOWA CLASS
SOUTH DAKOTA CLASS
NORTH CAROLINA CLASS
TENNESSEE CLASS
NEW MEXICO CLASS
COLORADO CLASS
PENNSYLVANIA
NEVADA
NEW YORK CLASS—ARKANSAS

LARGE CRUISERS (CB)

ALASKA CLASS

AIRCRAFT CARRIERS (CV)

ESSEX CLASS
ENTERPRISE
SARATOGA
RANGER

AIRCRAFT CARRIERS, LIGHT (CVL)

INDEPENDENCE CLASS

AIRCRAFT CARRIERS, ESCORT (CVE)

CVE (BOGUE—SANGAMON—CASABLANCA—COMMENCEMENT BAY CLASSES)

HEAVY CRUISERS (CA)

BALTIMORE CLASS
NORTHAMPTON—PORTLAND—PENSACOLA CLASSES
NEW ORLEANS CLASS
WICHITA

LIGHT CRUISERS (CL)

CLEVELAND CLASS
BROOKLYN CLASS—ST. LOUIS
ATLANTA—OAKLAND CLASS
OMAHA CLASS

DESTROYERS (DD)

FLETCHER—SUMNER CLASSES
BENSON—LIVERMORE—MAHAN—DUNLAP—PORTER—FARRAGUT CLASSES
GRIDLEY—BAGLEY—BENHAM—SIMS—SOMERS CLASSES

SUBMARINES

BALAO CLASS

BRITISH

BATTLESHIPS (BB)

KING GEORGE V CLASS
QUEEN ELIZABETH—VALIANT—WARSPITE
NELSON CLASS
RENOWN
ROYAL SOVEREIGN CLASS—MALAYA

AIRCRAFT CARRIERS (CV)

ILLUSTRIOUS—IMPLACABLE CLASSES—INDOMITABLE

AIRCRAFT CARRIERS, LIGHT (CVL)

UNICORN

AIRCRAFT CARRIERS, ESCORT (CVE)

CVE (BATTLER—NAIRANA CLASSES—ACTIVITY—PRETORIA CASTLE)

HEAVY CRUISERS (CA)

KENT—DEVONSHIRE CLASSES—NORFOLK
LONDON

LIGHT CRUISERS (CL)

DIDO CLASS
FIJI—SOUTHAMPTON CLASSES*
LEANDER CLASS
BELFAST
ARETHUSA CLASS—HOBART
ADELAIDE
EMERALD

DESTROYERS (DD)

"J" TO "Z" CLASSES
"A" TO "I"—WALLACE—DOUGLAS—SAGUENAY—CODRINGTON CLASSES
TRIBAL CLASS
"V" TO "W"—WAIRS CLASSES

SUBMARINES

TRITON CLASS
1940 "S" CLASS
UNITY CLASS

JAPANESE

BATTLESHIPS (BB)

NAGATO
ISE CLASS**
KONGO CLASS

AIRCRAFT CARRIERS (CV)

HAYATAKA CLASS

AIRCRAFT CARRIERS, LIGHT (CVL)

ZUIHO CLASS
HOSHO

AIRCRAFT CARRIERS, ESCORT (CVE)

OTAKA CLASS—KAIYO

HEAVY CRUISERS (CA)

NACHI—AOBA CLASSES
ATAGO CLASS
TONE CLASS

LIGHT CRUISERS (CL)

KUMA—NATORI CLASSES
AGANO CLASS
OYODO

DESTROYERS (DD)

FUBUKI—HATSUHARU—ASASHIO—TAKANAMI—MATSU CLASSES
TERUTSUKI CLASS
MUTSUKI—KAMIKAZE—MINEKAZE—WAKATAKE CLASSES

SUBMARINES

I-15
I-168
RO-100

FRENCH

BATTLESHIPS (BB)

RICHELIEU

LIGHT CRUISERS (CL)

LA GALISSONNIÈRE CLASS
EMILE BERTIN

DESTROYERS (DD)

LE FANTASQUE CLASS

OTHER TYPES

MERCHANT SHIP TYPES

TRANSPORT
FREIGHTER-TRANSPORT
FREIGHTER—(COMP. SUPERSTRUCTURE)
(SPLIT SUPERSTRUCTURE)
STACKS AFT—TANKER, CARGO, WHALER
NOTE (1): MERCHANT VESSELS OF ALL NATIONS ARE INCLUDED UNDER THE ABOVE TYPES
(2): CONVERSIONS OF MERCHANT SHIPS USED AS NAVAL AUXILIARIES ARE CLASSIFIED AS MERCHANT SHIPS

LANDING CRAFT

U.S. AND BRITISH

LANDING SHIP, TANK (LST)
LANDING SHIP, DOCK (LSD)
LANDING SHIP, MEDIUM (LSM)
LANDING CRAFT, INFANTRY (LCI)
LANDING CRAFT, TANK (LCT)
LANDING CRAFT, MECHANIZED (LCM)
LANDING CRAFT, SUPPORT (LCS)
LANDING CRAFT, CONTROL (LCC)
LANDING CRAFT, VEHICLE AND PERSONNEL (LCVP)
LANDING VEHICLE, TRACKED AND LANDING VEHICLE, TRACKED (ARMORED) (LVT AND LVT(A))
DUKW—2½-TON AMPHIBIAN TRUCK
NOTE: BRITISH HAVE NUMEROUS ADDITIONAL MINOR VARIATIONS OF BASIC TYPES

JAPANESE

TYPE A	TYPE E
TYPE B	TYPE F
TYPE C	LST
TYPE D	TYPE H

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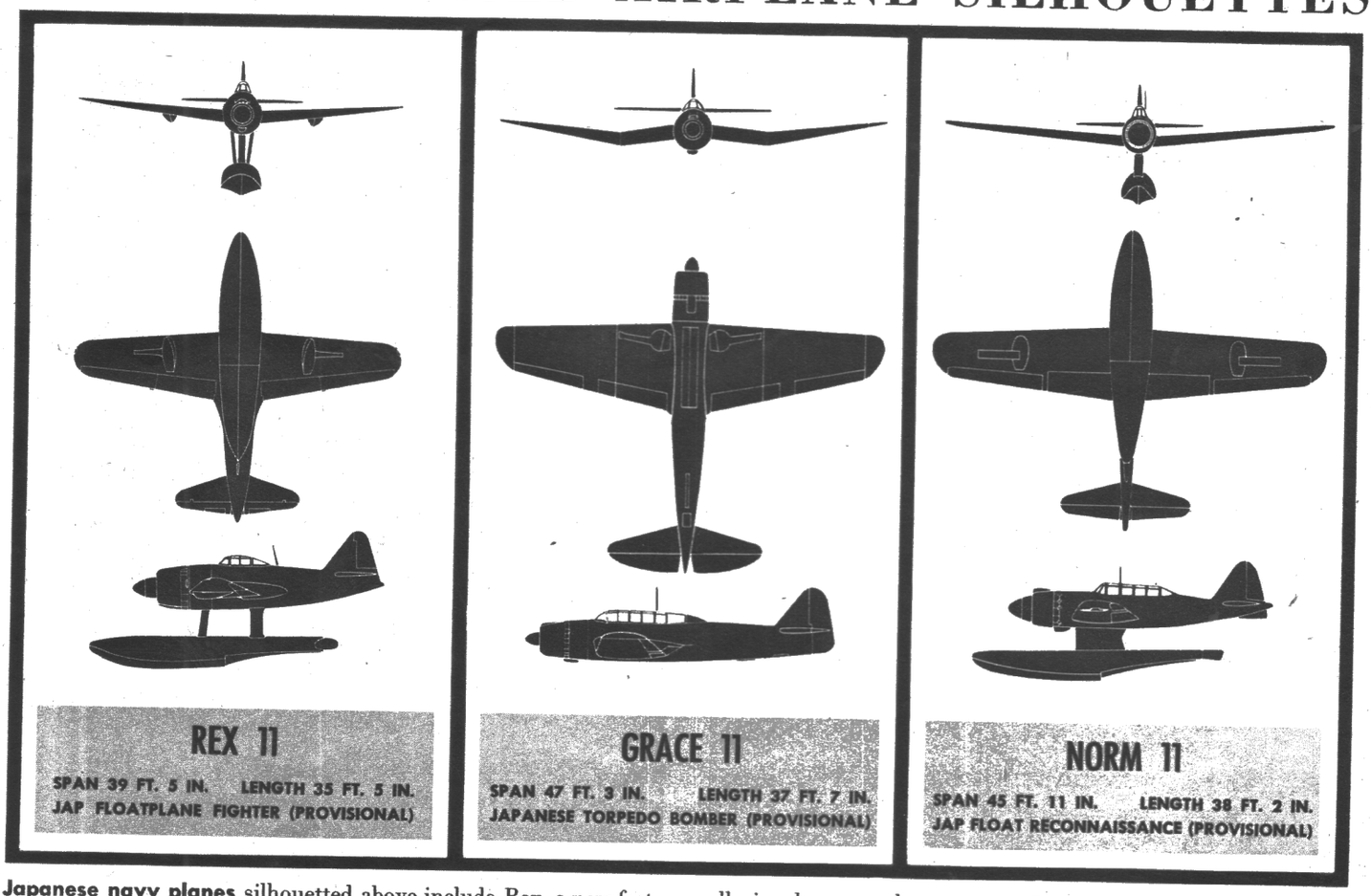
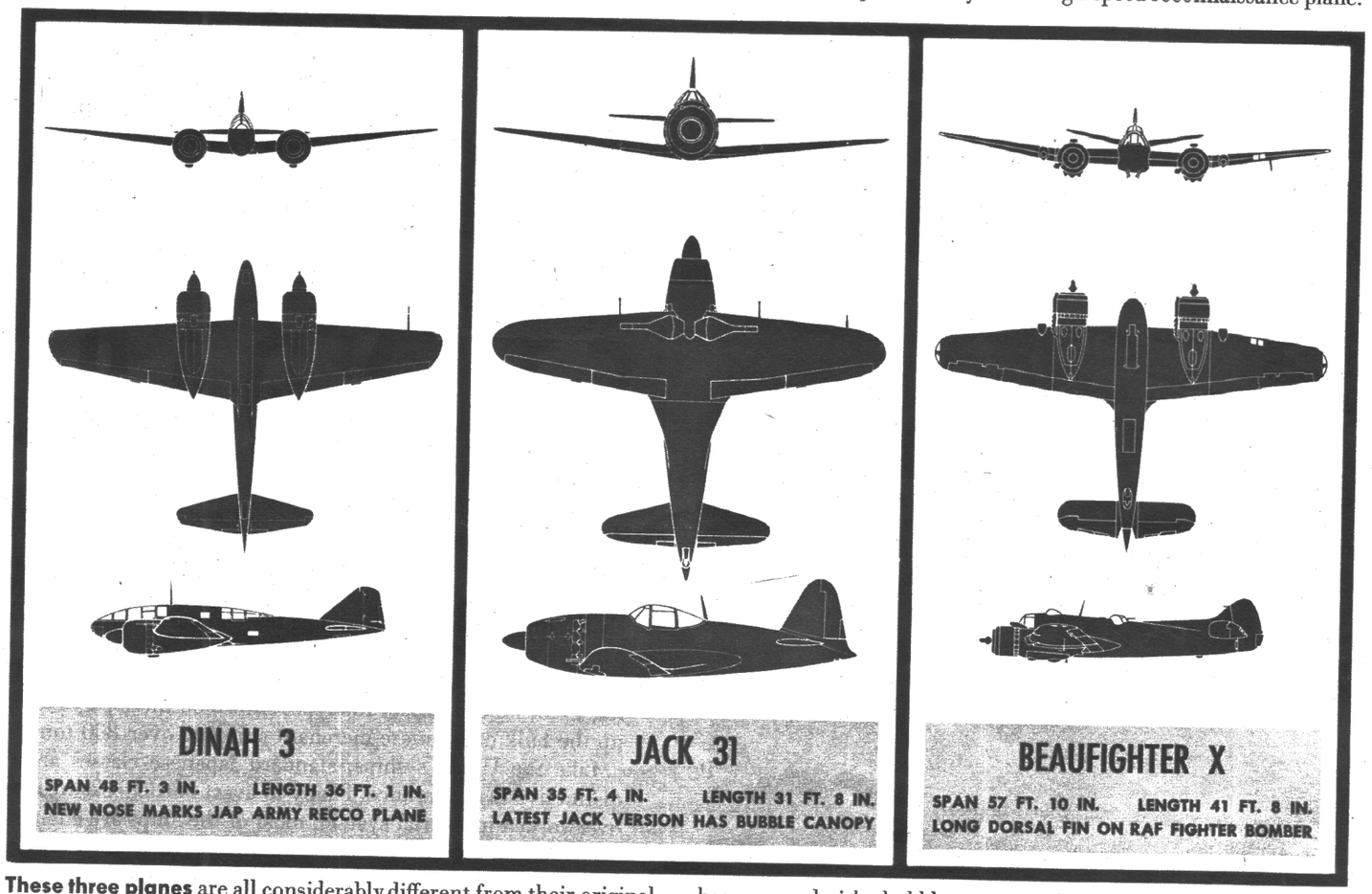
*INCLUDES UGANDA AND SWIFTSURE CLASSES

**ISE CLASS HAS BEEN REFITTED WITH FLIGHT DECK FOR 25 PLANES.

NEW AND REVISED AIRPLANE SILHOUETTES



Japanese navy planes silhouetted above include Rex, a new fast floatplane fighter which is fundamentally similar to the land-based George. Grace 11, latest enemy torpedo bomber, has a mid inverted gull wing, long greenhouse, triangular shaped fin and rudder. Single float, retractable wing floats and heavy streamlined strut distinguish Norm 11, the Japanese navy's new high-speed reconnaissance plane.



These three planes are all considerably different from their original versions. Dinah's long glass canopy now extends smoothly to the tip of the nose. A recent model of Jack, Japanese navy interceptor, has appeared with a bubble canopy replacing the original faired cockpit. A prominent dorsal fin which fairs forward almost to the gun turret distinguishes latest Beaufighter X from all previous models.







Triangular bow, chopped-off stern mark Sugar Baker Love as an "economy" hull design. Sturdy masts, booms and big hatches indicate it is a large cargo vessel. Note four kingposts built into bridge.



KOBE AERIAL SHOWS TWO SUGAR BAKER LOVES ON THE WAYS, THREE MORE

STANDARD

Three years of accelerating loss to U.S. submarines and aircraft have left Japan desperately short of merchant vessels. To meet the demand for replacements, Japan has concentrated all her merchant shipbuilding resources in a few standard designs. Roughly parallel to our Maritime Commission standardization, the Japanese program is probably as thoroughgoing and complete. During 1945, we can expect the types shown on these pages to make up the bulk of Japanese merchant shipping over 800 tons.

Like the USMC's ships, standard Japanese classes are very distinctive in appearance. Partly to avert bottlenecks in Japan's overworked industrial system, most of the ships are engines-aft design and powered by coal-burning rather than diesel engines. Speed in operation has been exchanged for speed in construction and for increased cargo capacity. Broad-beamed in relation to length, the most recent standard designs abound in straight

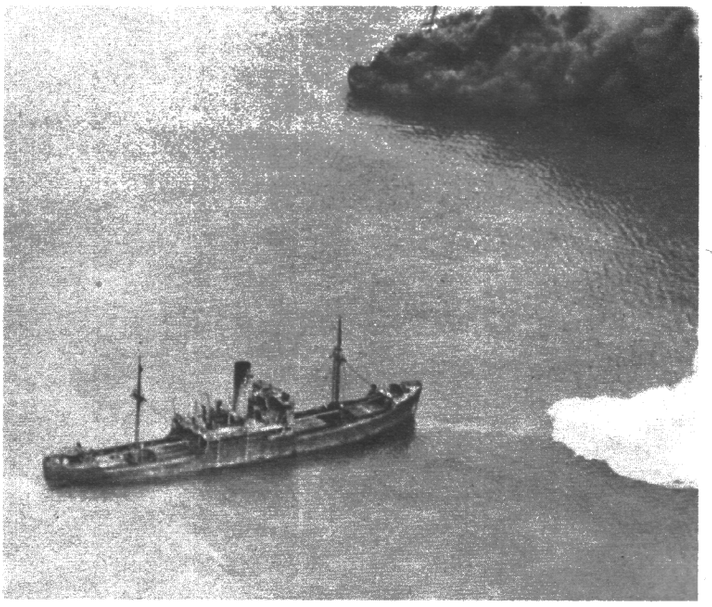


FITTING OUT IN DRYDOCK AND AT DOCKSIDE (UPPER LEFT). SMALL "ECONOMY" HULLS (LOWER RIGHT) ARE SUGAR CHARLIE SUGARS (ABOUT 850 TONS)

JAP SHIPS

lines and flat surfaces. Sharply pointed bows and beveled sterns make for simplicity in building and give them an angular or "economy" hull shape that is easy to recognize from the air.

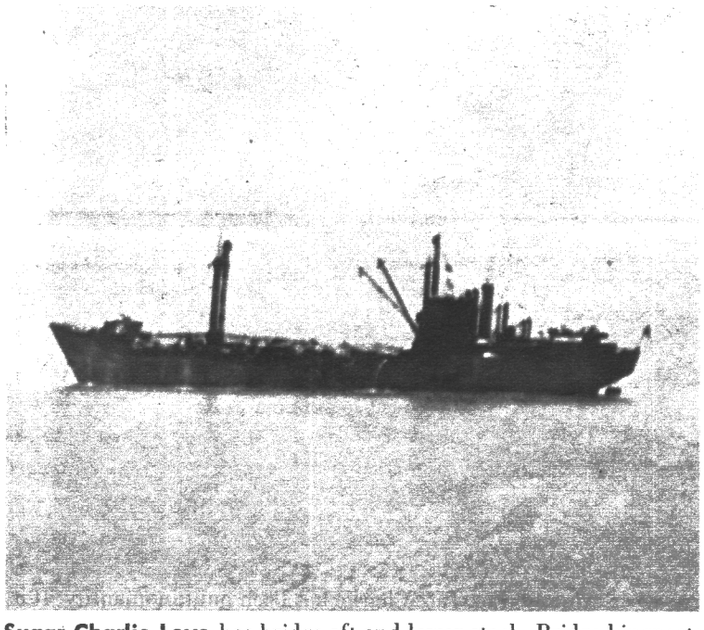
Standard cargo carriers are known in specialized manuals by single letters—Type A, Type C, etc.—while tankers are identified by the letter "T"—Type TM, Type TL, etc. However, all types have been coded in JMST and should be learned and reported according to this system. Certain earlier classes are simple but conventional designs, often dating from before the war, that have been built in quantity. The more recent and more important types are distinguished by the angular "economy" hull and sometimes have distinct JMST code names. Since both standard types are engines-aft, the cargo vessels somewhat resemble the tankers but they can usually be identified by their large hatches and array of heavy masts, kingposts and booms.



Prewar designed, Fox Tare Charlie has been built in quantity. It is one of two standard engines-amidships classes. Though not angular in hull shape, Fox Tare Charlie is simple in design, has lofty stack.



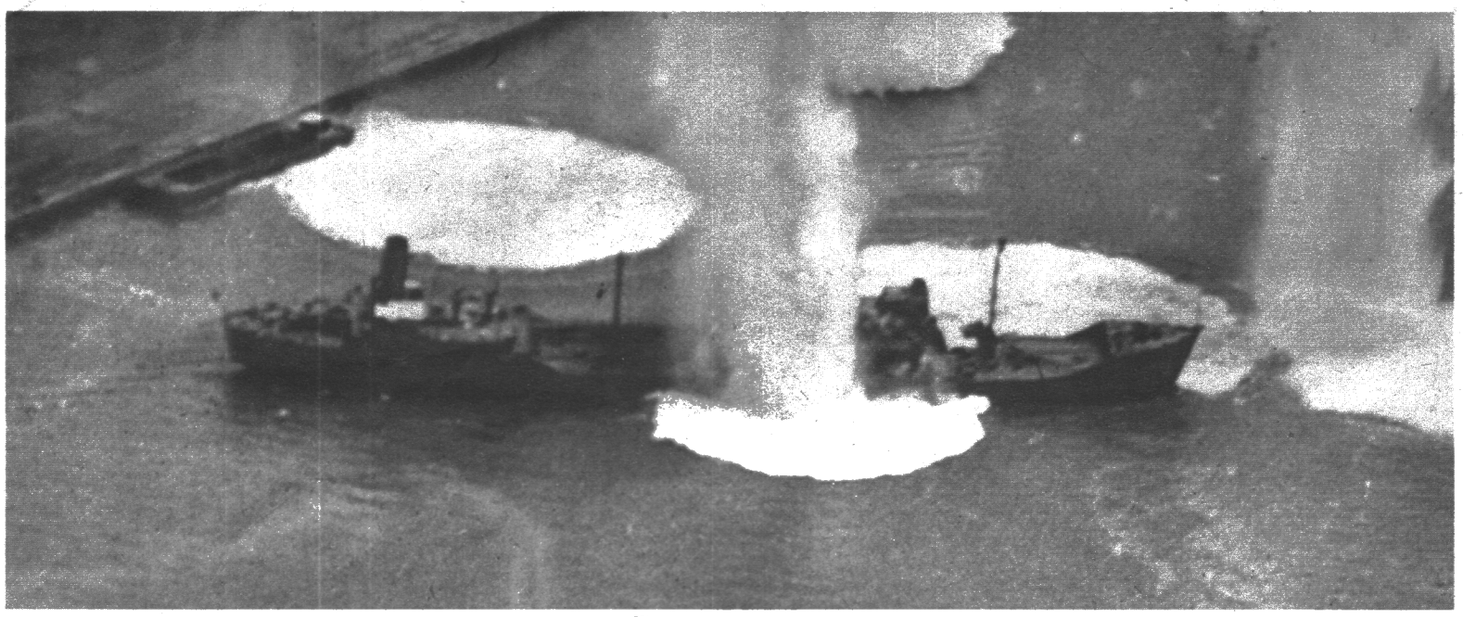
Stricken off Mindanao, small freighter (Sugar Baker Sugar) is shown with stern shattered and afire. A standard prewar coastal type, it is ancestor of "economy" Sugar Charlie Love. Heavy masts on poop and forecastle, kingposts behind forward bridge are outstanding features.



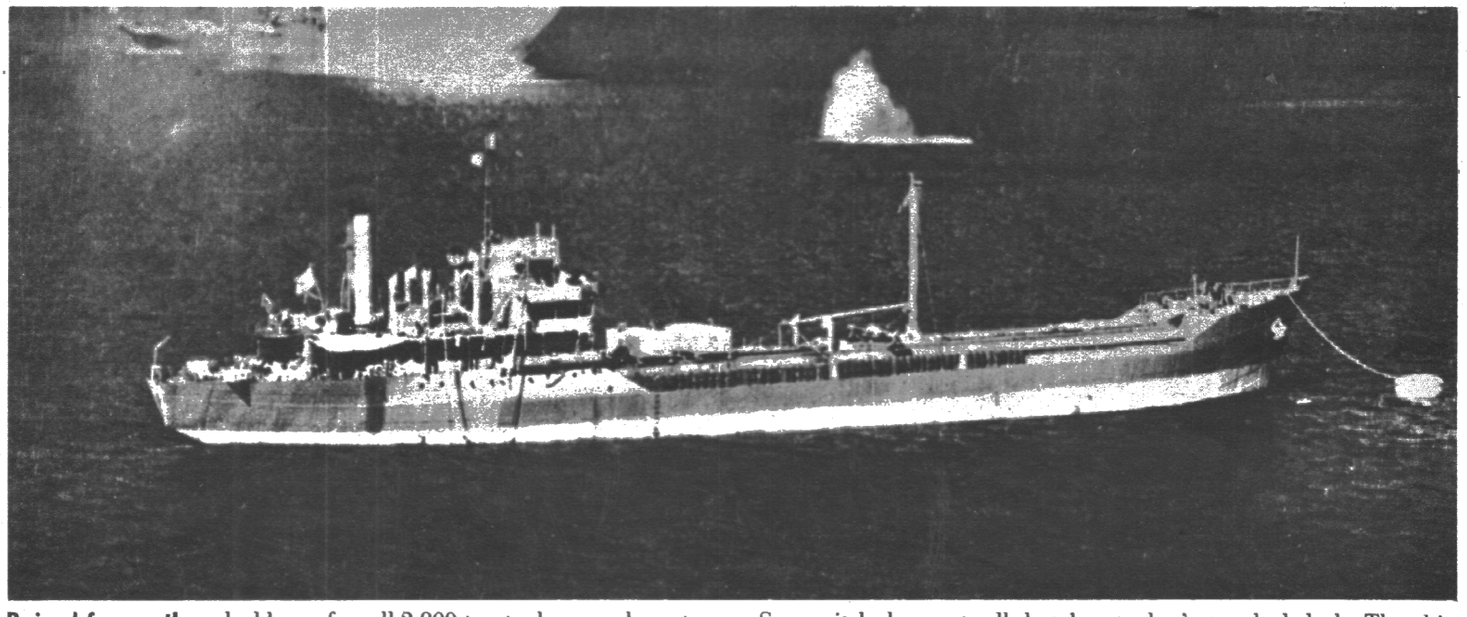
Sugar Charlie Love has bridge aft and lower stack. Bridge kingposts and heavy foremast help distinguish it from Sugar Able Sugar tanker.



