

JAPANESE AEROPLANES

AIRCRAFT IDENTIFICATION



PART FIVE

First Impression

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THE AEROPLANE

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EDITION

FOREWORD

By Peter G. Masefield, M.A., A.F.R.Ae.S.

Technical Editor of THE AEROPLANE and Editor of THE AEROPLANE SPOTTER.

JAPANESE AIR POWER provided one of the many surprises of this War. The treacherous attack against Pearl Harbour on December 7, 1941, showed that the enemy had built up Air Forces which had to be recognised as serious antagonists. The equipment was in general better than had been supposed, it was commanded with a full understanding of the part that the Air must play in modern sea and land warfare, and it was manned by resolute crews.

This view was endorsed as Japan swept forward to success after success in the Philippines, in Malaya, against Singapore, Burma and the Netherlands Indies. Where Japanese air strength had been seriously underestimated in the past it now began to be invested with powers it could never possess. Slowly, as the Allied dispositions began to gather strength in the Pacific, as the latest types of American aircraft came into action on a bigger scale, a proper balance began to be struck, and the true strength—and weaknesses—of Japanese Aviation began to appear in something like correct perspective.

There is no doubt that the Imperial Japanese Naval Air Service and the Japanese Army Air Force are formidable forces, well organised, adequately trained and equipped with aircraft which are not markedly inferior to those which can be brought against them. Nevertheless, experience has shown that Allied aircraft and Allied crews can gain superiority when meeting the Japanese on anything like equal terms. During 1942 the Japanese losses almost certainly exceeded production by a wide margin. As a result, the combined operations which played so great a part in the early Japanese success are no longer possible, while the mounting production of the United Nations builds up air superiority on all fronts.

A number of Japanese aircraft and aero-engines have been captured and put into something approaching their original condition. Examination and trials of these machines reveal them as competent engineering jobs, lightly built, the aircraft inadequately armoured but possessing a useful all-round performance.

Japanese airmen have not proved much different from those

of any other Nation, but a few remarks set down by an officer of the British Air Mission sent to Japan in 1922 "to organise equip and train the Imperial Japanese Naval Air Service" give an interesting sidelight on their character.

"The Japanese as pilots I consider very good. They are steady and reliable and I think the average is high. They produce very few star turns but also have very few failures. Their great failing is that they are not quick enough in an emergency. They have little thought for their engines and seem to have no 'ear' whatever. Although slow thinking, they take about the same number of hours' dual as we normally give to new pilots. They are remarkable shots, and I should think that in a scrap their one idea would be to down the enemy regardless of the cost to themselves. They are not consistent, and even their star-turn pilots do strange things at times—perhaps through over confidence."

This book is an effort to present both the features and general characteristics of the chief types of Japanese aeroplane now in operation with the Naval Air Service and the Army Air Force. A great deal of research from many and widespread sources has gone into it, most of it conducted over many months with painstaking diligence by Mr. John Stroud, who has also drawn many of the illustrations to fill gaps where photographs were not available to show all the aspects of the various aircraft or were of too poor quality to reproduce.

This research work, combined with data collected over many years in the files of THE AEROPLANE, and the experience gained by the Staff of THE AEROPLANE SPOTTER, in the constant preparation of recognition material on friendly and enemy types has, we trust, resulted in a reference book which will be of value and interest. We believe that it is the most complete and accurate compendium possible at the present state of knowledge, and it will be improved by revision as time goes on.

Meanwhile, a careful study of the Japanese types suggests that Allied superiority should become firmly established and that Japanese Air Power, having provided the worst surprises it holds, is now a declining force.

LONDON, February, 1943.