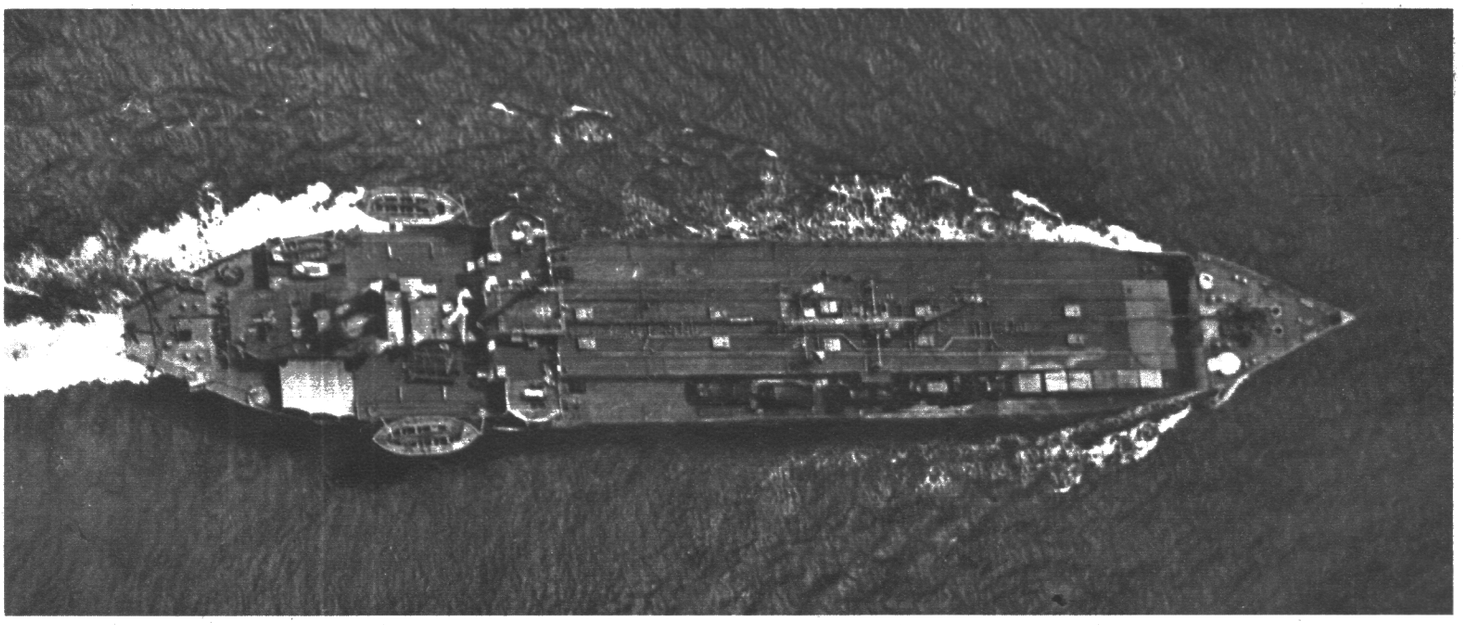
Broad beam gives Sugar Charlie Love clumsy appearance in oblique view. Note large mast with cluster of booms set in forward well deck.



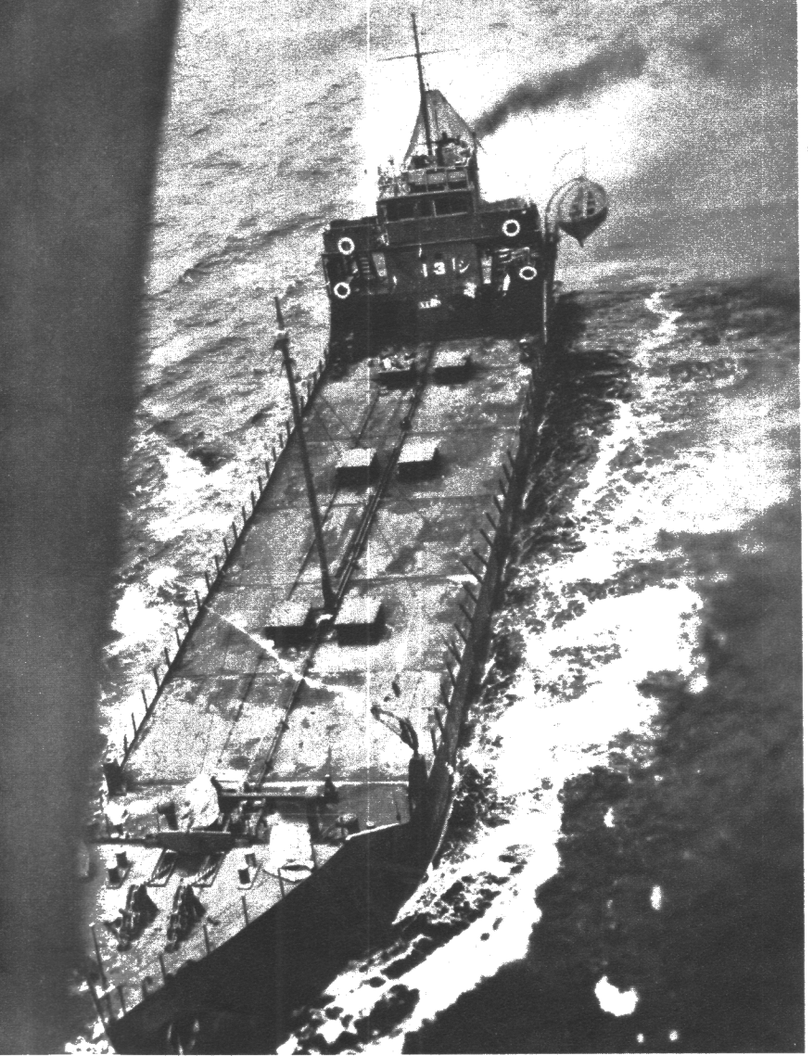
Bomb-straddled tanker at Cebu dockside is coded Sugar Able Item. Note catwalk only between bridge and stern superstructure. Sugar Able Item does not have extreme "economy" hull but it does show early stages of design simplification. Note somewhat flattened stern.



Raised forecastle, raked bow of small 2,800-ton tanker are characteristic of all recent standard Japanese classes. Classified as Sugar Able Sugar, it lacks a catwalk but has tanker's trunked deck. The thin pipe stack is set well aft and its light mast rises almost amidships.



"Economy" hull, with sharply angled bow, narrow tapering stern, stands out in this view of Sugar Able Sugar. Note pairs of small vent hatches along center line of the ship's deck. Tanker is carrying deckload of automobiles, tractors and large crates along the starboard side.

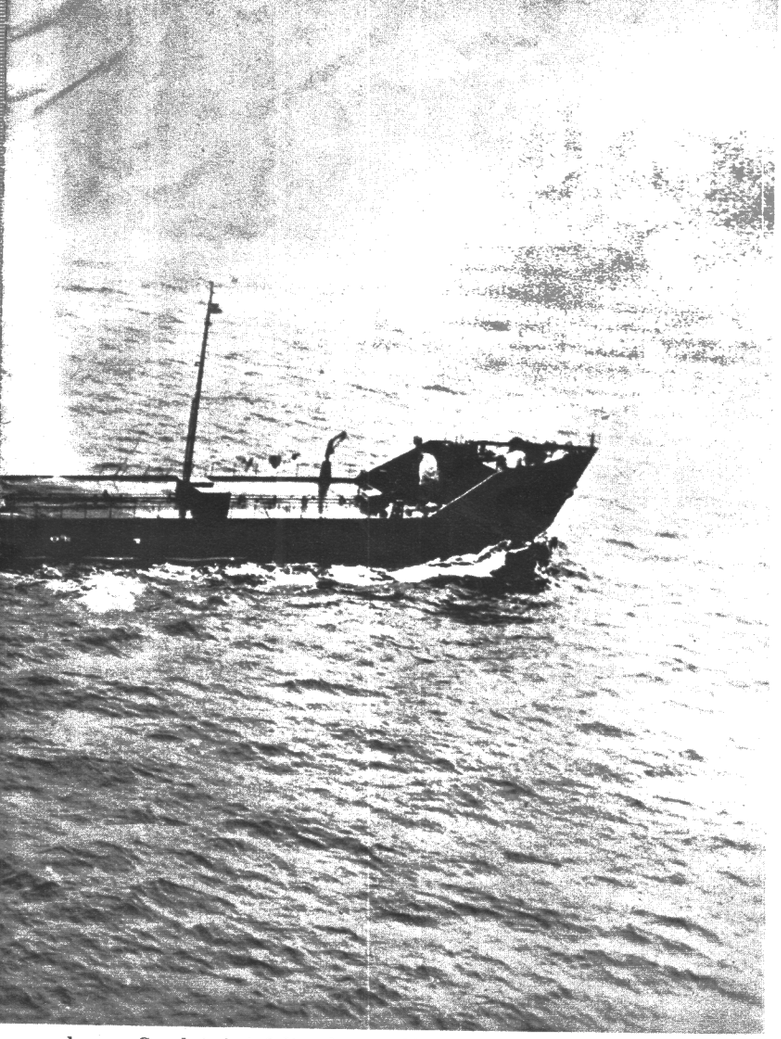


Combat close-up of 850-ton tanker (Sugar Able Sugar) shows square vent hatches. Note simple bridge, straight sides, abrupt lines of bow.



Low silhouette is afforded by Sugar Able Sugar. It has sharply raised forecastle bow, faceted stern found on most of important standard bridge. Displacing 10,000 tons, this type has a long hull riding low in the water, with a sharply pointed bow and a narrow tapering stern.

Attacking Helldiver swoops low over a large Sugar Able Love tanker trapped in its placid anchorage. Note light foremast set just abaft



classes. Stack is brief diesel type. Note the two white-coated Japanese crewmen ducking behind after vent hatches to escape strafing burst.



Steam-powered Sugar Able Sugar can be spotted by its lofty stack, with mast set aft. It has trunked deck and customary small hatches.

Extended stern shows clearly in this reconnaissance photograph of a Sugar Able Love tanker moored off Hong Kong water front. It is the largest of "economy"-hulled standard classes. Absence of hatches and catwalk aft distinguish it from large engines-aft cargo vessels.



ESCORT CRAFT

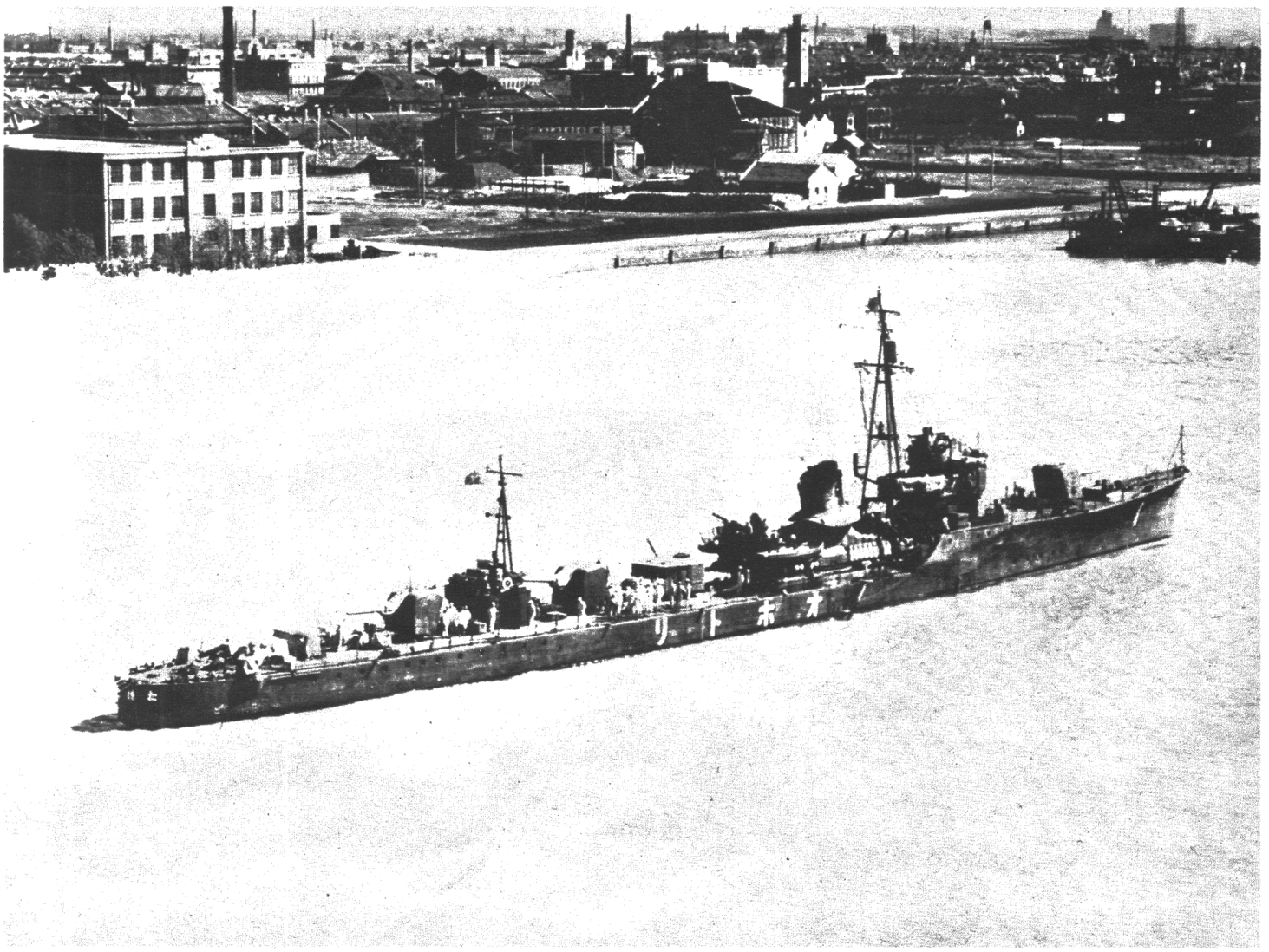


A low, simple profile characterizes Matsu Class, small DD's built in quantity for second-line duty. The second stack is abaft midships.

Japan is making supreme efforts to keep her weakened maritime supply routes from complete collapse. Advance bases won by the U.S. during recent months bring the all-important sea lanes along the coast of Asia within easy reach of carrier task forces and permit steady marauding by submarines and patrol planes. As the tempo of merchant ship losses has heightened, Japan's defensive reaction has taken the form of increased replacements. On preceding pages is a survey of standard tankers and cargo vessels being turned out in quantity; on these pages is a summary of the subchasers, frigates, destroyer escorts.

Aerial reconnaissance shows important Jap shipyards pushing work on a flotilla of CVE's (April *Journal*, page 12) which are presumably intended for convoy escort rather than fleet support. Also on the ways are reinforcements for the fleet of minor combatants that is bearing the chief burden of defense at present. Seriously short of destroyers, Japan will probably put even more emphasis on small patrol and escort types during 1945. They can be built quickly and economically without putting severe pressure on large shipyards and specialized maritime industries.

Although the minor combatants are not as glamorous as the larger fleet units, they are of comparable importance recognitionwise. With the main Japanese fleet more restricted in its

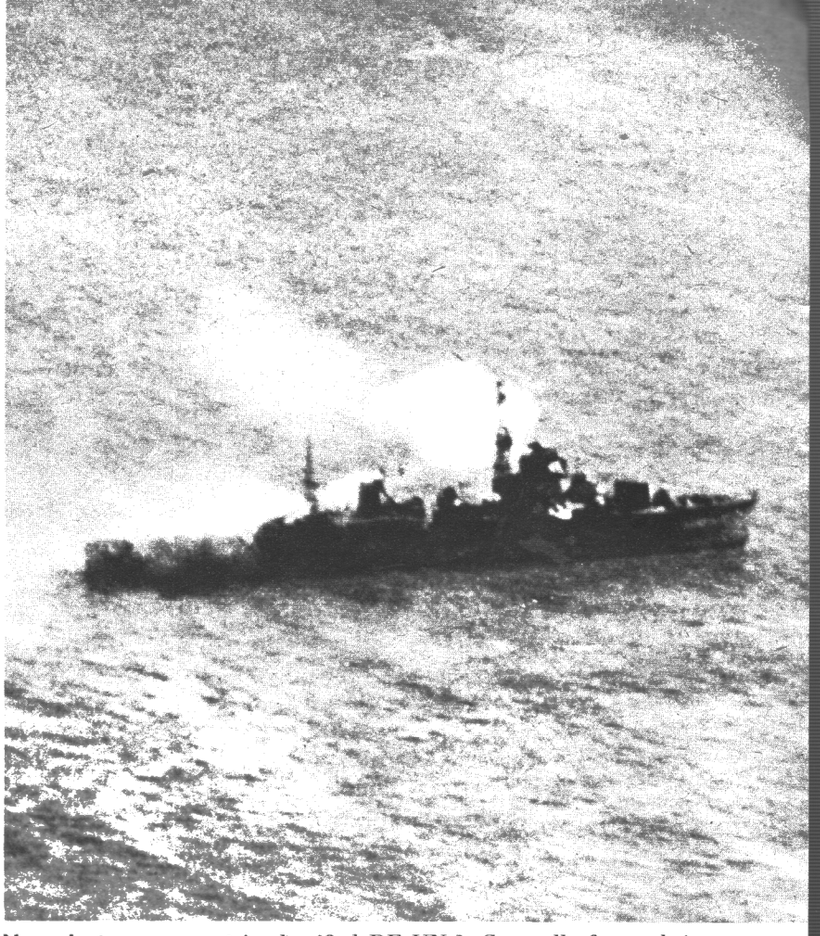


Torpedo boats of the Chidori-Otori Class are used as convoy guards. Light ships, the Chidoris have lean, swift lines. The bridge is low and elementary in design. Small trunked, raked stack is set well forward, leaving the long afterdeck broken by torpedo mount and gun shields.

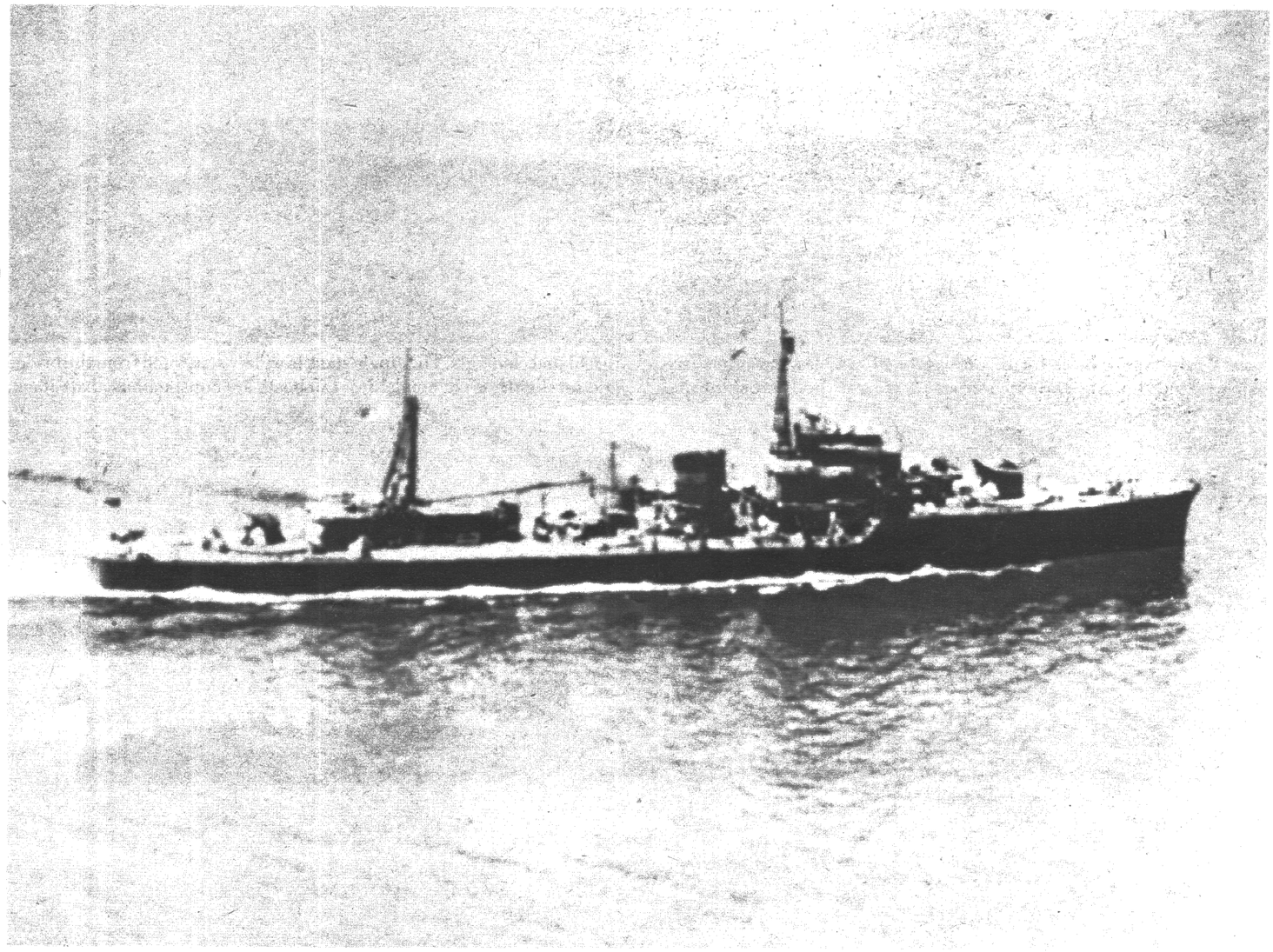
OF JAP FLEET

operations, the majority of naval targets encountered by our forces will be in the smaller categories. In our sustained war against Japanese supply, the escort vessels are a much surer clue to the nationality of a questionable convoy than the merchant ships it includes. One of the characteristics of Jap combat ship design, scattered superstructure elements, is again apparent in these craft. Well armed with depth charges and flak, the DE's, frigates and subchasers are also a serious threat to the success of our antishipping campaign. Their striking power must be neutralized if U.S. submarines, fighters and bombers are to maintain their strangling pressure on the Japanese.

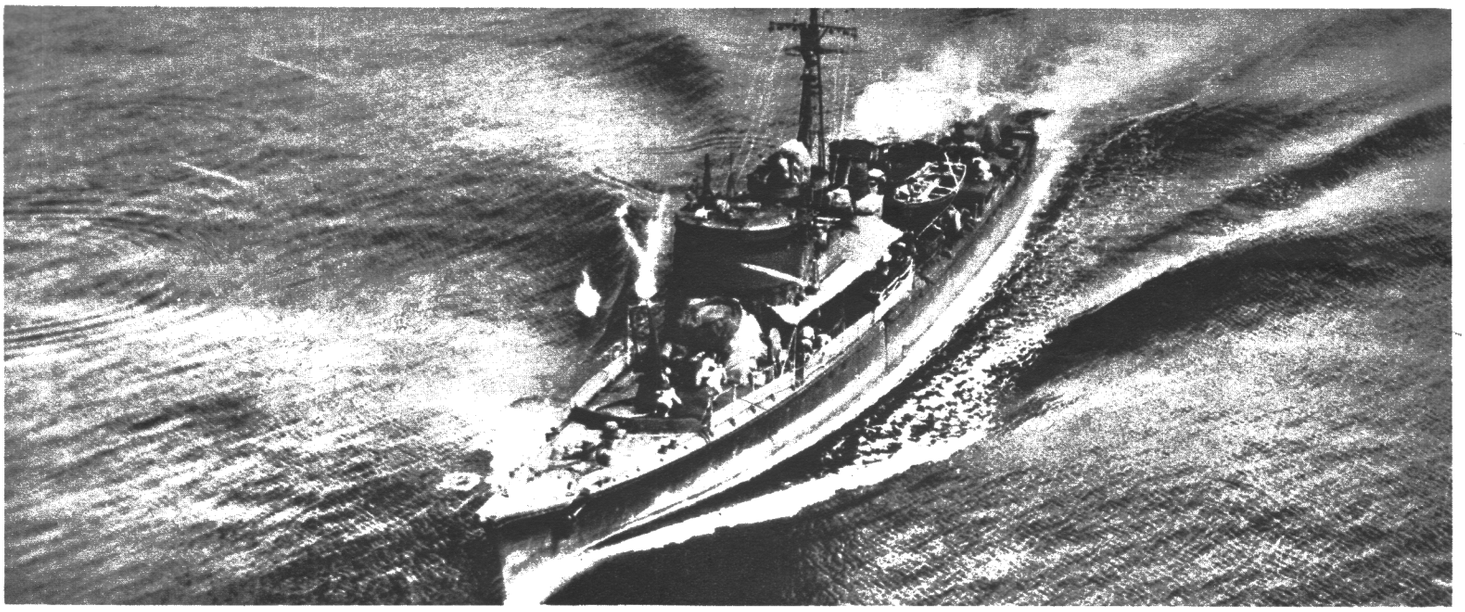
The Jap escort craft are a varied group and somewhat difficult to spot. Besides the types designed for escort operations, Japan has pressed gunboats and minesweepers into service as well as large trawlers and coastal craft. Thus the group ranges from destroyers of the small, simplified Matsu design (*left*) down to wooden subchasers of 100 tons displacement (*page 23*). However, the individual designs have distinctive features and, within general categories such as PC or PF, classes are frequently similar in appearance. Using the pictures available, the *Journal* presents on these and following pages a brief refresher on Japanese minor combatants, highlighting the principal escort types.



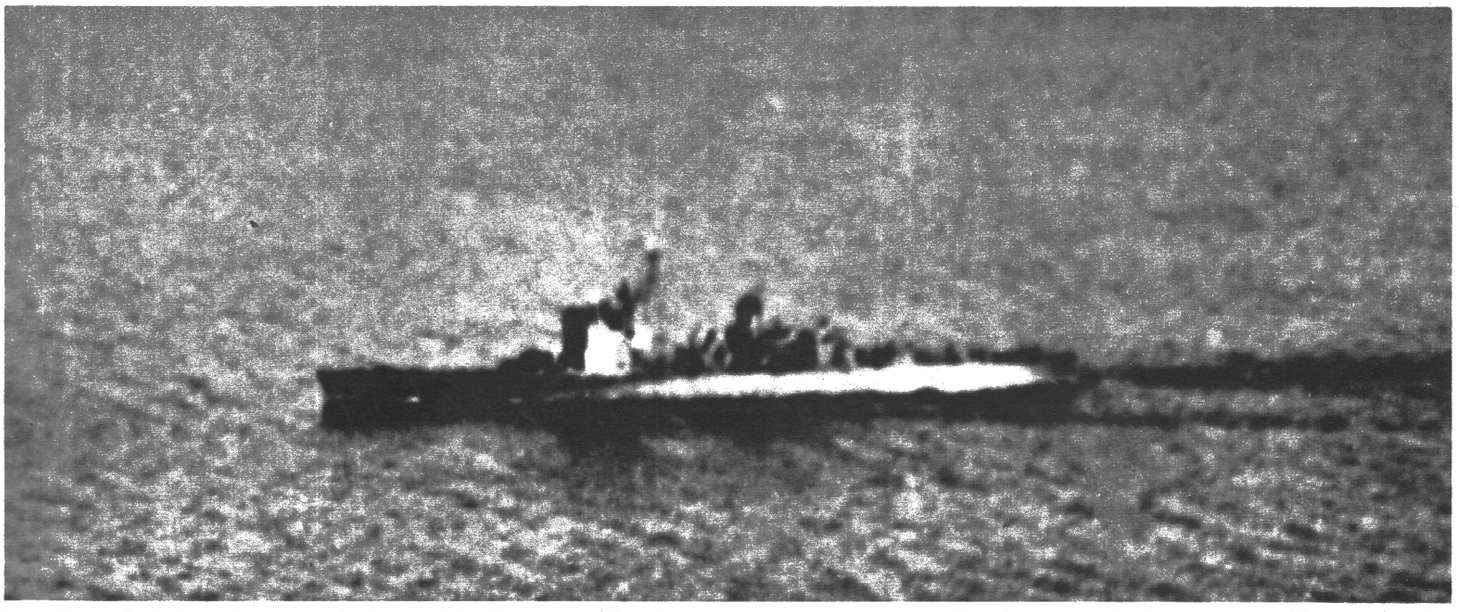
New destroyer escort is classified DE UN-1. Set well aft, stack is widely separated from the bridge structure which bristles with AA.



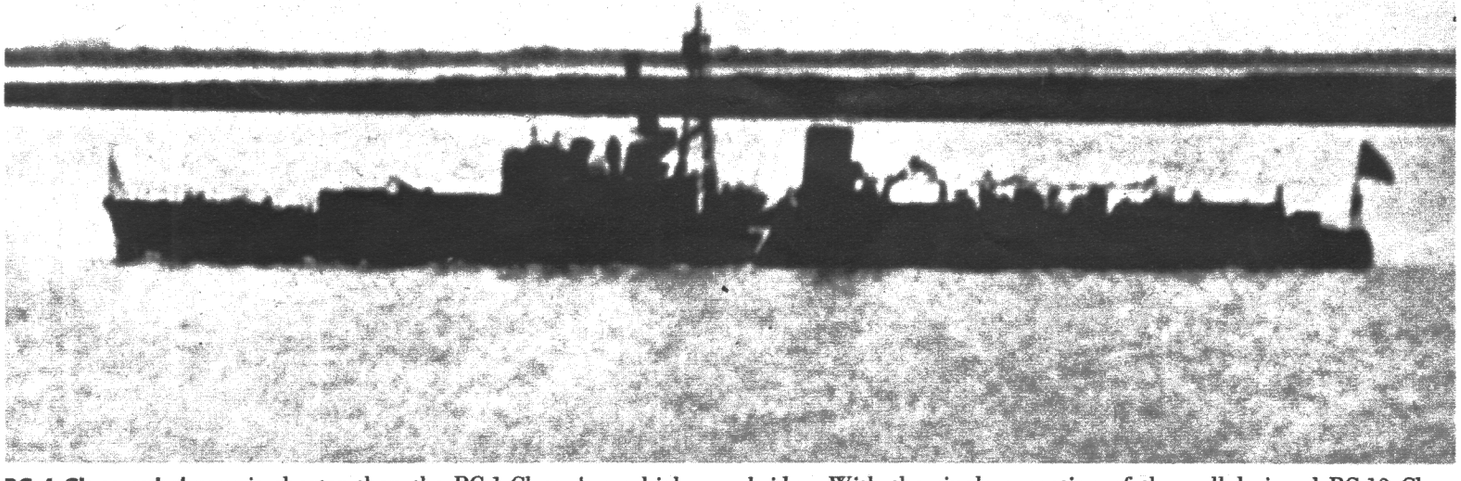
Sturdy frigate of Mikura Class has a broken deck, chunky bridge. The low stack is isolated, rising directly from the deck amidships. Note low deckhouse around mainmast. Mikuras carry twin 4.7-in. guns at bow and stern, have tripod masts characteristic of minor Jap warships.



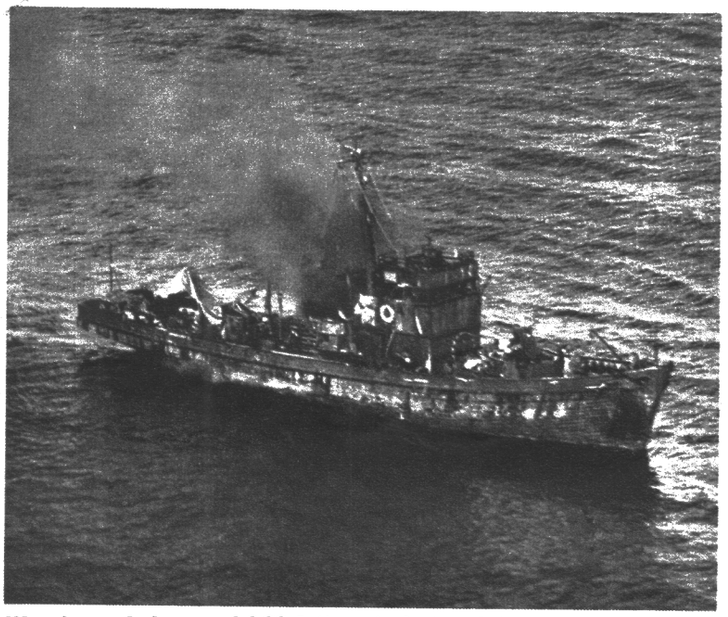
A graceful clipper bow is found on 168-ft. subchasers of the modern PC-13 Class. The bridge is smoothly rounded with a large searchlight platform and tripod mast rising from the low deckhouse aft. Note the gun crew ducking away from the elevated 3-in. gun on the foredeck.



Low flush deck is basis for the design of PC-1 Class and other large Japanese subchasers. The superstructure rises abruptly from the deck in isolated elements. The single stack is widely separated from the bridge and set slightly aft of amidships. Lifeboats are conspicuous abaft stack.



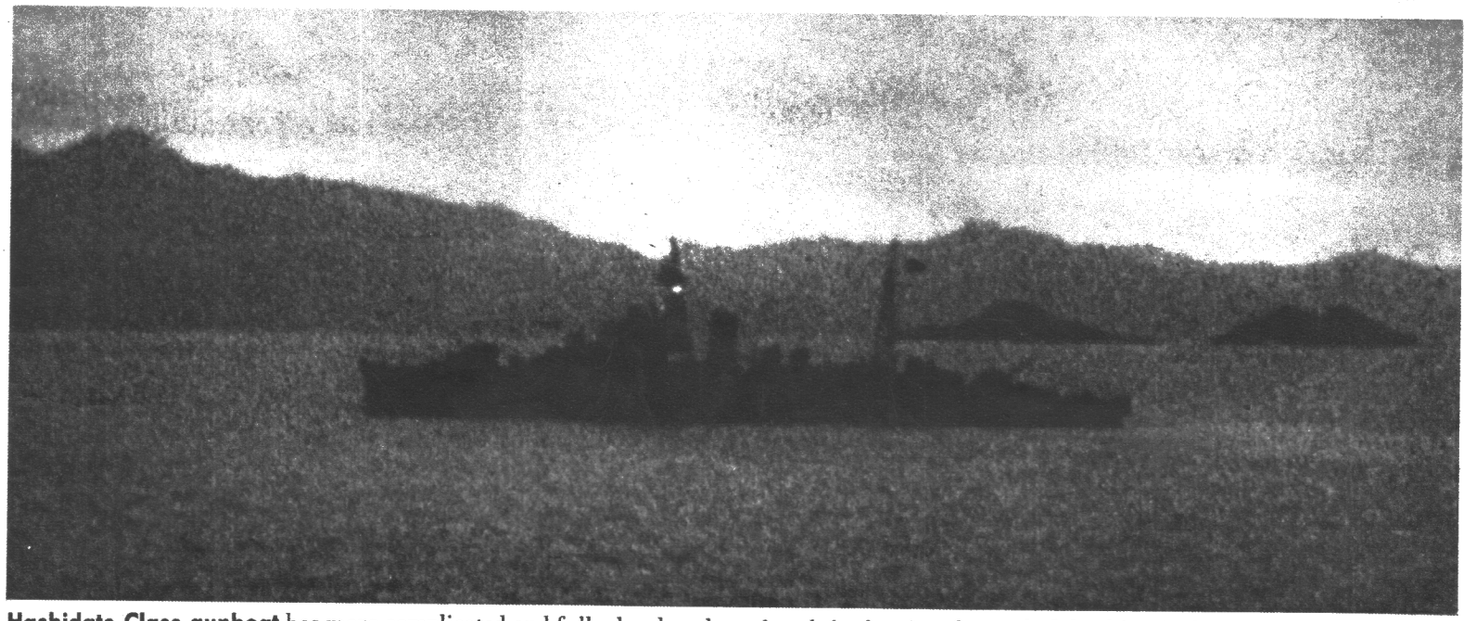
PC-4 Class subchaser is shorter than the PC-1 Class, has a higher and less extended profile. PC-4's have a low platform forward of the bridge. With the single exception of the well-designed PC-13 Class (*top*), all Jap subchasers mount only light antiaircraft machine guns.



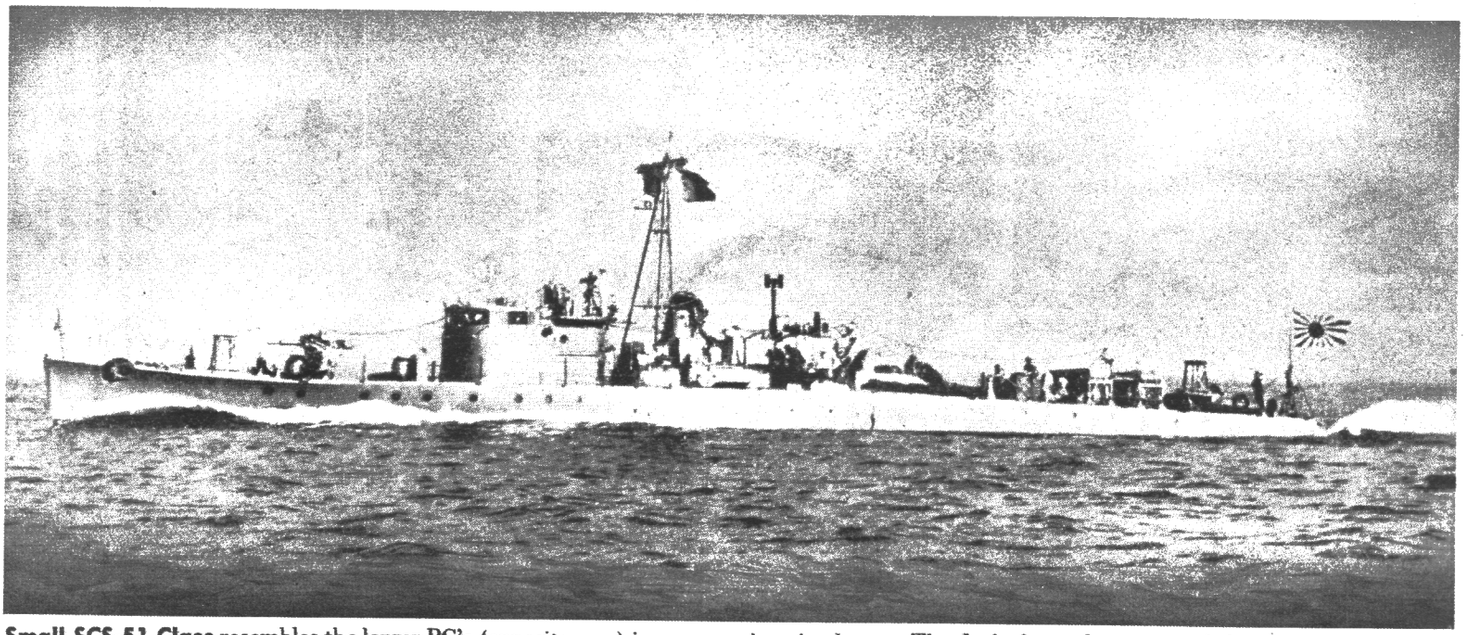
Wooden subchaser of SCS-1 Class is designed for quick, cheap construction. It resembles flimsy ocean tug with squared-off counter stern.



Fleeing SCS-1 carries load of depth charges, two chutes for dropping them at stern. Raked stack is set close behind ramshackle box bridge.

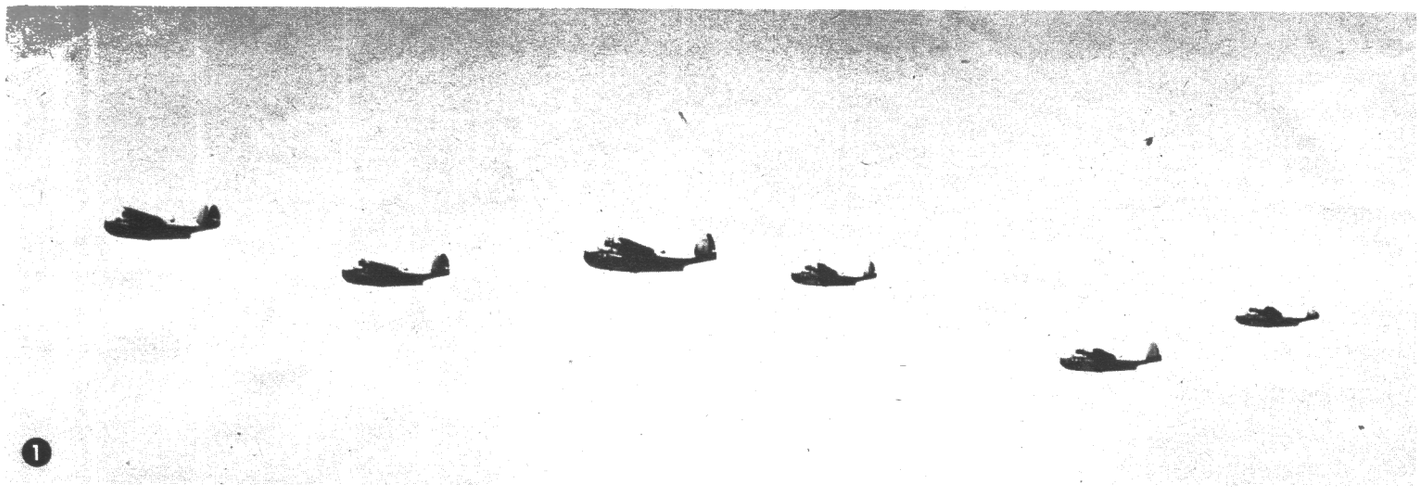


Hashidate Class gunboat has more complicated and fully developed superstructure than other Japanese escort vessels. Its deckline is sharply broken just forward of the thin, single stack. Hashidates mount respectable armament of light AA in addition to three 4.7-in. guns.



Small SCS-51 Class resembles the larger PC's (*opposite page*) in overall design. Trunked, raked stack sits forward, and is partly straddled by tripod mast. The deck slopes down toward the stern. SCS-51's are 146 ft. long, have been built in numbers before and during the war.

QUIZ NO. 2: IMPORTANT PACIFIC PLANES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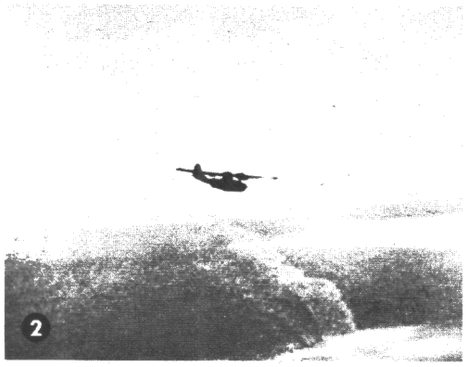
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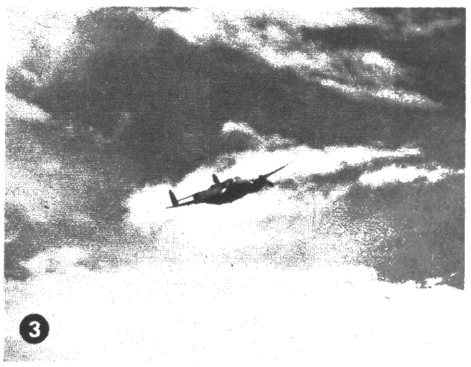
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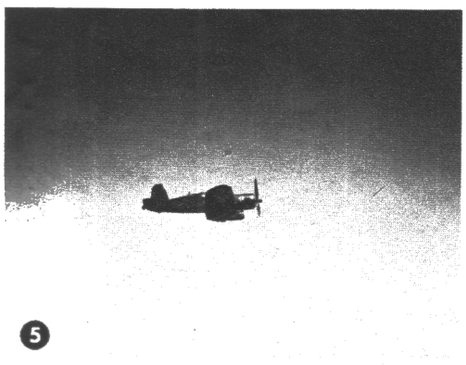
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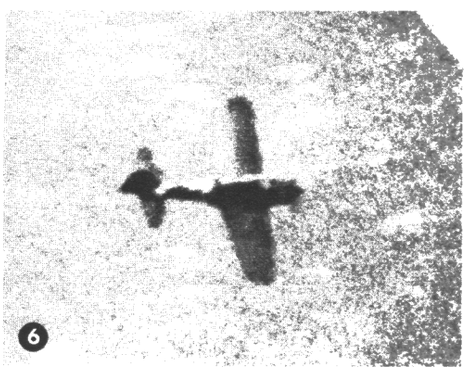
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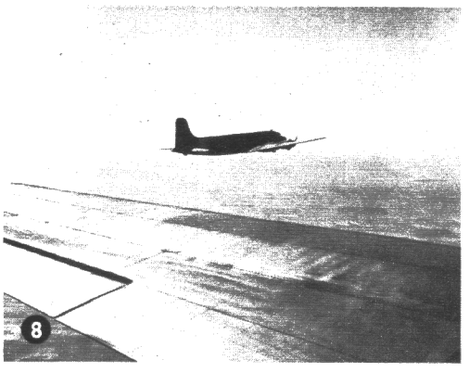
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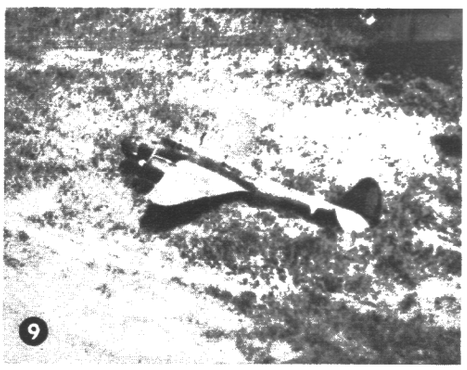
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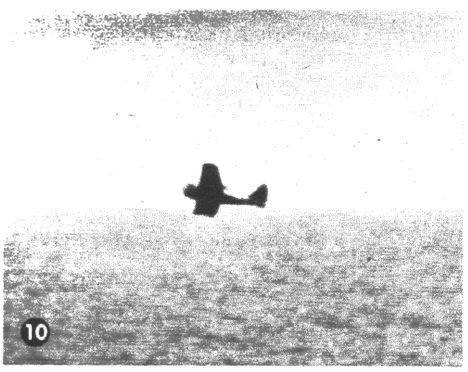
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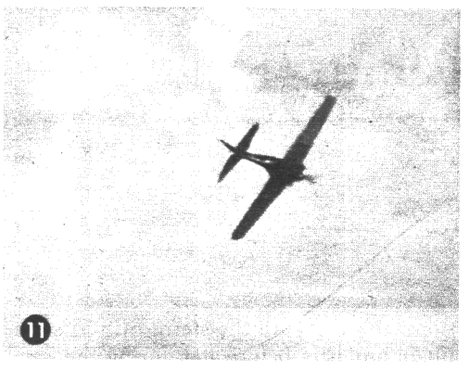
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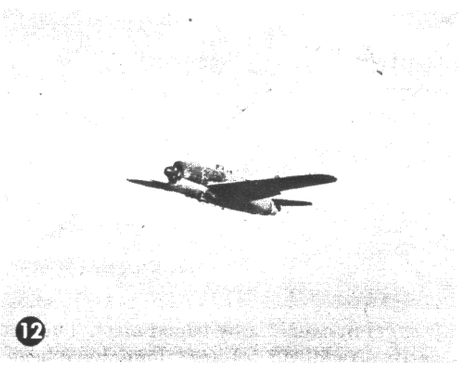

12


13

For answers see p. 48



ALREADY ACTIVE IN THE INDIAN OCEAN, THESE ROYAL NAVY BARRACUDAS SYMBOLIZE BRITISH AVIATION'S RETURN TO GLOBAL STRENGTH

BRITISH PLANES

ARRIVAL IN CENTRAL PACIFIC CREATES NEW RECOGNITION PROBLEM

On March 30, Pacific Fleet Headquarters announced that four days earlier a British task force had begun attacks against the Sakishima island group situated between Formosa and Okinawa. This means that British planes, already active in Australia and Burma, are now operating in the central Pacific alongside units of the U. S. Navy's Fifth Fleet.

While naval planes have been the spearhead for Britain's air power in this new theater, it is possible that they will eventually be followed by the fast fighters and husky, weight-carrying bombers of the Royal Air Force. It is naturally impossible to anticipate precisely which types will appear in which theaters. For this reason U. S. gunners and airmen will find it advisable to study carefully all of Great Britain's important aircraft as presented on the following ten pages.