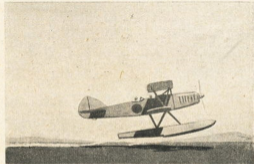
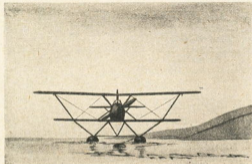
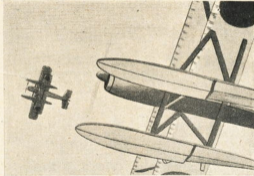
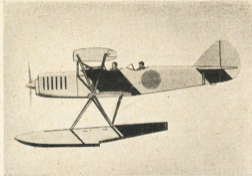
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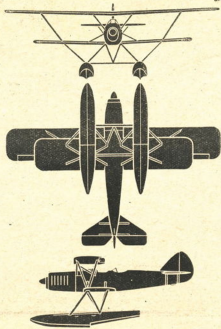
Consolidated 28 (H-98), Douglas DC-2, Douglas DC-3, Fiat BR-20 (OB-98), Heinkel He 111K (OB-98), Heinkel He 118 (Y-98), Junkers Ju 52/3M (Y-95), Lockheed P4, Messerschmitt Me 109 (S-91), Messerschmitt Me 110 (S-91), Poter 63 B2 (B-91), and Severdy (Republic) ZPA Model 200 (S-98) Back cover



THE AICHI NAVY KT-97

One 770 h.p. Aichi motor.

DIMENSIONS.—Span, 42 ft. 7 ins.; length, 32 ft. 6 ins.; height, 13 ft. 1 in.; wing area (gross), 450 sq. ft. **WEIGHT.**—Loaded, 5,650 lb. **FUEL CAPACITY.**—120 imp. galls. **PERFORMANCE.**—Max. speed, 162 m.p.h. at 15,000 ft.; range, 410 miles at 125 m.p.h.

"Aeroplane
drawings"

AICHI NAVY KT-97

TYPE.—Twin-float reconnaissance biplane.

CREW.—Two.

ARMAMENT.—One fixed machine-gun on motor cowling and one movable machine-gun in rear cockpit. Light bombs may be carried under the wings.

THE AICHI NAVY KT-97 is an obsolescent twin-float seaplane developed for catapult work from warships of the Imperial Japanese Navy. It appears to owe a good deal to early Heinkel float seaplanes and is developed from the Aichi AB-3 single-seat fighter built for the Chinese Navy in 1936. The Aichi KT-97 has a 770 h.p. Aichi 12-cylinder Vee liquid-cooled motor, the radiator of which is mounted around the airscrew spinner in the nose. It is entirely strut-braced except for wires between the wings of unequal span.

The crew of two are seated in tandem in open cockpits and dual control is believed to be fitted.

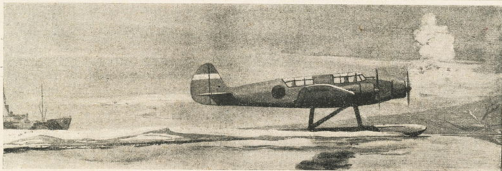
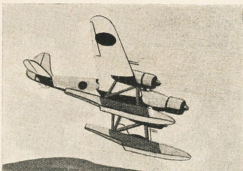
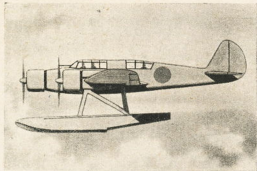
The Aichi Navy KT-97 has now been in service for some five years and is being superseded by more modern types.

Parent Company: AICHI TOKAI DENKI KABUSHIKI KAISHA (The Aichi Watch and Electric Machinery Co.), at Nagoya.

POINTS OF RECOGNITION.—Biplane of unequal span and equal chord. Slightly staggered and swept-back wings. Twin floats braced to each other and to the wings and fuselage by three V struts (front view) or N struts (side view). Two open cockpits. Single fin and rudder. Braced tailplane with sharp taper on leading edge and cut-away in elevators for rudder movement.

Span 42 ft. 7 in.

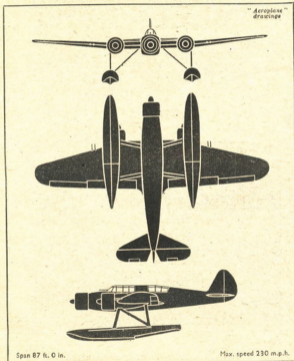
Max. speed 162 m.p.h.