In the 15 months since the *Journal* last reviewed the RAF, there have been, except for the jet-propelled Meteor, no startling changes in British plane design. Veteran aircraft, such as the Stirling, Swordfish, Walrus and Fulmar, are no longer first line while new ones, Warwick, Tempest V, Tempest II, Firefly and Lincoln, have gone into production. But not one of these new airplanes fails to show a very close connection, in a recognition sense, to an older type. The Warwick is basically a Wellington; the Tempests differ little from the Typhoon; the Firefly shows pronounced Fulmar features and the Lincoln is almost indistinguishable from the Lancaster.

In aerial doctrine, however, there has been a somewhat greater change. Daylight sorties by British heavies are now commonplace, while night bombing, particularly of Berlin, has more and more become the task of the Mosquito. The latter, one of the war's great planes and already active in the Pacific, hacked at the capital for 36 nights running beginning February 20. It has also saved thousands of patriot lives in Norway, Denmark, France and the Netherlands by wrecking Gestapo headquarters and blasting open Nazi jails with daring pin-point bombing.

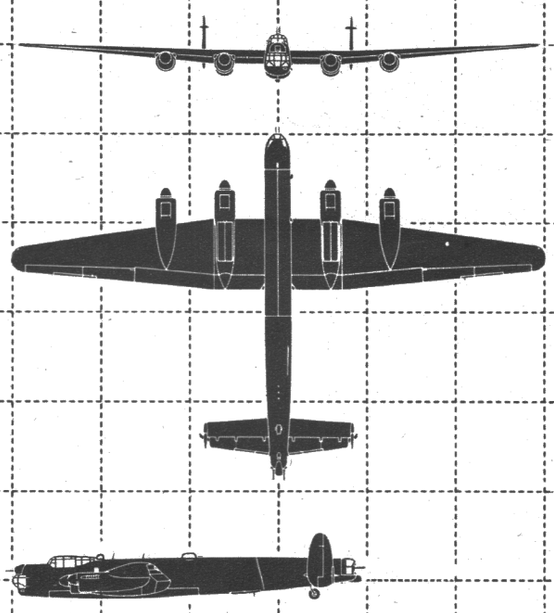
BRITISH AIRCRAFT

PRINCIPAL RAF

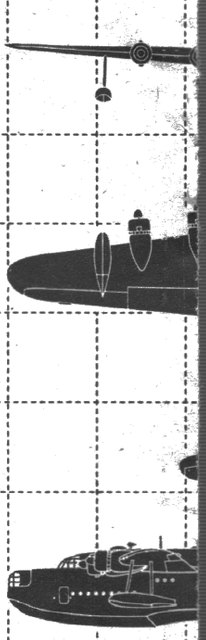
This grid presents the 21 planes which make up the first-line strength of the Royal Air Force and Royal Navy. Two of these, Lincoln and Tempest II, are not yet operational but are expected to see action in 1945.

The Halifax is shown here with radial engines simply because it has appeared more frequently in this version than in the inline model. The Spitfires, too, represent the most important types, the IX and the XIV. As recognition students know, not all Spitfires of a given mark are identical in details like the cockpit cover and the shape of the fin and rudder. However, the silhouettes shown cover these variations on the models now in use.

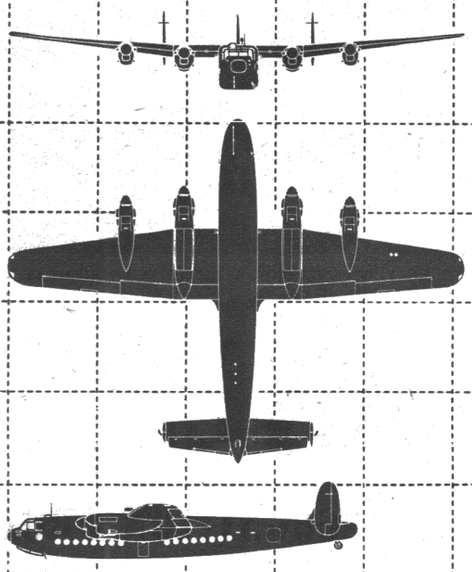
SCALE: EACH SQUARE EQUALS 20 FT.



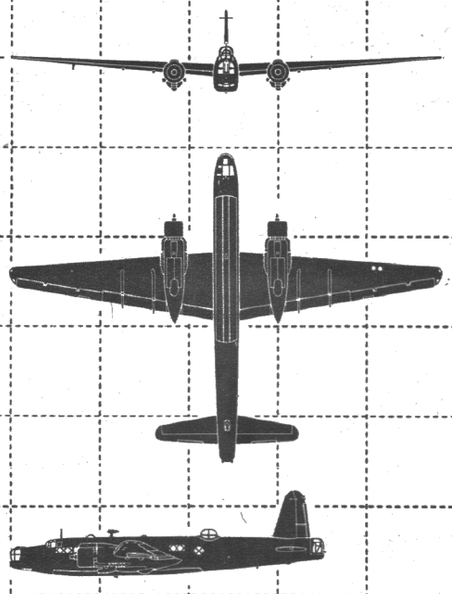
LINCOLN



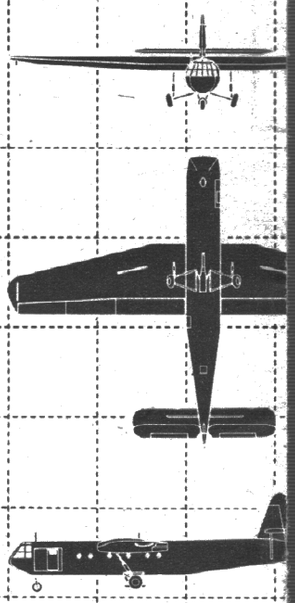
SUNDERLAND



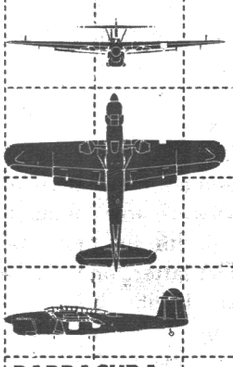
YORK



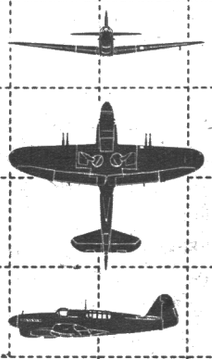
WARWICK



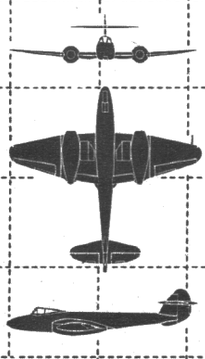
HORSA



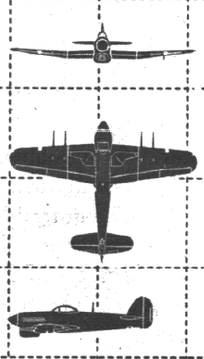
BARRACUDA



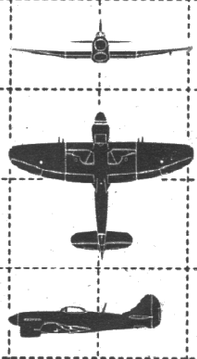
FIREFLY



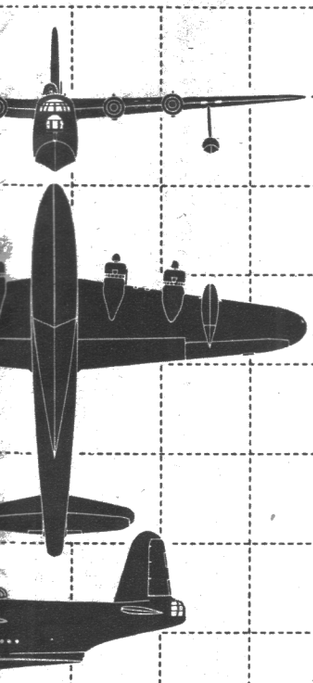
METEOR

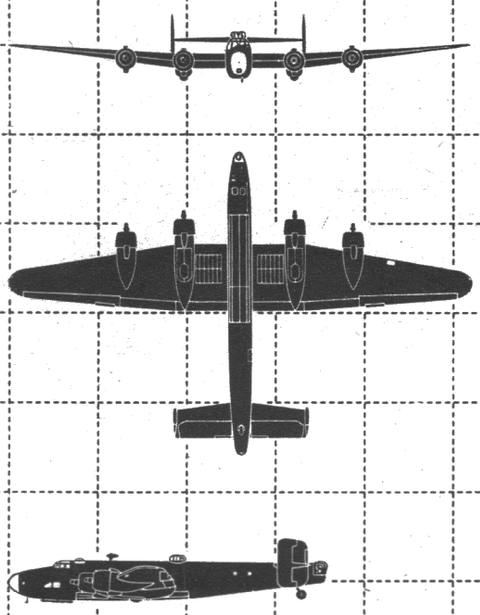


TYPHOON

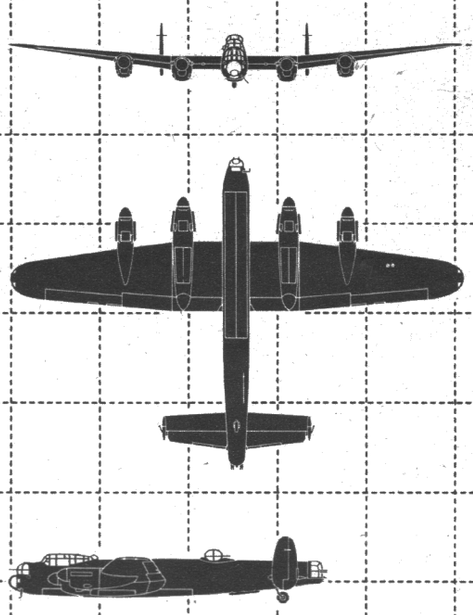


TEMPEST V

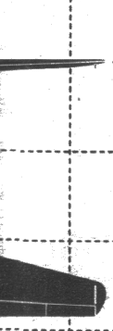


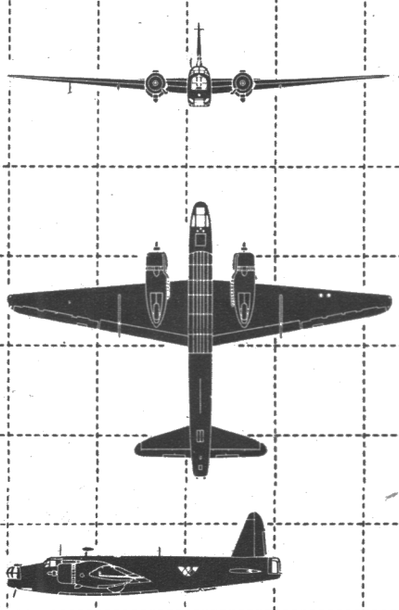


HALIFAX

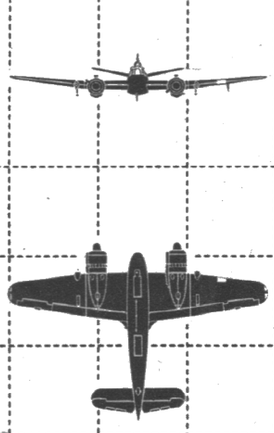


LANCASTER

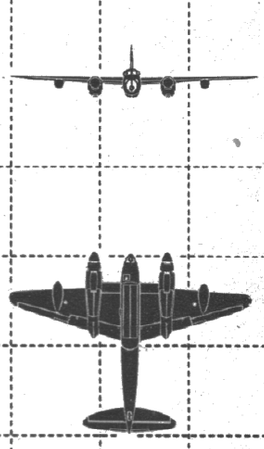




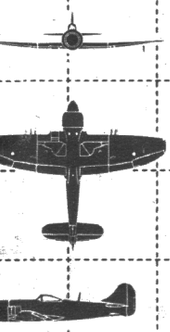
WELLINGTON



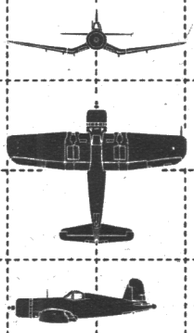
BEAUFIGHTER



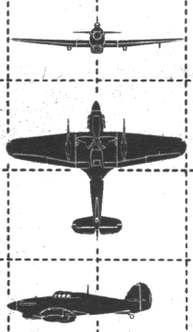
MOSQUITO



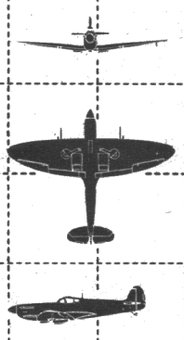
TEMPEST II



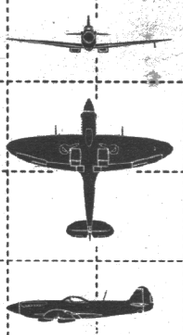
CORSAIR



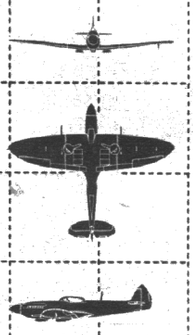
HURRICANE



SPITFIRE IX

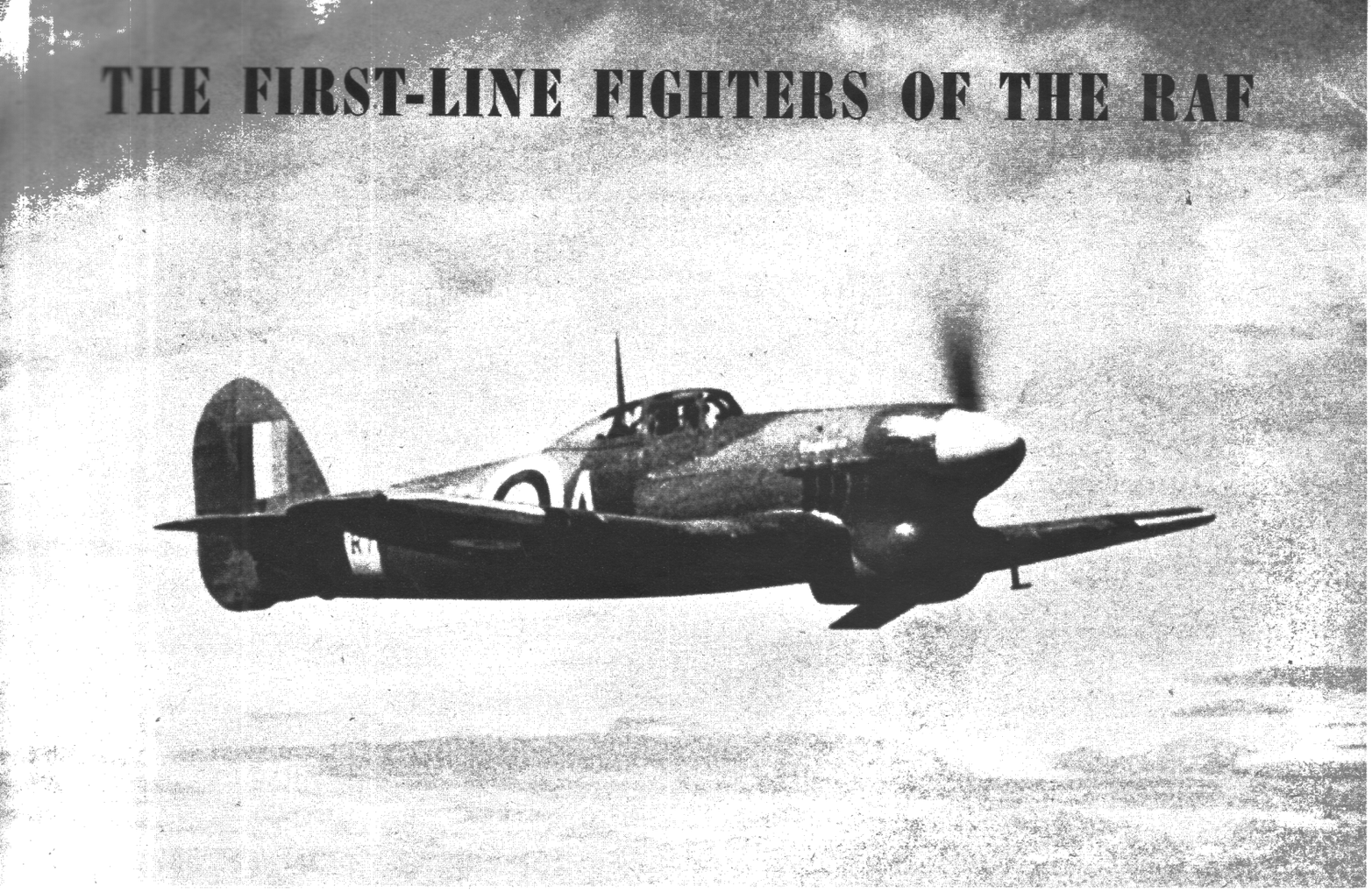


SPITFIRE XIV



SEAFIRE

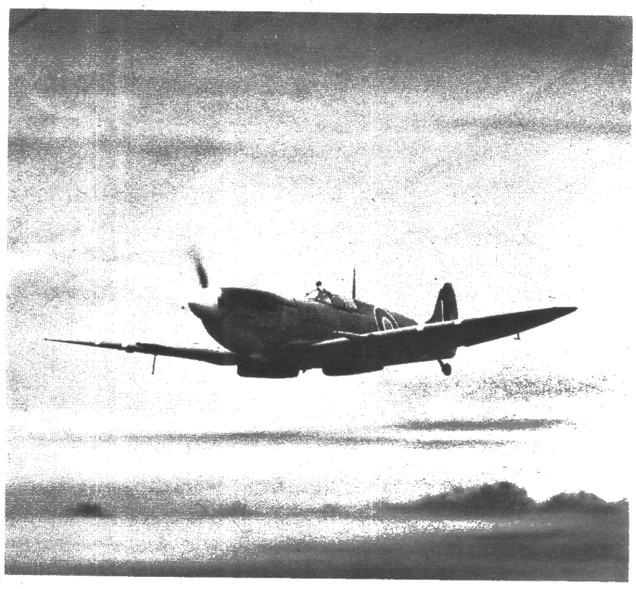
THE FIRST-LINE FIGHTERS OF THE RAF



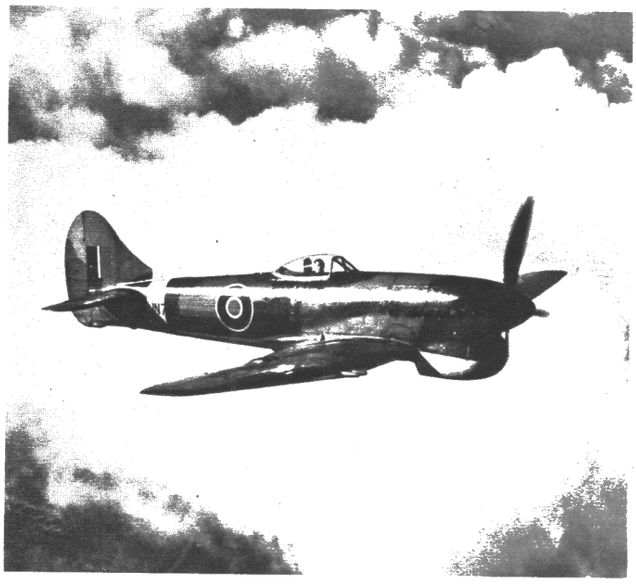
TYPHOON Designed as an interceptor, the Typhoon has become RAF's best tactical rocket plane and divebomber. The Sabre engine's airscoop under the nose is an important recognition clue. The wing has rounded tips, dihedral on outboard panels only. Fin and rudder are rounded on top, have a vertical trailing edge and curve down below thick fuselage's belly line.

METEOR Pressed into service against last summer's V-1 attacks, the Meteor was the first Allied jet plane to see action. Its irregular fin and rudder and high tailplane appear tacked onto slender, sleek fuselage which tapers to a sharp point at the nose. Wing, which bisects bottle-shaped jet units, has great chord at roots and tapers sharply on both edges. Cockpit sits well forward.

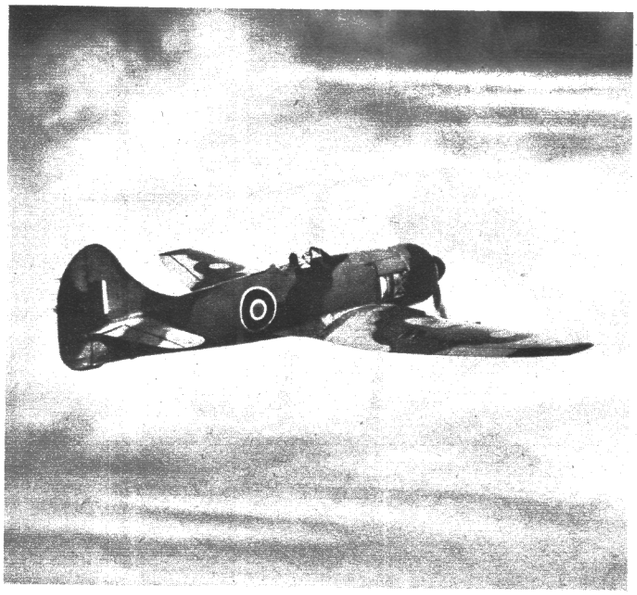




SPITFIRE IX Spitfires have elliptical wings with dihedral stemming from the roots. In head-on view wing radiators are clue to the IX.



TEMPEST V Curved fairing of the fin and the wing's curved trailing edge and square tips distinguish the newer Tempest from Typhoon.

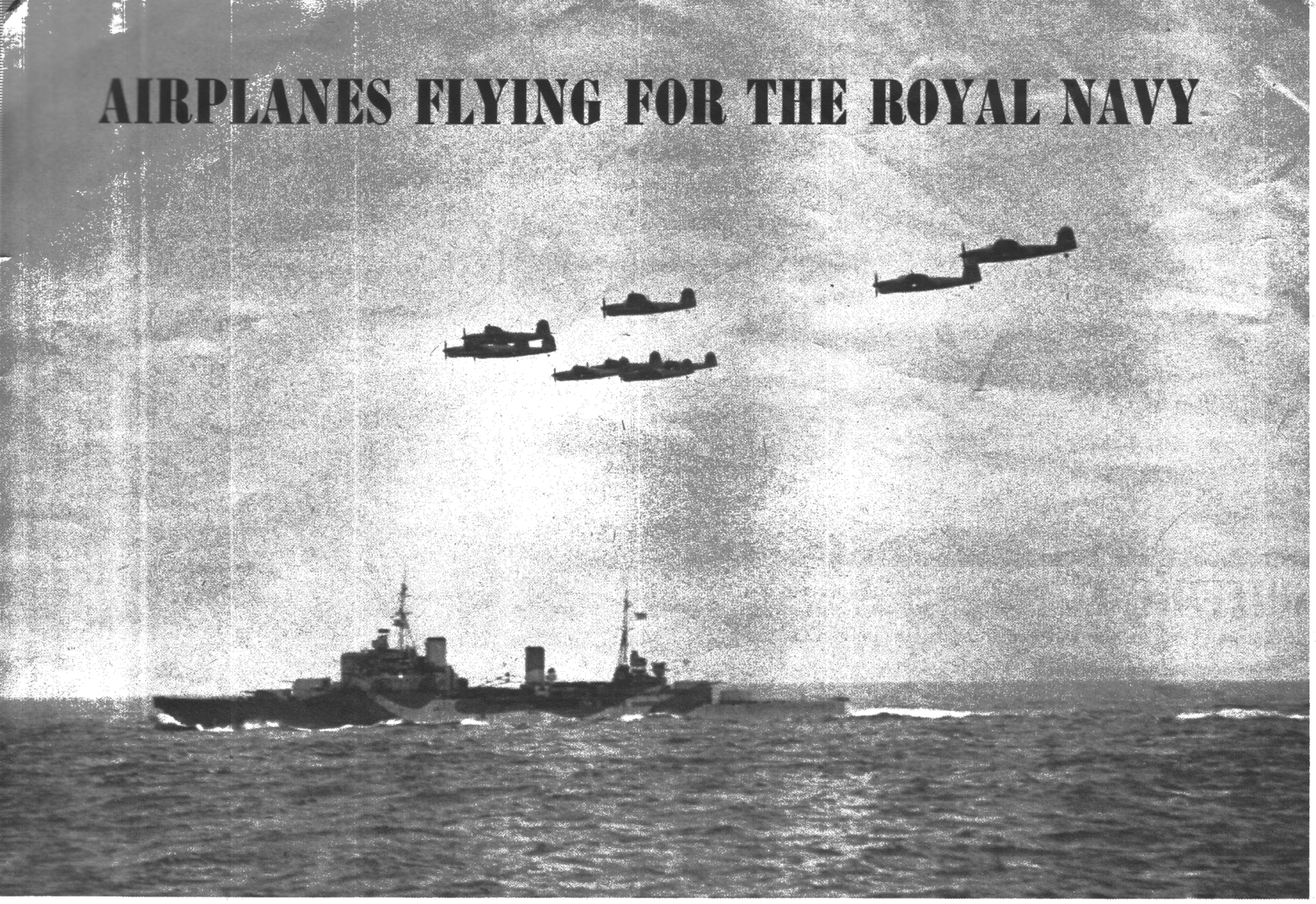


TEMPEST II First RAF radial-engine fighter since 1940, the Tempest II is now mass-produced. Barrel nose is main difference from V.



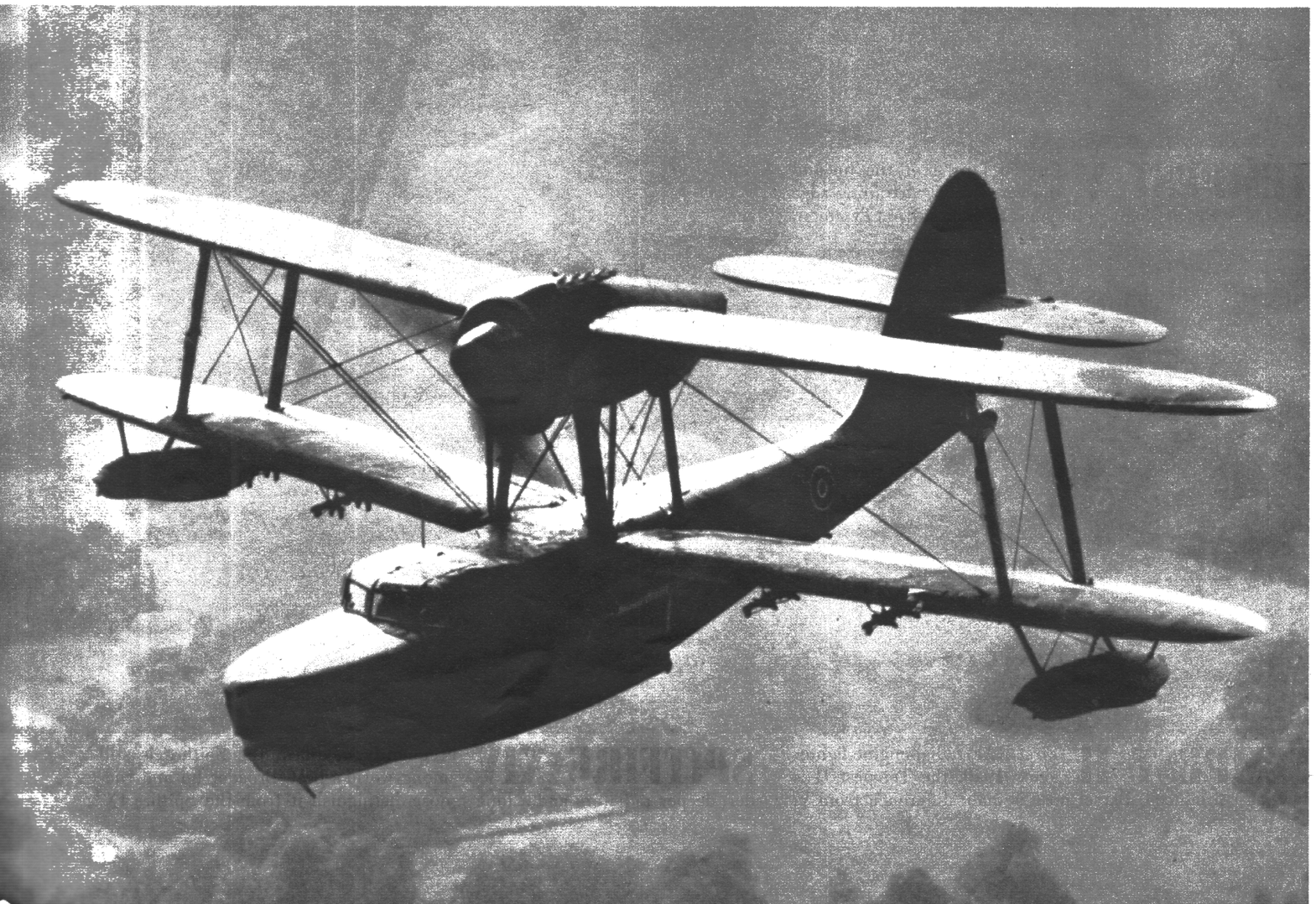
SPITFIRE XIV Frequently modified, the Spitfire is still among world's best. Broader fin and rudder, deeper radiators and a longer nose distinguish it from the Spitfire IX.

AIRPLANES FLYING FOR THE ROYAL NAVY



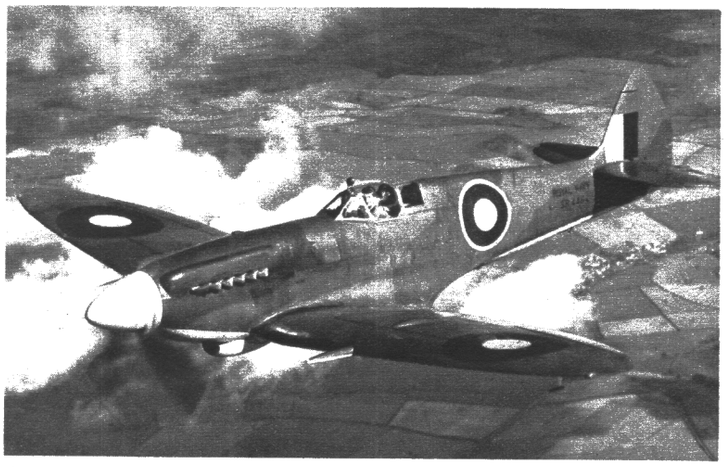
BARRACUDA A divebomber and torpedo plane, Barracuda is very maneuverable. Tailplane is set high to avoid turbulence created by dive-brake flaps.

SEA OTTER Important in air-sea rescue, the Sea Otter (*below*) is development of the Walrus, can be distinguished by archaic biplane structure, boatlike hull.

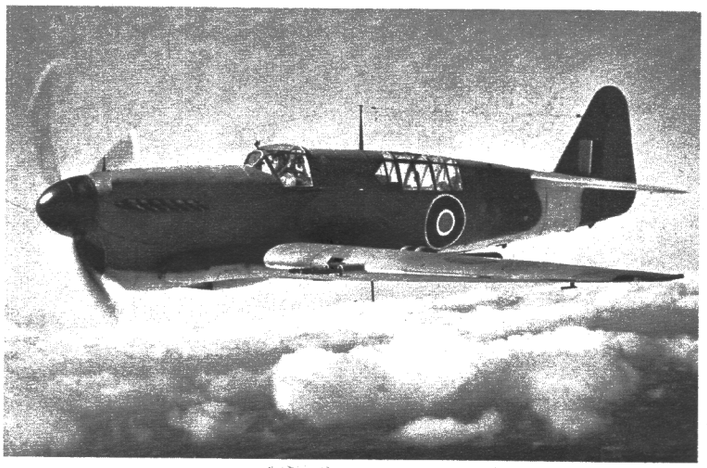




CORSAIR Clipped wingtips distinguish British Corsairs from those flown by U. S. Navy and Marine pilots. Otherwise they are identical and can be recognized by the inverted gull wing and tall fin and rudder extending forward of the stabilizer. A veteran of several Tirpitz attacks, the Corsair supplements the Seafire (*below*), Hellcat and Wildcat on British carriers.

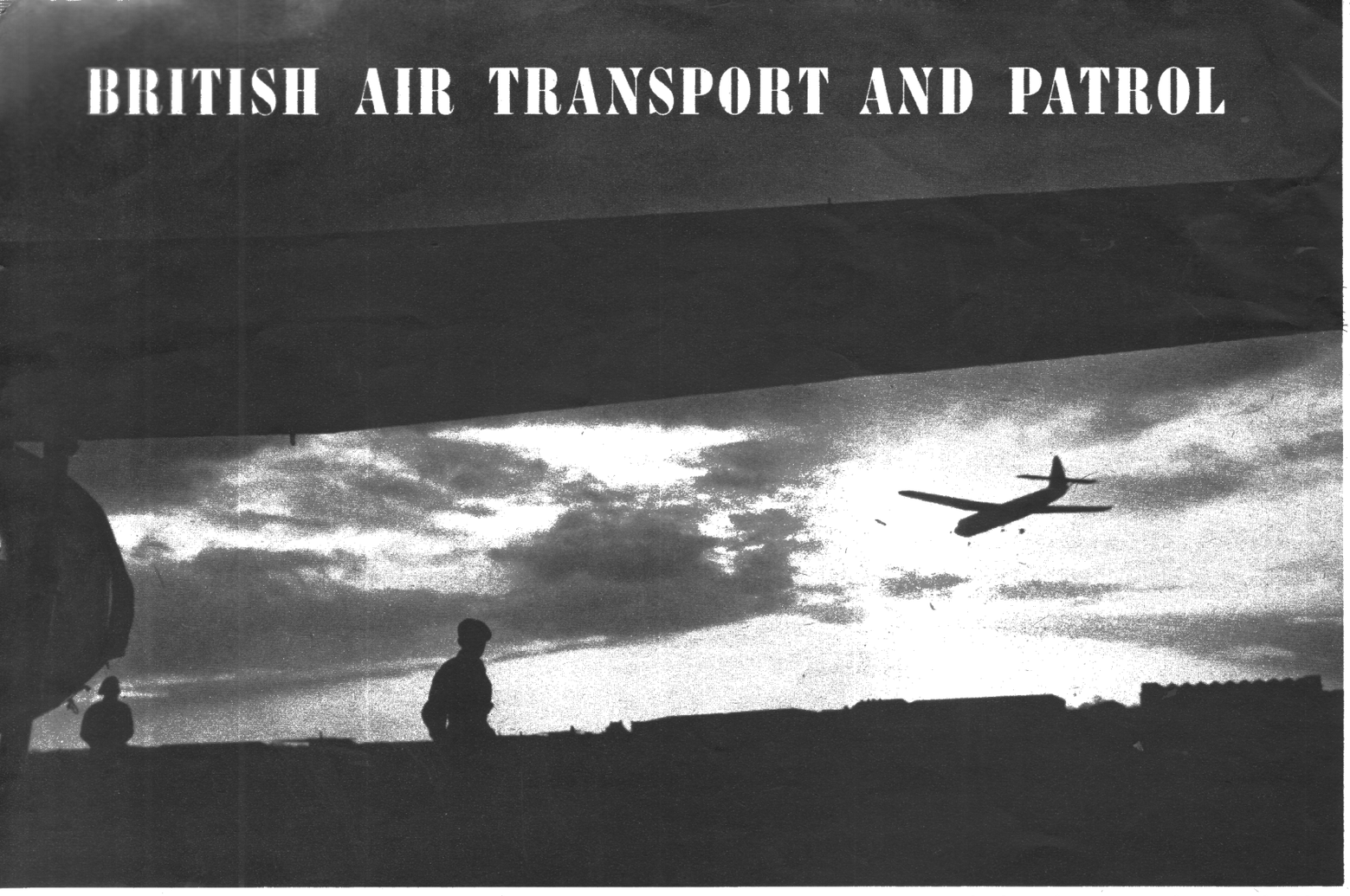


SEAFIRE Britain's favorite fighter is basically unchanged in its ship-based version. The latest model (*see grid*) will have a full-view canopy and retain the pointed rudder.

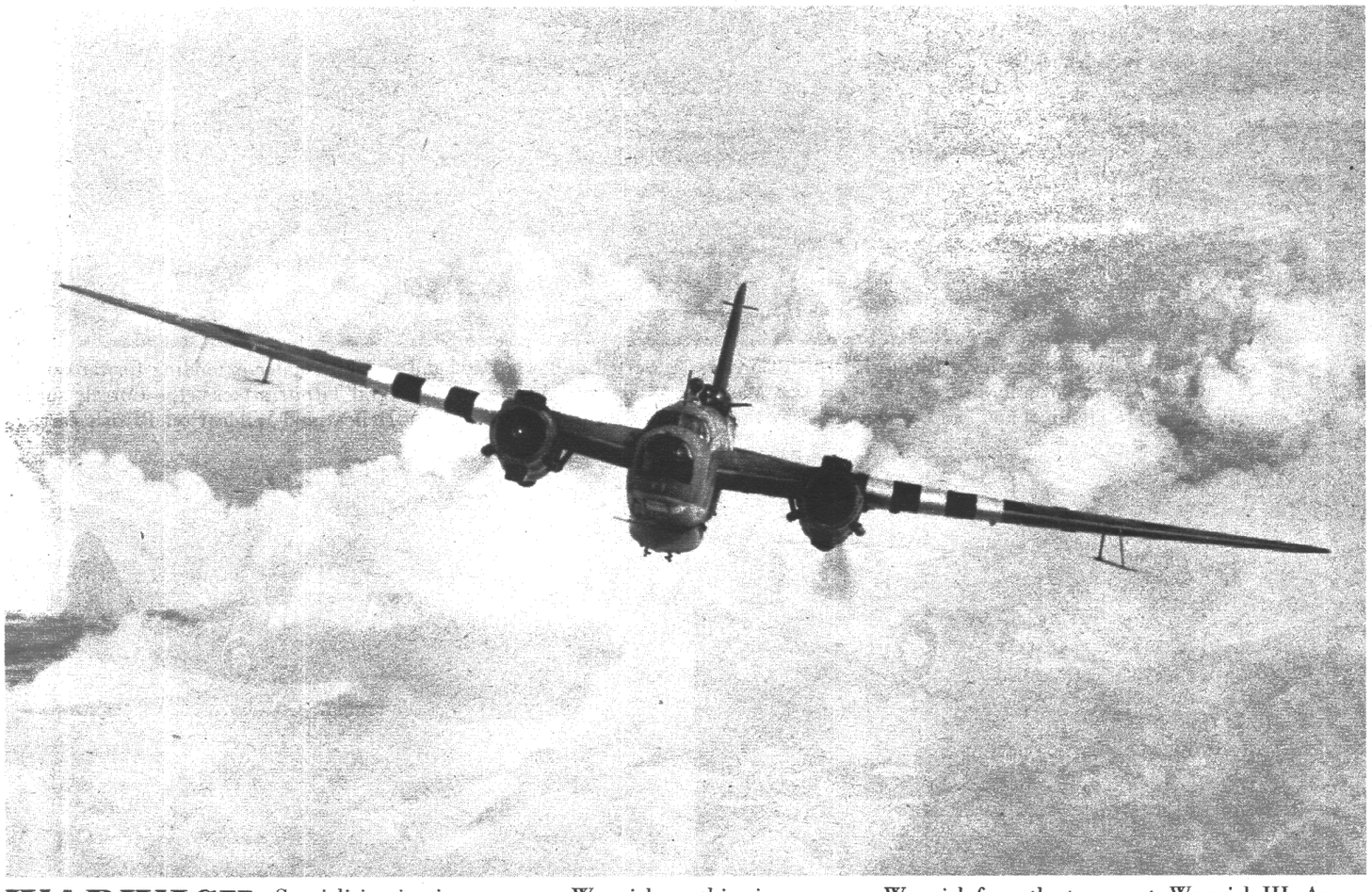


FIREFLY Long range, heavy armament mark Firefly. Low wing, built-in greenhouse, triangular tail distinguish it from inline Judy. Tailplane is set well forward.

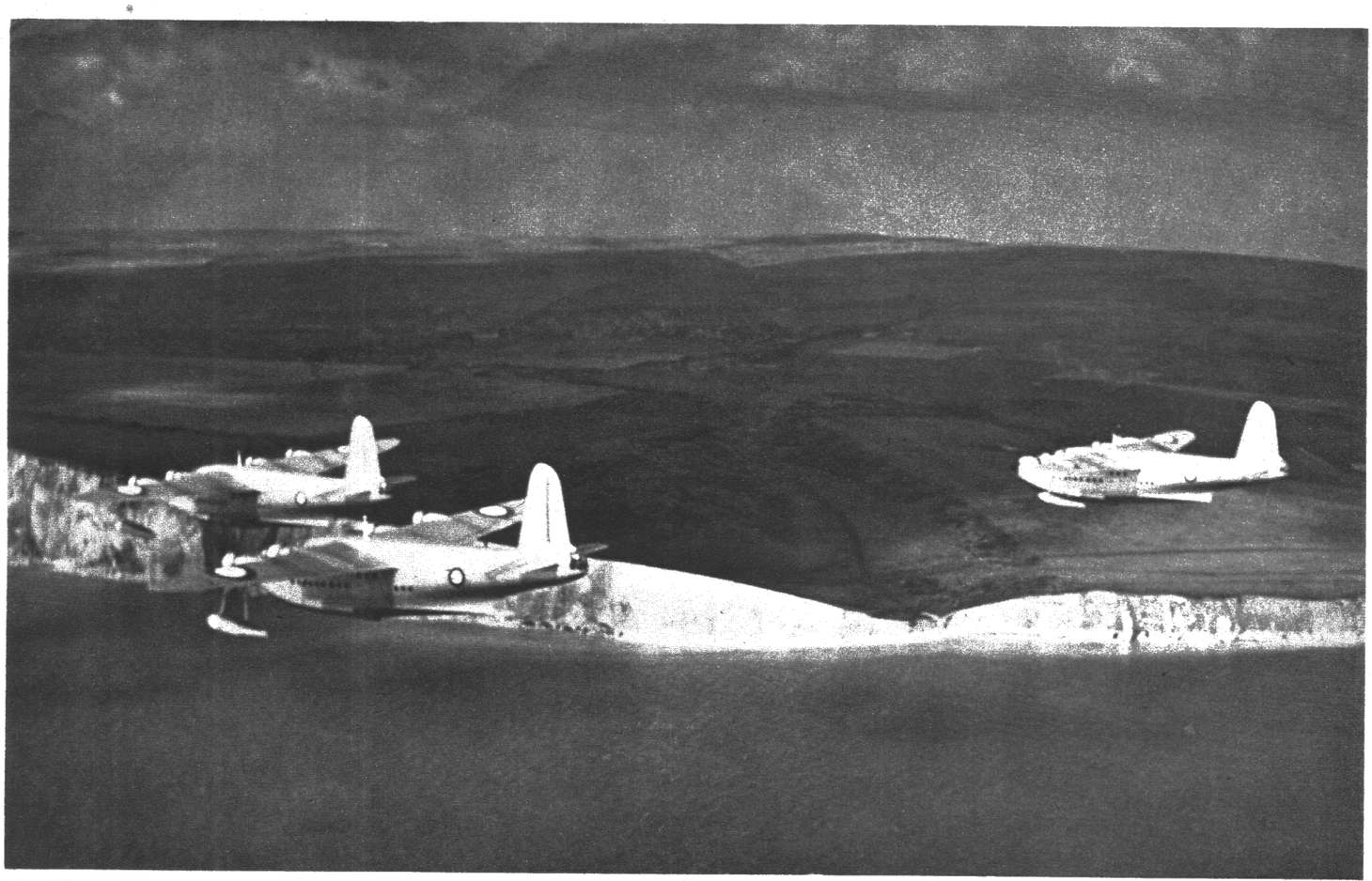
BRITISH AIR TRANSPORT AND PATROL



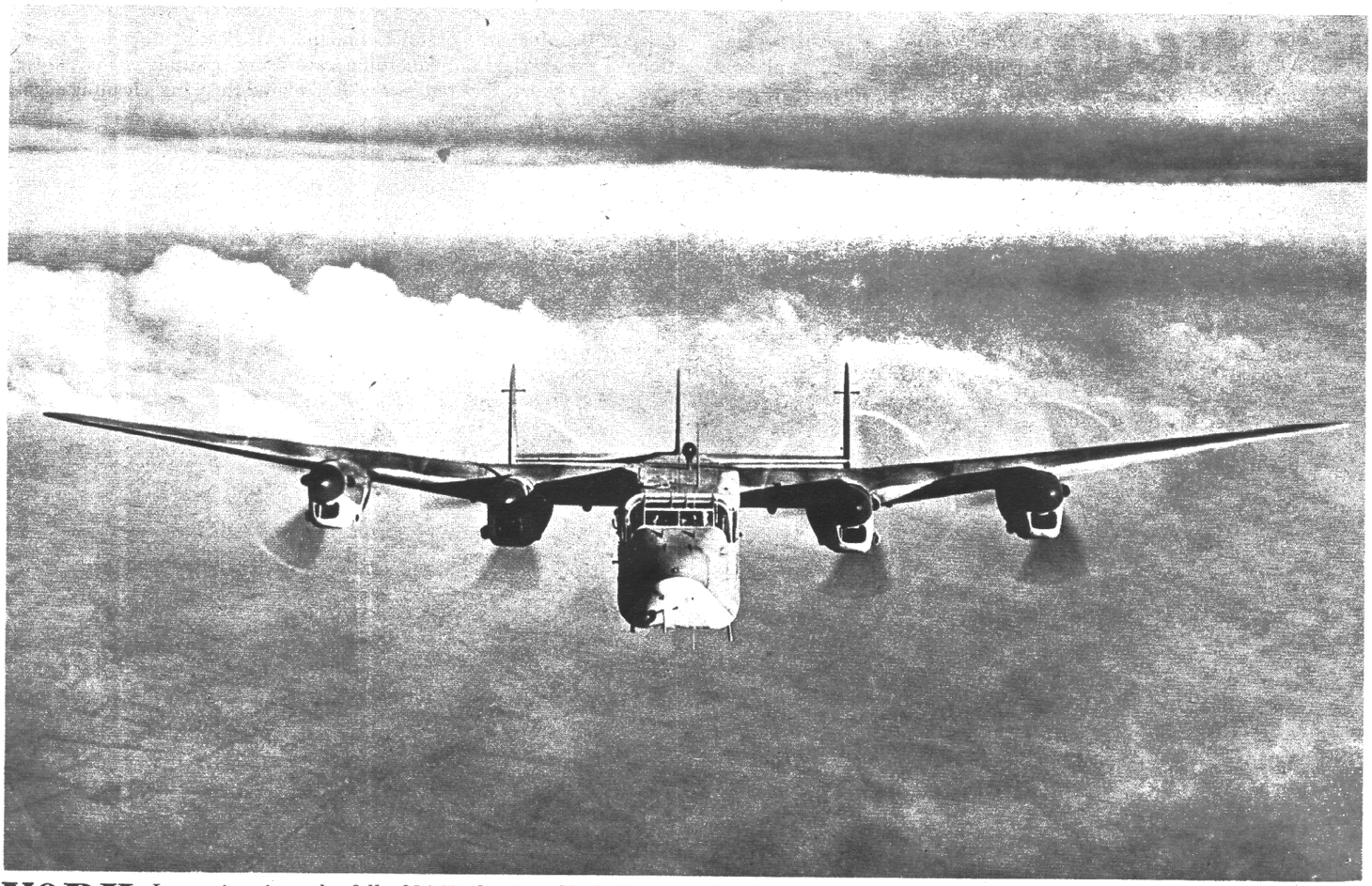
HORSA Gliding in for a landing at dusk, a Horsa shows its long roomy fuselage, tricycle landing gear and high, well-braced tailplane. This glider has been used in all British air borne operations from Sicily in the summer of 1943 to the Rhine crossing late last March. Larger than the U.S. CG-4A, it carries 30 fully equipped men, is usually towed by Stirling or Halifax glider tugs.



WARWICK Specializing in air-sea rescue, Warwick I carries a jettisonable dinghy which makes a bulge under fuselage. Nose, tail and dorsal turrets distinguish this air-sea rescue Warwick from the transport, Warwick III. An enlarged Wellington, the Warwick is one of Allies' biggest twin-engine planes, with a 97-ft. wing span. Engines are U.S.-built Double Wasps.



SUNDERLAND Sunderland sweeps by the RAF's Coastal Command have accounted for Nazi subs from Iceland to the Bay of Biscay. It is now serving the RAAF and RNZAF as well, as both patrol plane and transport. Upturned blunt nose, short, deep hull and an unusually tall single fin and rudder set it apart from other four-engine flying boats (*see p. 46*).



YORK In service since the fall of 1943, the Avro York shows its Lancaster ancestry in the bulky fuselage, shape of its high-set wing and the guitar-pick outboard fins and rudders. The fuselage appears to be undershot at the nose. The unusual triple tail assembly is an outstanding recognition feature of the airplane. Fast for a commercial type, the York has a top speed of about 285 m.p.h.

TWO WORK HORSES AND TWO HEAVY BOMBERS



MOSQUITO Mosquito does everything but carry torpedoes and the RAF's heaviest bombs. Equipped with a solid nose mounting machine guns and cannon for nightfighting and ground attack, it is also seen with a plexiglass nose in bomber and reconnaissance versions. Semi-elliptical fin and rudder, wide chord of shoulder wing at root, short nose are recognition aids.