THE AICHI NAVY KT-98

Three 770 h.p. Aichi motors.

DIMENSIONS.—Span, 87 ft. 0 in.; length, 65 ft. 0 in.; height, 24 ft. 3 in.; wing area (gross), 940 sq. ft. **WEIGHT.**—Loaded, 26,400 lb. **FUEL CAPACITY.**—880 Imp. galts. **PERFORMANCE.**—Max. speed, 250 m.p.h. at 13,000 ft.; range, 1,000 miles at 199 m.p.h.; service ceiling, 24,000 ft.



AICHI NAVY KT-98

TYPE.—Three-motor twin-float reconnaissance monoplane. CREW.—Five.

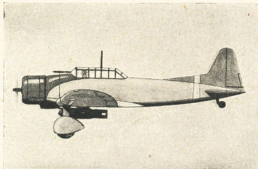
ARMAMENT.—One fixed cannon, four fixed machine-guns, two in each wing, and one movable machine-gun in the rear cockpit.

THE AICHI NAVY KT-98 is a conventional three-motor mid-wing monoplane on twin floats and is apparently derived directly from the Italian Cant Z-506B of the Regia Aeronautica. The Aichi Navy KT-98 is used both for reconnaissance and as a medium bomber for the Imperial Japanese Navy. Powered with three 770 h.p. Aichi radial motors, it has a top speed of 230 m.p.h. at 13,000 ft. The crew is normally five, carried in two separate cockpit enclosures seated in tandem.

Very little has been seen of this machine in action and it is probably produced in fairly small quantities.

Parent Company: AICHI TOKAI DENKI KABUSHIKI KAISHA (The Aichi Watch and Electric Machinery Co.), at Nagoya.

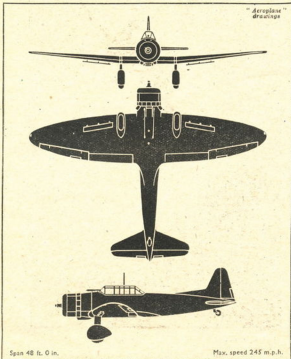
POINTS OF RECOGNITION.—Mid-wing with almost straight trailing edges and sharp taper on leading edges. Three radial motors. Glazed front and rear cockpits over leading and trailing edges of the wing respectively. Twin strut-braced floats protruding slightly in front of nose motor. Single fin and rudder. Taper on leading edge of tailplane, cut-out in elevators for rudder movement. Four guns protrude from leading edge of wing.



THE AICHI NAVY K-99

One 1,050 h.p. Mitsubishi Kinsei MK-44 motor.

DIMENSIONS.—Span, 48 ft. 0 in.; length, 36 ft. 6 in.; wing area, 389 sq. ft. **FUEL CAPACITY.**—206 Imp. galls. **PERFORMANCE.**—Max speed, 245 m.p.h. at 13,000 ft.; range, 874 miles at 205 m.p.h.; ceiling, 30,000 ft.



AICHI NAVY K-99

TYPE.—Single-motor dive bomber.

CREW.—Two.

ARMAMENT.—Two fixed machine-guns firing forwards through the airscrew disc, and one movable machine-gun in the rear cockpit. Bomb load of up to 550 lb. is slung under the centre-section of the fuselage.

THE AICHI NAVY K-99 two-seat dive bomber was used by the Japanese for their treacherous attack on Pearl Harbor on December 7, 1941. A number of these machines flying from aircraft carriers attacked both the American Fleet at anchor and the aerodromes on the Hawaiian Islands.

The Aichi Navy K-99 is an orthodox single-motor cantilever low-wing monoplane with a fixed spatted undercarriage and a single fin and rudder. In general appearance it is not unlike the Northrop A-17 attack-bomber of the United States Army. The machine is believed to be a