BEAUFIGHTER Formerly an RAF mainstay as a nightfighter and strafing plane, the Beaufighter is now used more as an antishipping weapon. It has replaced Beaufort in Coastal Command. All Beaufighters now operational have marked tailplane dihedral. Wing position is mid; nose is extremely short, does not extend far beyond the wing's leading edge.





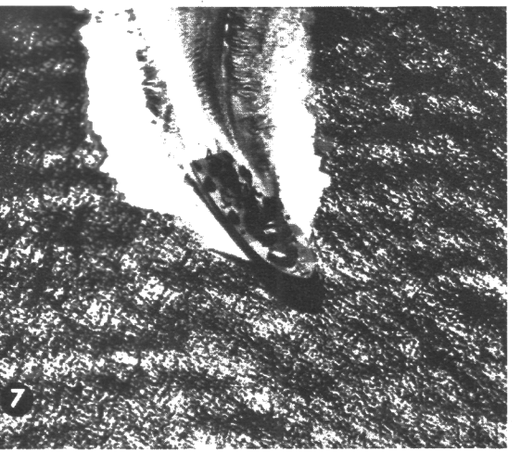
LANCASTER The pride of the Bomber Command, the Lancaster has been shattering German industry with 11-ton "volcano" bombs. The mid-wing has round tips, taper on both leading and trailing edges of outboard sections. Tailplane bisects the fuselage. Radial engines have replaced inlines on Lancaster II (*above*) but Merlin-powered models are also in action.

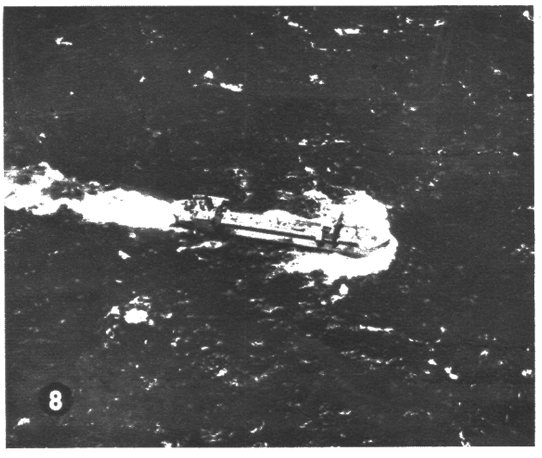
HALIFAX Streamlined nose, radial engines, and rectangular fins mark the Halifax VII (*below*), although, as with the Lancaster, inline versions are operational. Round wingtips make the Halifax resemble Lancaster more than before, but nose contour and position of the tailplane remain different. Halifaxes are also seen as glider tugs and Coastal Command patrol planes

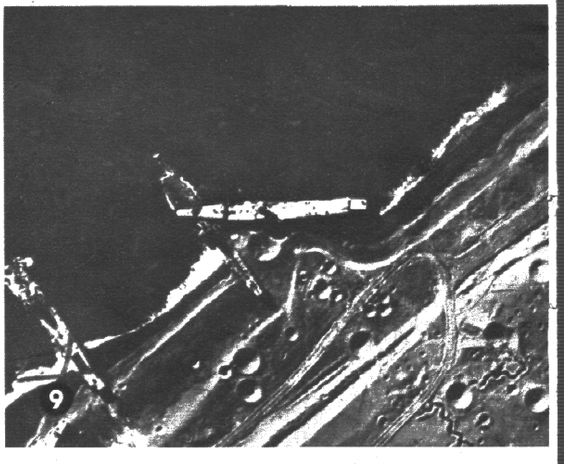


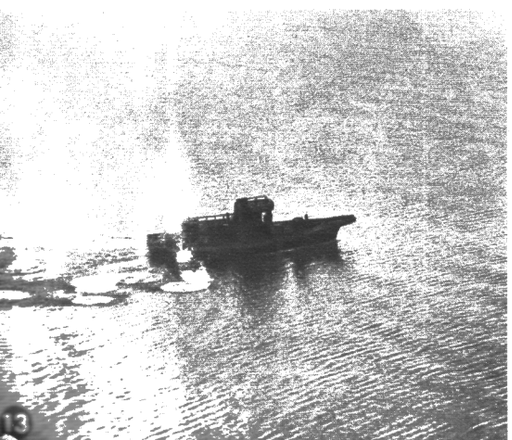
QUIZ NO. 3: B-29 PROBLEMS ON ROAD TO

During the long tedious hours of round trip between Saipan and other bases and Tokyo, a B-29 may fly over many varied Japanese targets as well as elements of our own striking force. On these two pages are pictured only a few of the types of surface craft that dot the seas

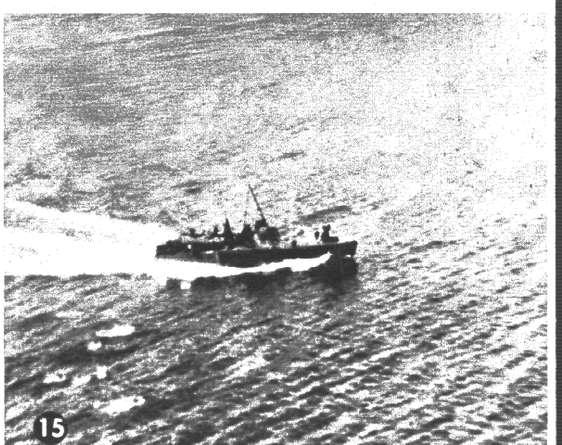


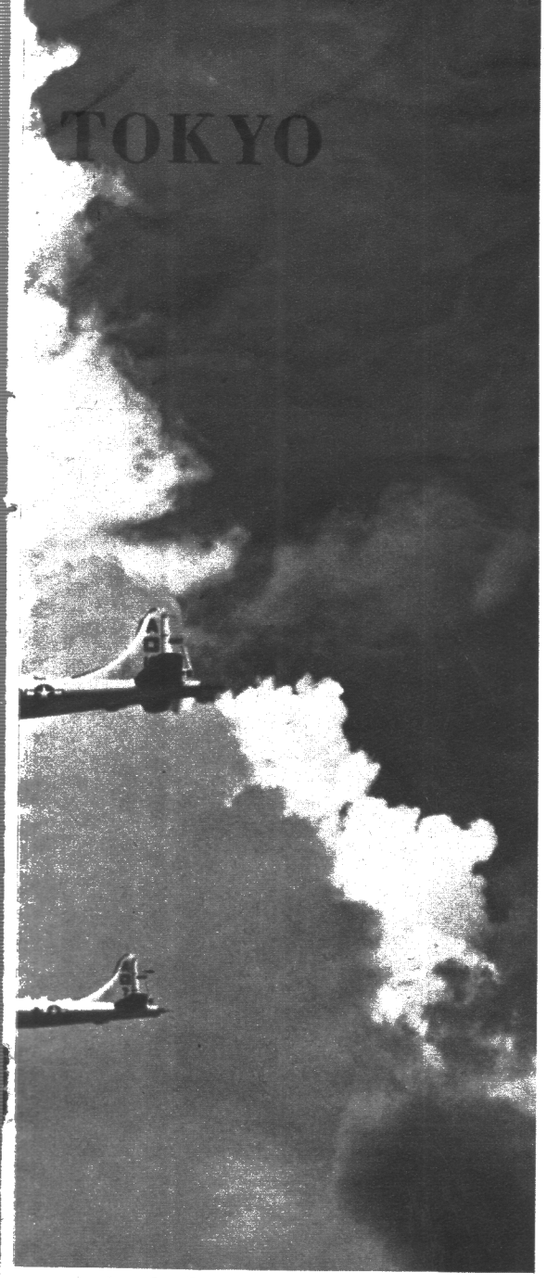






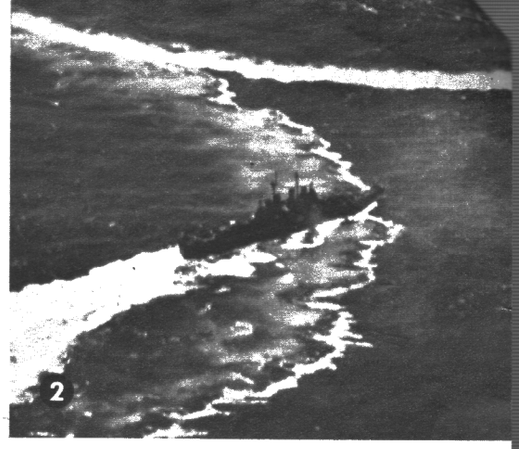


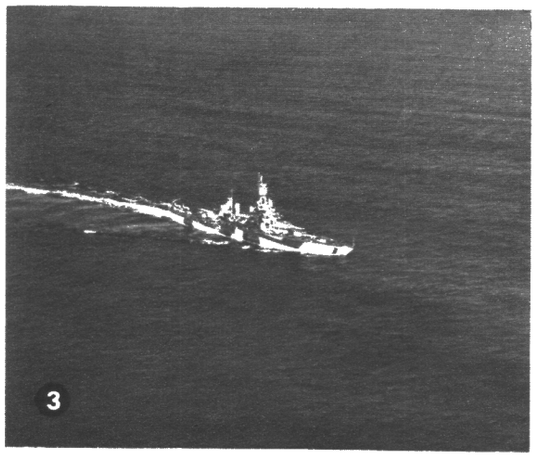




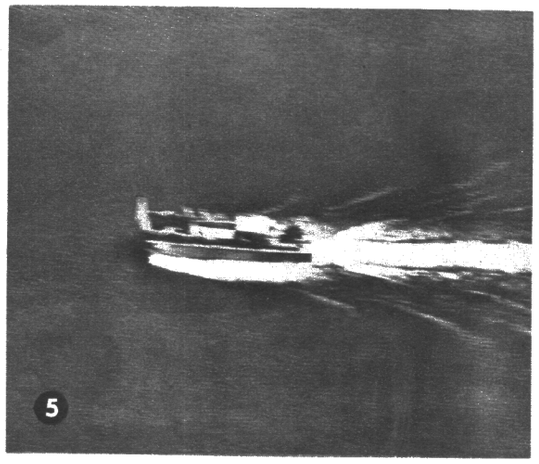
under the Superforts in the course of their raids over the increasingly active far Pacific.

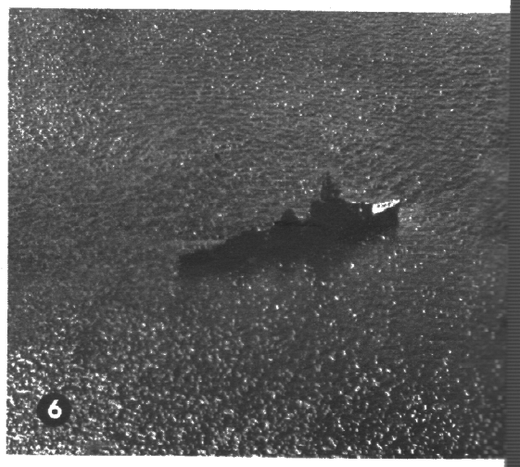


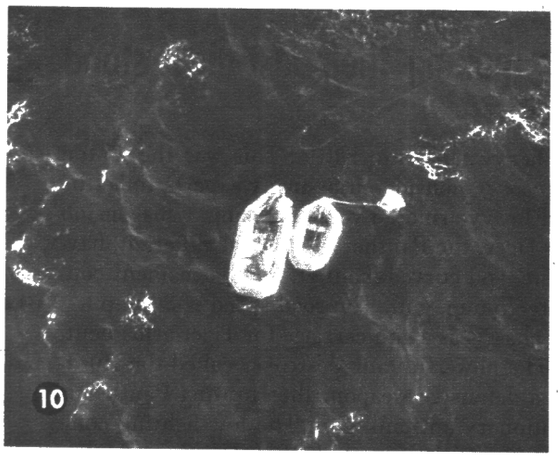


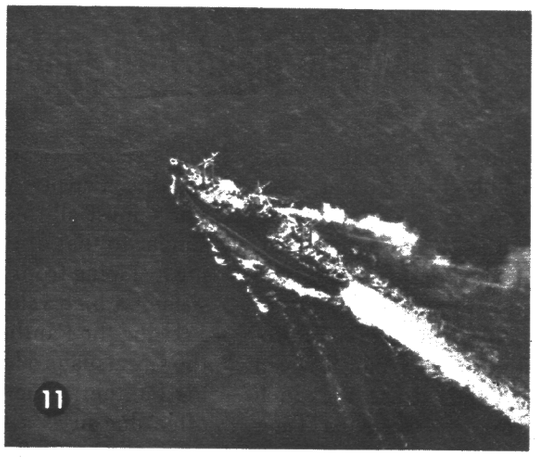


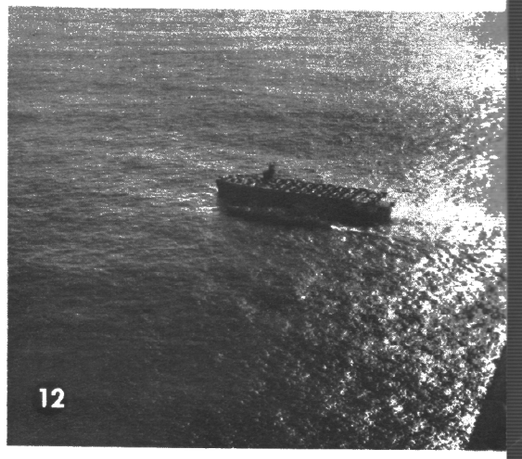


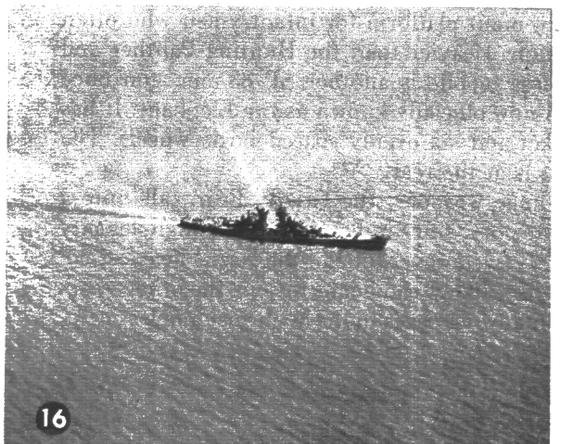
















For answers see p. 49



GUNS TURNED TO THE REAR, TWO TIGERS AND A PANTHER (CENTER) WERE EVIDENTLY TRYING TO COVER A GERMAN RETREAT WHEN CRIPPLED BY

GERMANS' LAST HOPE

Heaviest tanks and SP guns are likely to guard Nazi fanatics making their last-ditch stand

As Nazi forces retreat to wherever they hope to make their final stand, they will very likely be screened by the heaviest, most vicious tanks and tank killers in the German arsenal. Named after beasts of prey, they are being used as fast as they are produced.

Best known of these weapons is the world's heaviest tank, the King Tiger. Weighing 75 tons and armed with an 88-mm. gun of high muzzle velocity, its outstanding quality is the degree of protection it affords its crew and power train. Turret armor is seven inches thick in front, while on the glacis plate it has a six-inch thickness. Modified since its first appearance, the King Tiger looks less like a Panther than before. The turret top is sloped towards both front and rear and there is no visible gun mantlet. Some units have the model-43 tank gun with a two-piece barrel.

Older than the King Tiger but just as heavily armed is the Tiger, PzKpfw VI. First tank to carry an 88-mm. gun, it appeared in North Africa late in 1942. The boxy design of turret and hull showed definite relationship to the latest German medium tank, PzKpfw IV, but the suspension, with eight sets of interleaved bogie wheels supporting the track, was different. On the newest Tigers the ends of the axles protrude from all eight bogies as on the King Tiger.

Approximately a year after the Tiger was introduced, the Germans sent a second heavy tank into battle. This was the 45-ton Panther, PzKpfw V (*above*), considered by many experts to be the war's finest all-round heavy armored vehicle. Using a suspension similar to that of the Tiger, the Panther looks quite different, having a sloping front plate and curved mantlet. Main armament consists of a high-velocity 75-mm. gun. Top road speed is 30 m.p.h.

Using the Panther chassis as a gun carriage for Tiger armament, the Germans produced a powerful tank destroyer called the Hunting Panther. Chiefly a defensive weapon, the Hunting Panther is often dug in as a stationary antitank gun. The low fighting compartment has a flat roof which extends halfway to the vehicle's rear, affording a convenient platform for infantrymen who often ride in a prone position. Heavier than the Hunting Panther and consequently much less mobile is another SP 88-mm. gun once called Ferdinand and now officially known as the Elephant. It has a rear driving sprocket and six evenly spaced bogie wheels. The fighting compartment is at the rear.

The last of these huge weapons, the Grizzly Bear, falls into a somewhat different category, since it does not have a high-velocity tank or antitank gun. It is, however, one of the Nazis' heaviest SP howitzers. As such it is a likely candidate to join the other weapons on these and the following pages in the Wehrmacht's last fight.

SOVIETS. PANTHER HAS RAKED LINES, PROMINENT GUN MANTLET. TIGERS ARE MORE SQUAT AND BLOCKY, HAVE FLAT MANTLETS AND 88-MM. GUNS



King Tiger's size can be judged from U.S. prisoners filing past during the battle of the Ardennes bulge. The unusually wide treads measure 32 in. across. The powerful 88-mm. gun has a two-piece barrel and prominent muzzle brake. The mantlet is in the form of heavy collar.



Low silhouette makes Hunting Panther hard to hit, easy to dig in for antitank defense. The chassis is same as that of the Panther tank, but low, flat-topped fighting compartment mounting an 88-mm. gun replaces the Panther's turret. Armor is coated with antimagnetic plaster.

Crippled Elephants show their massive bulk from the front and side. Formerly known as Ferdinand, the Elephant has six-wheel rear-drive sprocket suspension which was unsuccessfully tried on the Tiger. When seen in head-on view, the Elephant actually resembles the Tiger be-

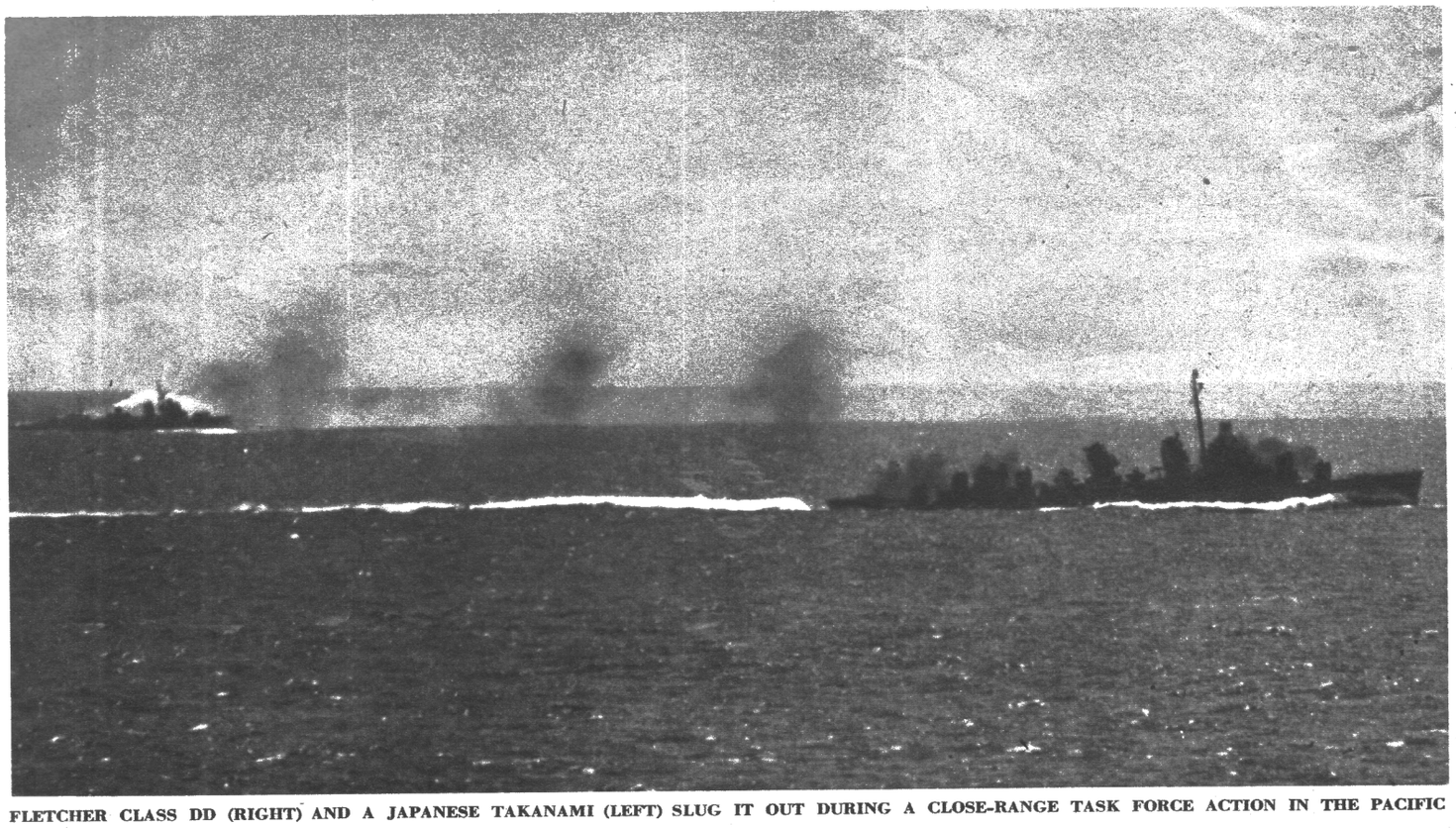




PzKpfw IV chassis serves as the carriage for the big Grizzly Bear with its stubby 150-mm. assault howitzer. The gun shield with its flat sides and sharply sloping front plate is mounted over the middle of the vehicle. Only half the gun barrel extends beyond the ball mount.

cause of the three distinct layers formed by the bow plate, hull and fighting compartment. Hull armor is eight in. thick in front, contributing to the Elephant's 72-ton weight and poor maneuverability. Empty shell cases are ejected through a large hole in the rear plate.



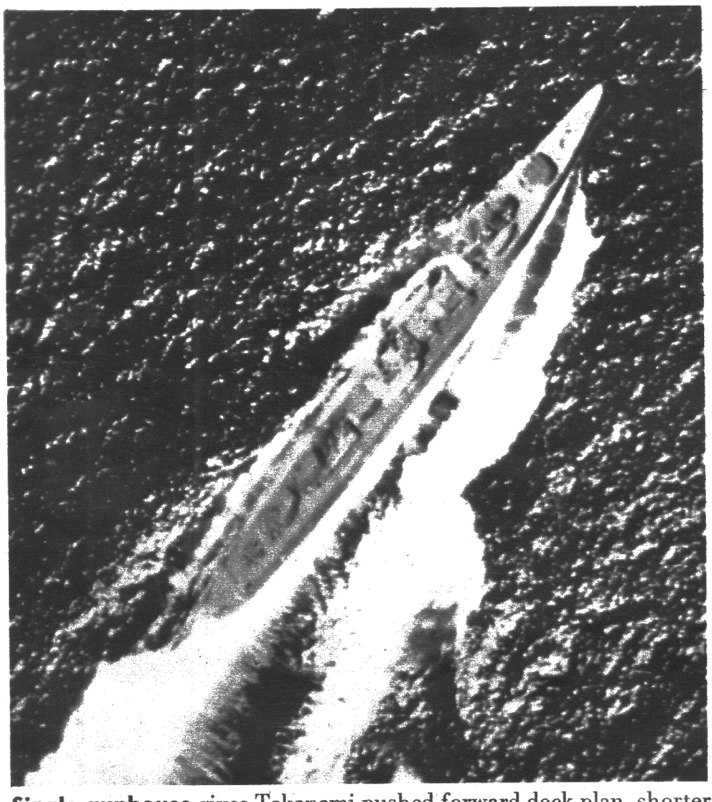


FLETCHER CLASS DD (RIGHT) AND A JAPANESE TAKANAMI (LEFT) SLUG IT OUT DURING A CLOSE-RANGE TASK FORCE ACTION IN THE PACIFIC

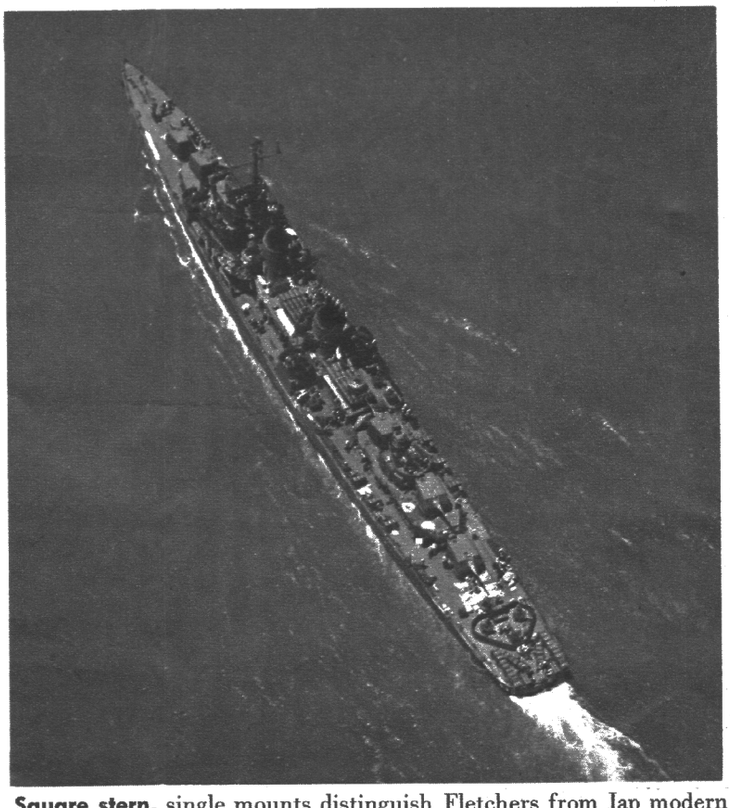
CONTRASTING DD's

U.S. Fletcher Class and Jap Takanami show differences between two navies' two-stackers

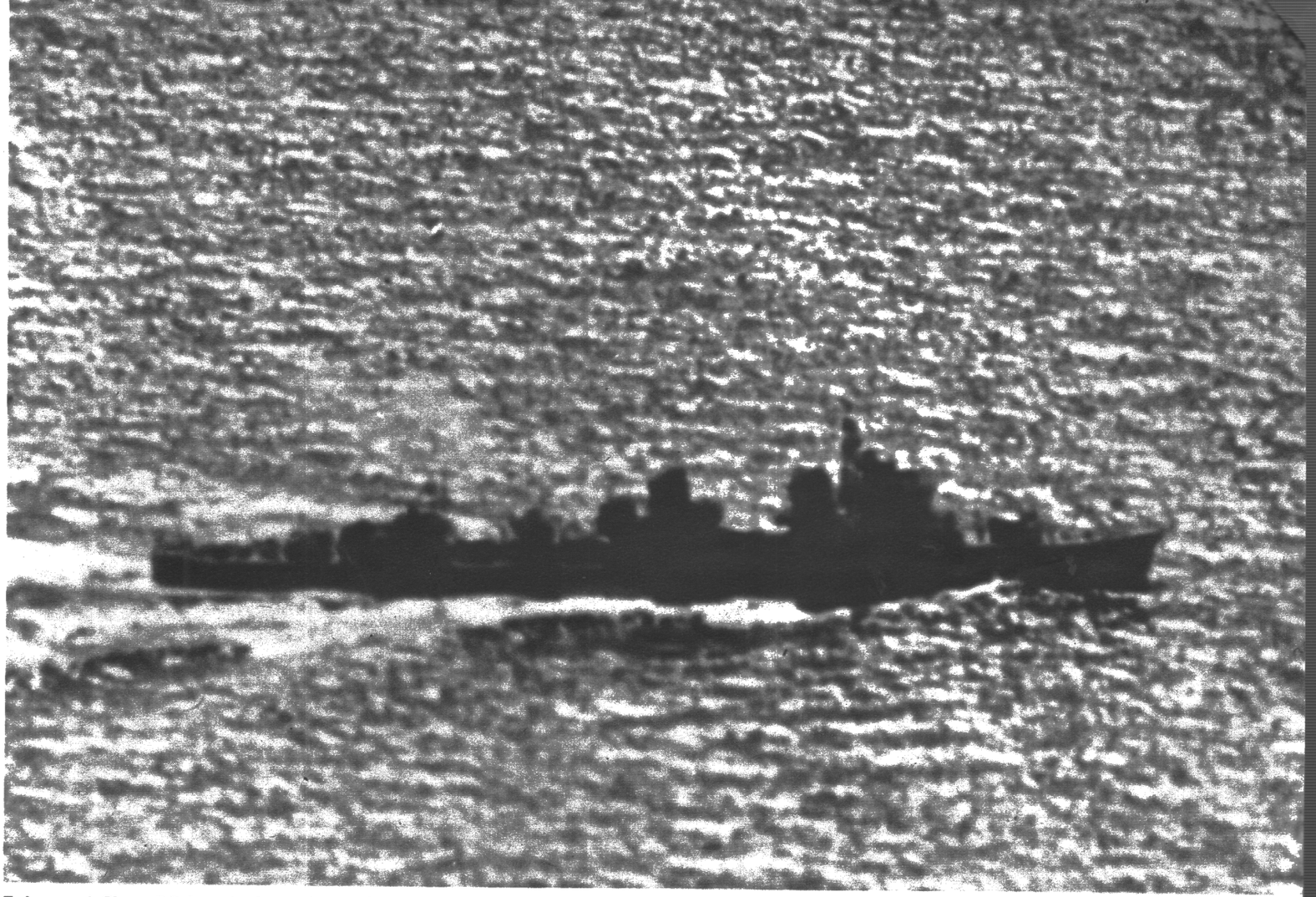
With Japan's bigger warships wary of approaching a U. S. task force, combat recognition in the Pacific will to an ever greater extent be concentrated on smaller types. One such problem in ship recognition concerns U.S. *vs.* Japanese two-stack fleet destroyers. Superficially similar because of their size, shape and the fact that they all have two stacks, these ships can, nevertheless, be recognized by national characteristics governing their overall appearance (see *Journal* for December 1944) and by differences in specific details. As illustrated by the Fletcher and Takanami Classes, these differences are brought out by the pictures on these pages.



Single gunhouse gives Takanami pushed-forward deck plan, shorter foredeck than Fletcher. Note upswept, tapered lines of Japanese bow.



Square stern, single mounts distinguish Fletchers from Jap modern two-stackers. Three gunhouses aft make Fletchers unique in Pacific.



Takanami Class DD has single gunhouse forward, set distinctly apart from the bridge. Except for Terutsukis, all Jap DD's have only this one mount forward. Masting on the newer Japanese destroyers is tripod, with prominent mainmast halfway between after stack, stern.

Fletcher profile is more substantial than Takanami's. The stacks and torpedo mounts rise from low deckhouse amidships rather than from deck itself. Superfiring gunhouses create sturdy, sloping outline forward; raised gunhouses form mound of superstructure near stern.





TOPSY, CHIEF JAP ARMY TRANSPORT, HAS A LONGER NOSE, MORE SLENDER FUSELAGE THAN U.S. TYPES. BOTH WING EDGES TAPER EVENLY

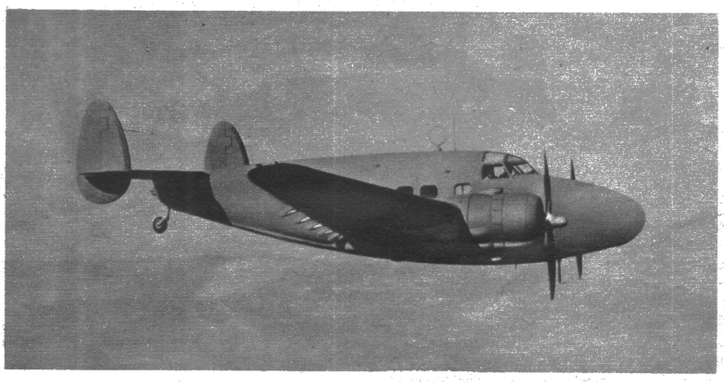
JAP TRANSPORT PLANES

Until recently the recognition of Japanese transport planes was not a major problem for U.S. airmen since location alone determined in most cases whether a transport was Allied or Japanese. But with U.S. forces less than 400 miles from Japan proper, accurate transport recognition is now a vital matter. Since the crippling of their fleet, the Japs must depend more on airplanes, as at Iwo Jima, to supply island garrisons besieged by U.S. troops which are themselves receiving airborne supplies.

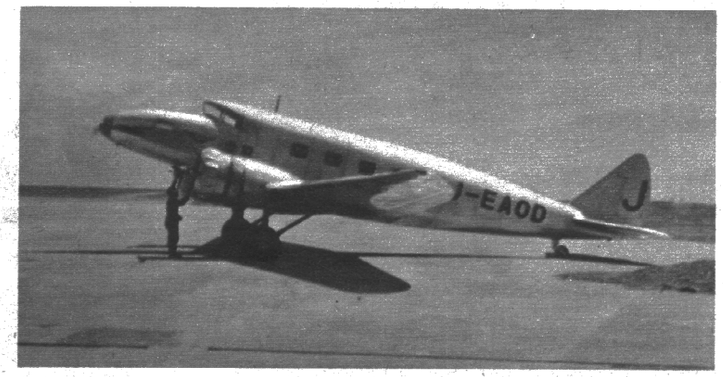
The transports used by the enemy fall into two classes, those designed exclusively for transport use, with code names beginning with "T," and second-line bombers and flying boats adapted for transport service. The latter, Nells, Sallys, Betty 11's, Mavises and Emilys, should present no great difficulty, since (except for Emily) they are unmistakably Japanese in design (see *Journal* for March). It is with the "T" types that trouble can be expected, for three of them, Tabby, Tess and Thelma, are outright copies of U.S. models and a fourth, Topsy, does not look particularly Japanese.

Fortunately our DC-2 (C-32) and Lockheed Lodestar, prototypes of Tess and Thalia respectively, are not operating in areas near Japan. Even Tabby, which is almost a replica of the DC-3 (C-47), differs slightly in detail from the U.S. type (*see opposite*). But these differences apply only to details which cannot be observed unless looked for intently by U.S. air crews.

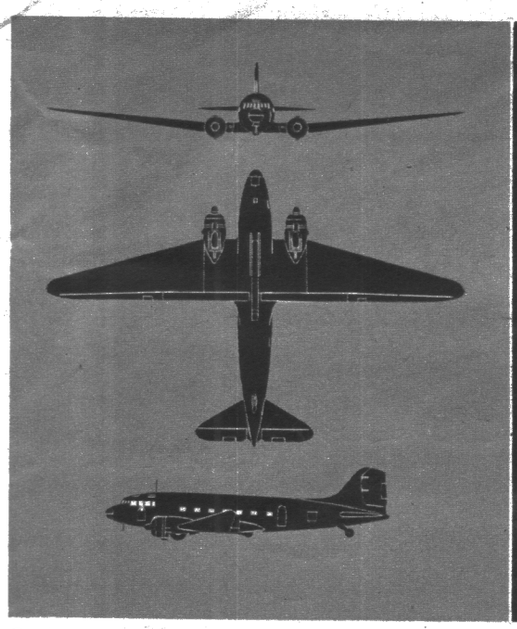
This means that recognition by total form does not always provide the answer as regards the recognition of transport planes in combat zones. U.S. airmen must depend to a large extent on the details pointed out on these pages, may even be able to confirm their decisions by seeing markings. And identification procedures —attitude of approach, behavior—will, in these instances, do more to establish identity than pure visual recognition. On these pages, wherever a Japanese airplane having a resemblance to an Allied plane is shown, the Allied counterpart is also presented.

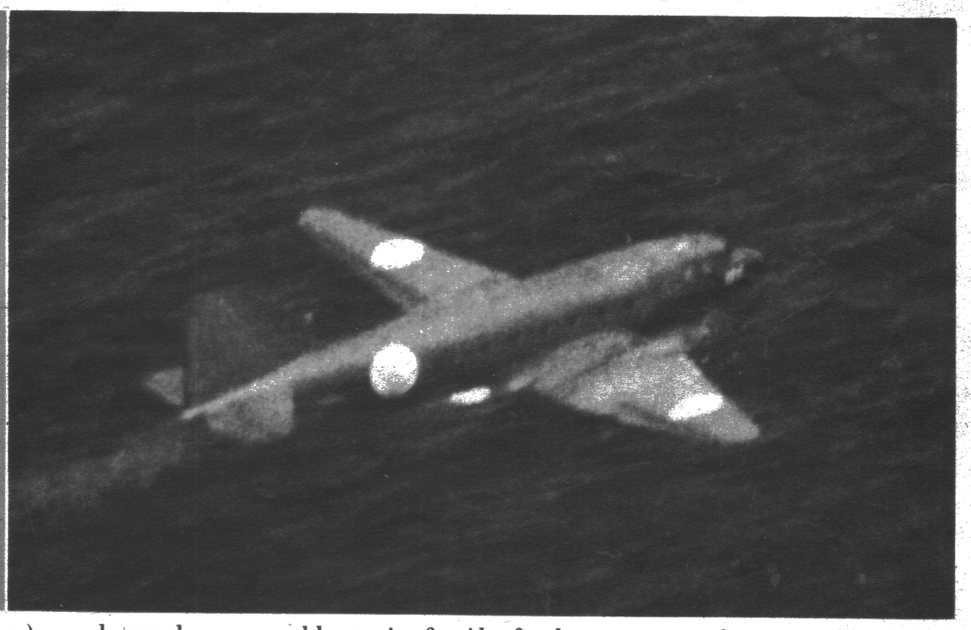


Lockheed ancestry is seen in newly coded Thalia's Fowler flaps, oval fins, rudders. Smooth belly marks it from PV's. Thelma is Lockheed 14.

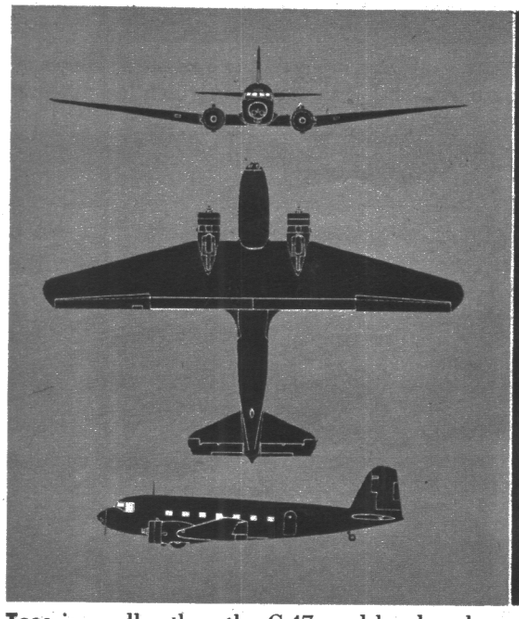


Thora, a prewar commercial plane, is strictly Jap design. Nose is pointed; small fin has sharply slanted leading edge much like Dinah's.



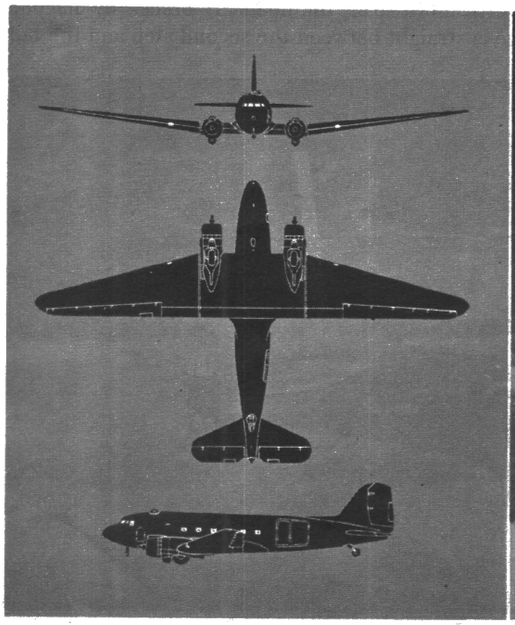


Comparing Tabby with U.S. C-47 (*bottom of page*) reveals rounder fuselage in the head-on view, larger spinners, shorter nacelles, more smoothly curving fin. Also fuselage comes to a sharp point at tail. However, Tabby's overall appearance is amazingly similar to the Skytrain.



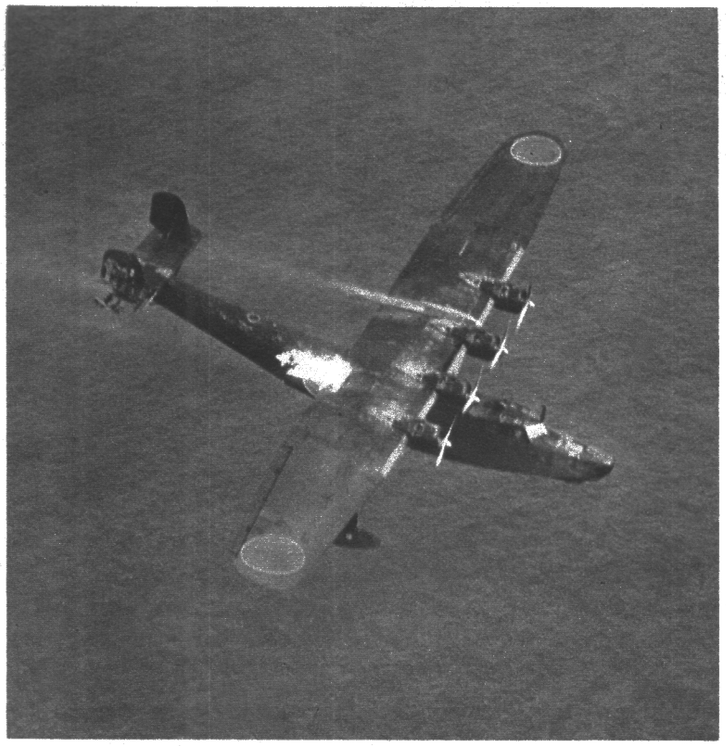


Tess is smaller than the C-47, and head-on has a deeper, narrower fuselage. Best recognition feature is the fin which stops abruptly forward, although several Tesses have been found with fin and rudder similar to Tabby's. The trailing edge of rudder shows a definite slant.





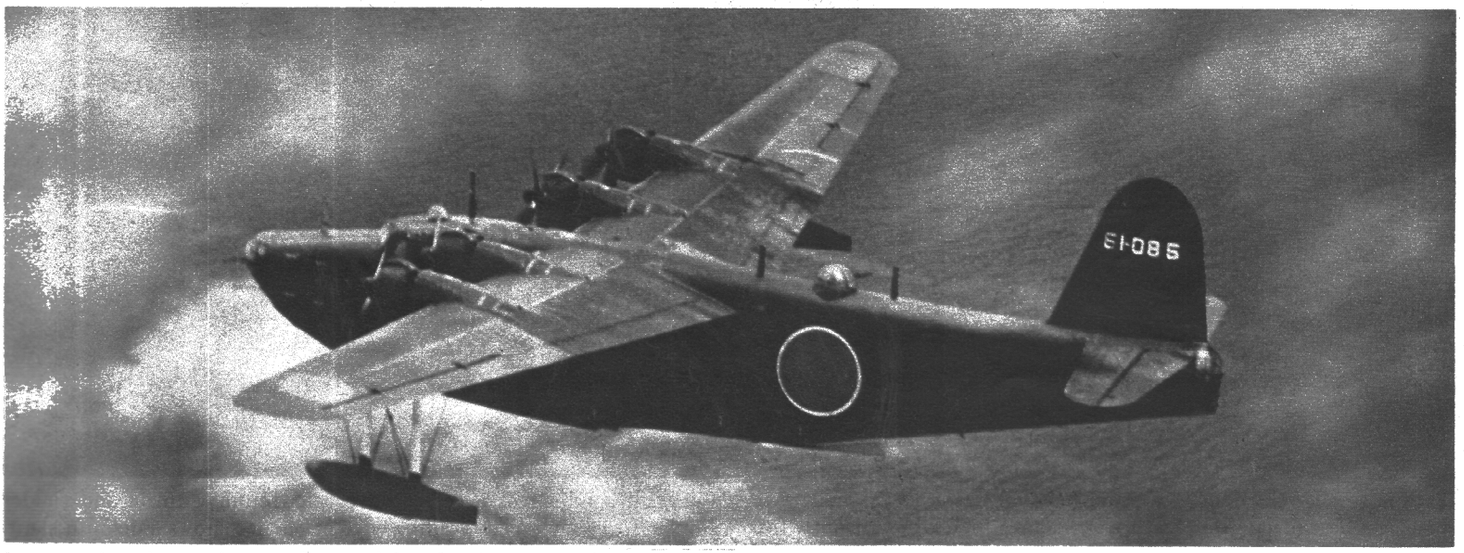
USAAF's C-47 (Navy R4D) has a cropped tail just under the rudder. Fin's downward curve has a definite break just above fuselage. Longer engine nacelles make the nose appear shorter than on Japs' Tabby and Tess. The bite in the C-47's tailplane is a further distinguishing feature.



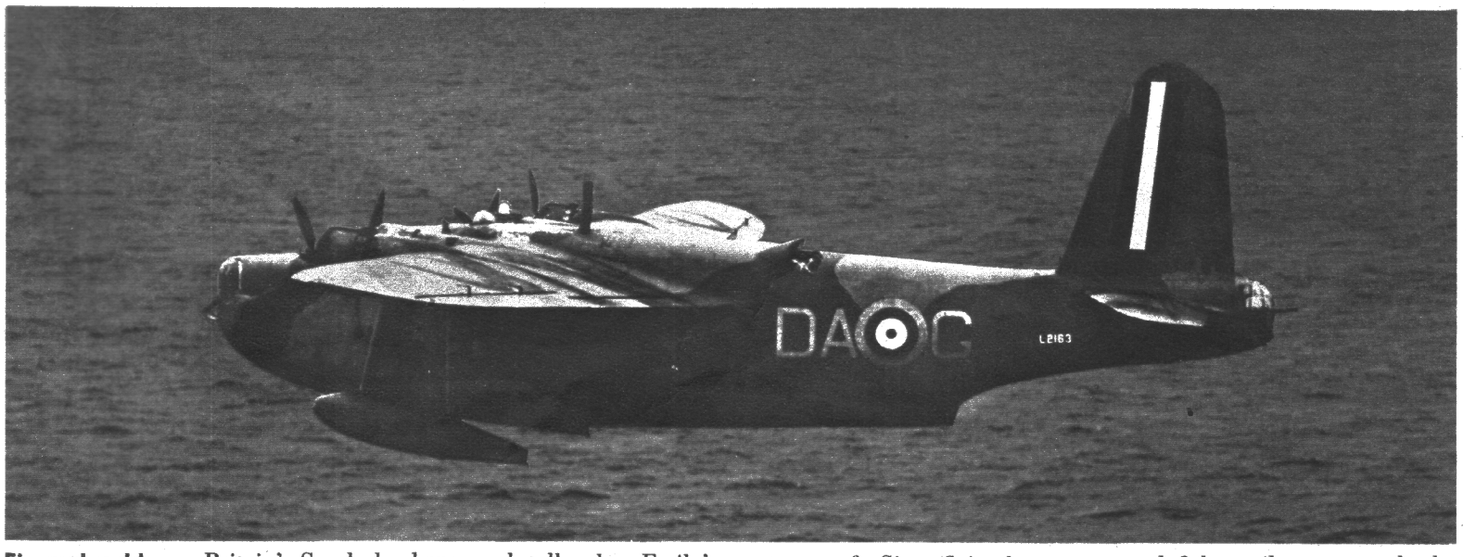
Twin fins and rudders might cause confusion between Mavis and PBM. Mavis has a parasol wing, much thinner fuselage, longer nose.



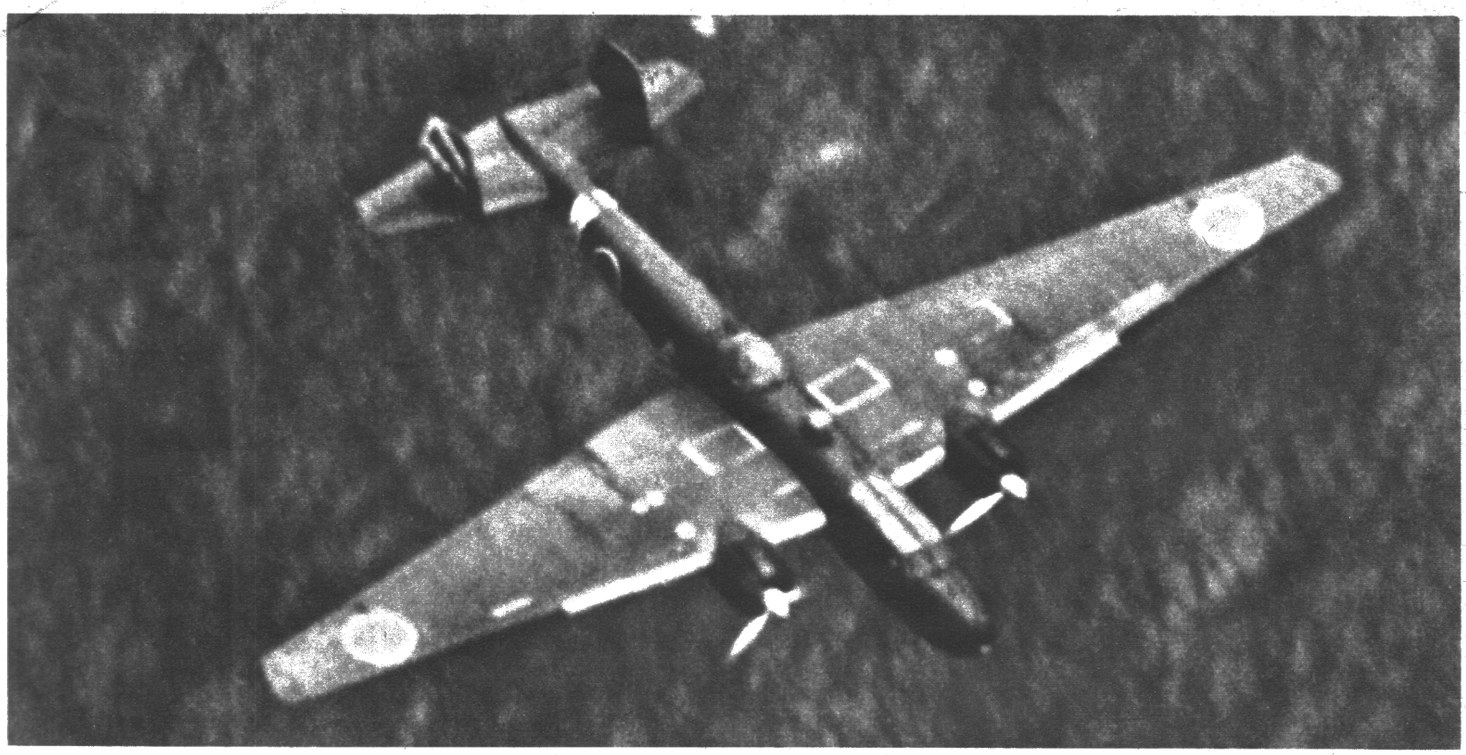
PBM has deep fuselage, gull wing mounting two engines. Fingernail fins, rudders slant; are outboard of the tailplane which has dihedral.



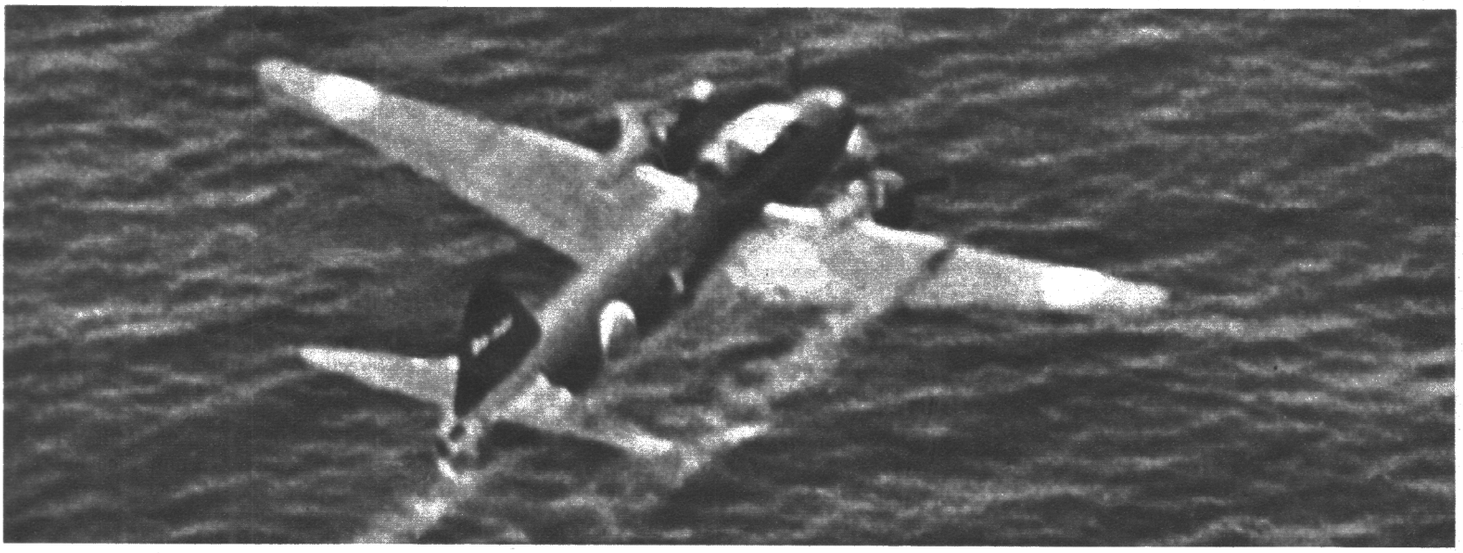
Long, pointed nose is one of several details which differentiate Emily from the RAF Sunderland (*below*). Emily's wing has somewhat greater dihedral and twelve ft. more span; the floats are braced by diagonal struts. The hull line is straight between the second step and the tail.



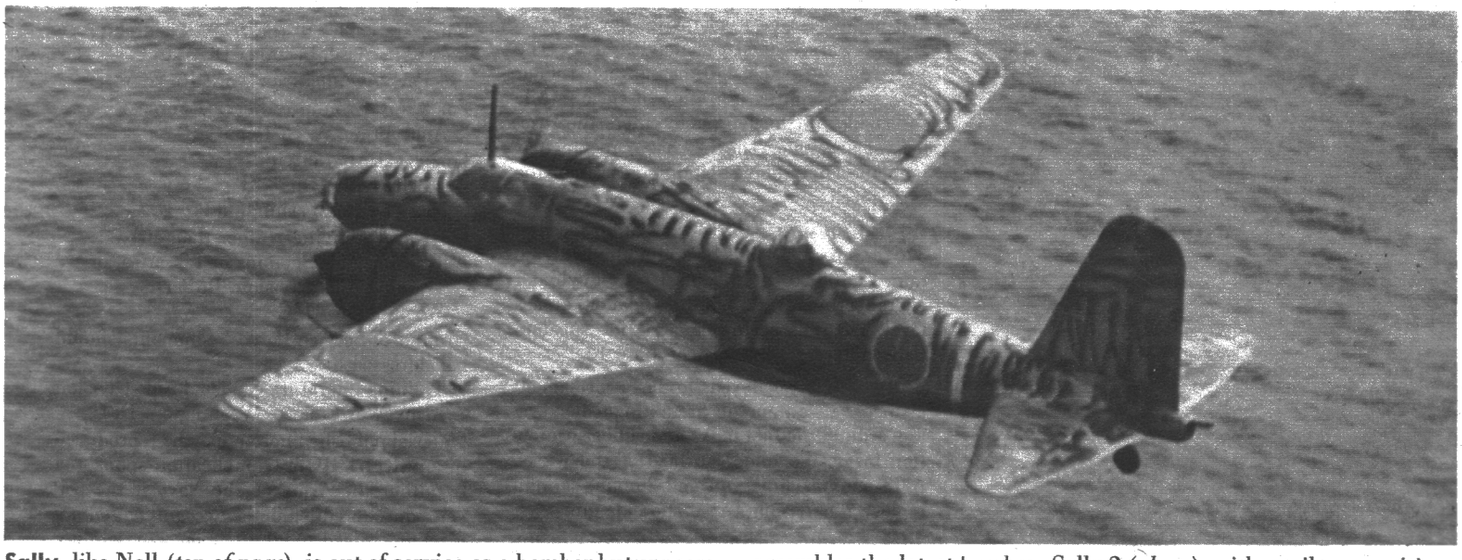
Fin and rudder on Britain's Sunderland are much taller than Emily's but not so wide. Nose is short and blunt and the hull has a decided step-up aft. Since flying boats are armed, fighter pilots must make decisions from greater distances than in the case of transport planes.



Old bomber Nell has been retired from combat but is still operational as a transport. Nell is one of few Jap planes with twin fins and rudders, but mid-wing, short nacelles and gun blisters set it apart from U.S. planes. Armament has been reduced on the transport version.



Transport Bettys are presumably Betty 11's since the newer models could hardly be spared from combat. Wingtips on Betty 11 are raked, and dorsal armament is 7.7 mm. in a turret. But the best recognition aids, thick fuselage and fat tail, are the same as on current Bettys.



Sally, like Nell (*top of page*), is out of service as a bomber but appears in combat areas as a transport. It is likely that the transport version resembles the latest bomber, Sally 2 (*above*), with a tail gun position. The tailplane is invisible when Sally is seen from a head-on view.

QUIZ ANSWERS

QUIZ NO. 1

1. Sugar Baker Love
2. Fox Tare Baker
3. Fox Baker
4. Fox Baker
5. Sugar Able Sugar
6. Tare Two Stacks, Fox Tare Charlie
7. Fox Tare Dog
8. Fox Tare Charlie
9. Fox Tare Able

QUIZ NO. 2

1. PBM's
2. PBY
3. PV-1
4. Emily
5. F4U
6. Zeke
7. Dinah
8. C-54
9. Lily
10. F4F
11. Frank
12. George
13. Jill

QUIZ NO. 3

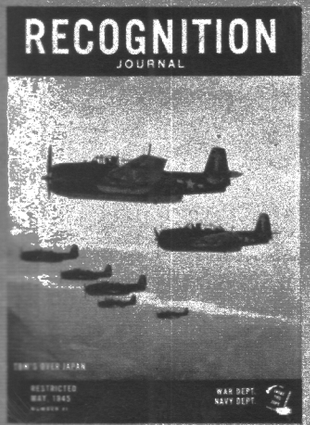
1. U.S. submarine
2. Cleveland Class CL
3. Colorado Class BB
4. U.S. LST
5. LCV carrying cargo
6. Fletcher Class DD
7. U.S. PT
8. U.S. AO (fleet oiler)
9. Japanese LSM's
10. U.S. rubber life rafts
11. U.S. AGC (communications headquarters ship)
12. Sangamon Class CVE
13. Japanese lugger
14. Shimakaze Class DD
15. Japanese PT 101 Class
16. Alaska Class CB
17. Ise Class BB-XCV
18. Porter Class DD, Atlanta Class CL

QUIZ NO. 4

1. U.S. M-4 medium tanks
2. Japanese medium tank, Model 2597 (improved) with 47-mm. gun
3. German PzKpfw V Panther
4. U.S. M-18 tank destroyer
5. U.S. M-7 SP howitzer
6. Soviet 152-mm. howitzer on KV chassis (SU-152)
7. Japanese light tank, Model 2595
8. U.S. M-3 medium tank
9. British Churchill Crocodile
10. U.S. LVT (4), U.S. M-4 medium tank

QUIZ NO. 5

1. C-47
2. Frances
3. PV-2
4. Judy
5. SC-1
6. Jack
7. F7F
8. Tojo
9. P-51D
10. Tony
11. P-61
12. Nick
13. P-47N
14. Frank
15. PB4Y-1

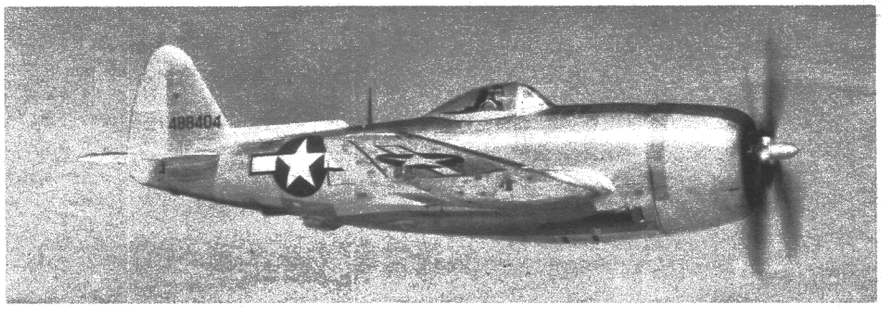


When the historic first U.S. fighter strikes were made on Tokyo Feb. 16-17 by the carrier-based planes of Vice Admiral Marc Mitscher's famous Task Force 58, one of the planes carried LIFE Photographer W. Eugene Smith. Despite the thick weather, he took this striking picture of TBM Avengers flying over heart of the Japanese mainland.

CREDITS

The pictures used in the *Journal*, unless otherwise specified (*see below*), came from the Allied Armed Services.
Cover—W. Eugene Smith
2—Top right, Frank Scherschel
24—Fourth row left, Eliot Elisofon
34—Top, Samson Clark
38—Top, Sovfoto
41—Top, Sovfoto
45—Bottom right, William Vandivert
48—Top, Republic Aviation
51—Second row left, Acme; third row center, Sovfoto; third row right, International

NEWS & MISCELLANY



Latest variation on the P-47 is the addition of a dorsal fin. It is designed to improve directional stability and will be standard on both N (*above*) and D models of the Thunderbolt.

NEWS

Patsy is the new code name for Pat. Originally Ki-74 was thought to be a single-engine fighter and coded Pat. However, a later, correct translation shows it to be a twin-engine bomber and reconnaissance plane and the code name Patsy was assigned. Its two radial engines are reported to have 2,700 hp. each at take-off, fuel injection and two stage superchargers. Patsy may be met in limited numbers this year.

Rex 11 (*see silhouette on page 13*) represents a strenuous effort by Japan to develop a high-performance seaplane fighter. Hampered in speed and maneuverability by its large single float, Rex will be at a disadvantage in combat with modern carrier and land-based planes. When pitted against slower bomber and patrol aircraft, however, the new floatplane should not be discounted. It is also expected that Rex will be used against PT's, LST's and Allied small craft in general. Maximum speed is estimated at approximately 330 m.p.h. at 19,680 ft. Maximum range is about 1,200 statute miles, combat radius about 375 miles. Span is believed to be 39 ft., 5 in.; overall length (including float), 35 ft., 5 in. A second overall length of 33 ft., 3 in. has been reported. The manufacturer is Kawanishi.

Jap copy of the Storch, built on a smaller scale than the German Fieseler 156, has a 282-hp. radial engine and carries no armament. It is probably intended for surface reconnaissance and headquarters liaison work and might also be used for low-level photographic work against undefended areas. The Allied liaison plane, L-5, has fin and rudder that sweep gently into the fuselage, while the rudder of the Jap plane enters the fuselage at an angle. The L-5 has a rectangular tailplane and stubbier landing gear than the Jap Storch.

Radial engine Judy 33 has a top speed of 376 m.p.h. at 18,500 ft. and a climb of 3.6 min. to 10,000 ft. Its Kinsei 62 14-cylinder engine provides a 1,580-hp. take-off at sea level. The 33's performance is not substantially different from that of Judy 12.

Betty 34 is believed to have armament changes, an automatic fire-extinguisher system around the fuel tanks and rubber protection inside the under surface of the wings. A 13-mm. machine gun and 20-mm. cannon replace the 7.7-mm. nose and side guns.

Jack is out in at least three versions of the basic design, which the Japs call Raiden 11, 21 and 31. The main improvement in the latter versions seems to be added armament. Raiden 31 may have armor and protected fuel tanks. Its cockpit has been redesigned for bubble canopy (*see p. 13*) to give better visibility. Jack is primarily used for short-range interception.

Zeke 52 is now equipped with increased armament. Zekes were found on Iwo Jimo with one 20-mm. cannon and one 13.2-mm. MG in each wing, and one 13.2-mm. MG in the starboard side of the cowl.

George 11 has been found with all four 20-mm. cannon set right in the wing, as contrasted with the package-gun arrangement shown in last month's *Journal*.

Tojo captured in the Philippines has two 40-mm. wing cannon, and two 12.7-mm. MG's in the cowl.

ANNOUNCEMENT

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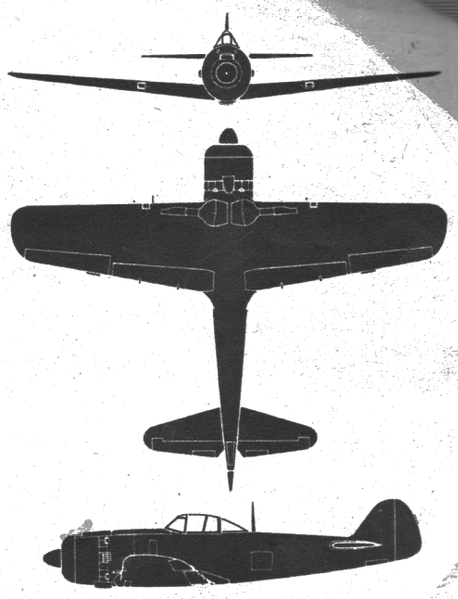
JAPAN





SPAN: 37 ft., 1 in.
LENGTH: 32 ft., 4 in.
APPROX. MAX. SPEED: 422 m.p.h.
SERVICE CEILING: 39,000 ft.

DISTINGUISHING FEATURES: Frank is a single-engine, low-wing monoplane, with a single fin and rudder. Its wing shape is similar to that of Oscar 2, and its oval fuselage, streamlined above and below, is broken only by blister cockpit. Wings show moderate dihedral; leading edge is straight, with tapered trailing edge. Tips are moderately raked. Fin and rudder, more rounded in appearance than those of other Japanese fighters, resemble Tojo's. The fuselage extends beyond the tailplane which has considerable taper to its leading edge. **INTEREST:** More formidable than either Oscar, Tony or Tojo, Frank at present is the most outstanding Japanese army fighter. Self-sealing fuel and oil tanks, adequate armor, heavy firepower and a maximum speed in the 420-m.p.h. class contribute to its importance. It may carry a fuel tank or one bomb under each wing.

APRIL 1, 1945
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30
NAVY DEPARTMENT BUAER 3

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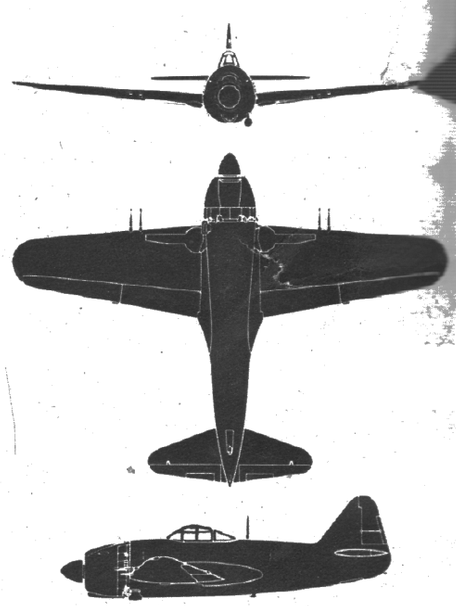
NOTE: This page is to be cut along dotted lines (*above and below*), added to the proper nation's section in the Recognition Pictorial Manual. The dots indicate perforations.

FIGHTER

JAPAN

GEORGE 11





SPAN: 39 ft., 4 in.
LENGTH: 29 ft., 7 in.
APPROX. MAX. SPEED: 407 m.p.h.
SERVICE CEILING: 40,000 ft.

DISTINGUISHING FEATURES: A single-engine, low mid-wing monoplane with single fin and rudder, George has a fat oval fuselage which, unlike other Jap fighters, is thick throughout. Blister cockpit is set about midway between nose and tail. Wings have broad chord at root and greater taper to trailing edge; tips are rounded. Trailing edge is faired into fuselage. Leading edge of tailplane has decided taper; trailing edge is almost straight. Empennage resembles miniature Betty. Low mid-set wings have dihedral from roots. **INTEREST:** George is fast, dangerous, maneuverable. It is the first Jap fighter to have fully self-sealing gas tanks, and its superior performance makes it very important to Japan's defensive plans. A Homare 21 1,970-hp. engine gives it a maximum speed of 407 m.p.h. at 19,600 ft. There are wing racks for small bombs. Armament consists of two 20-mm. cannon in each wing and two 7.7-mm. MG's firing through the propeller.

APRIL 1, 1945
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30
NAVY DEPARTMENT BUAER 3

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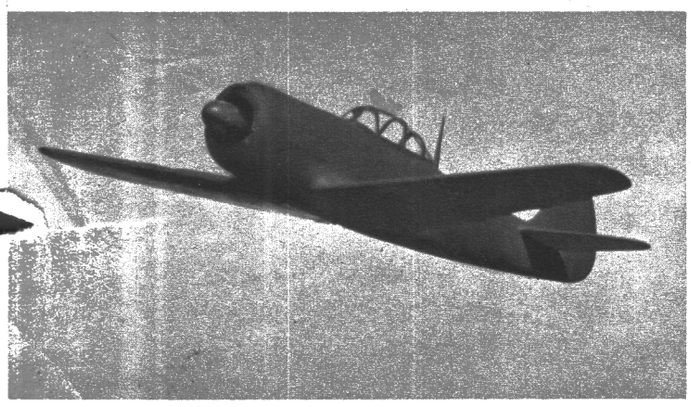
B



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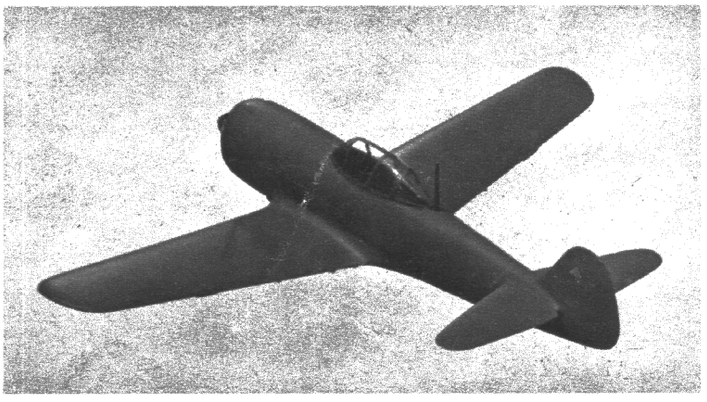
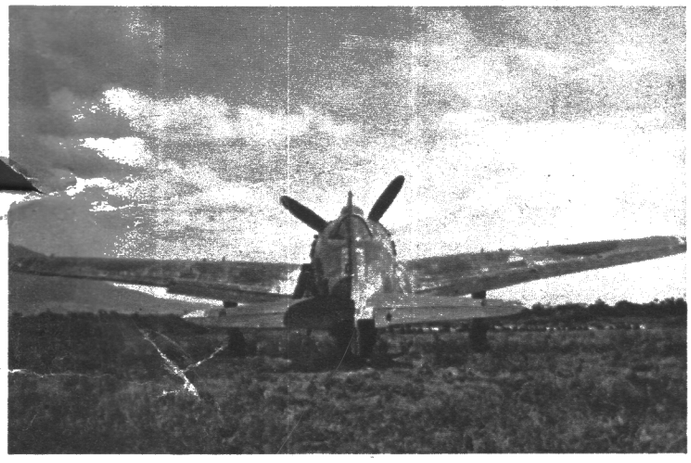


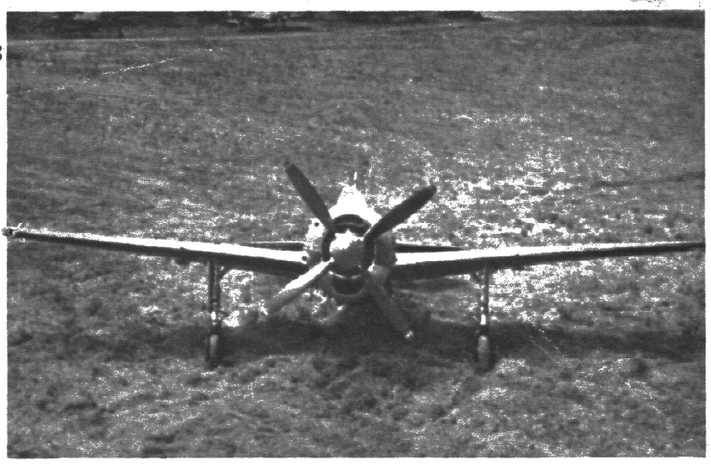
FRANK played a major role in the defense of the Philippine Islands. It has two 12.7-mm. MG's firing through the propeller, and one 20-mm. cannon in each outboard wing section. The t[illegible]ne is set high with a small bite on the trailing edge.

GEORGE, known to the Japanese navy as "Shiden," or "Violet Lightning," is the most heavily armed single-seat Jap fighter yet seen. Since no arrester hook has been found on Georges recovered so far, it is believed they were not for carrier use.

A



B



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D

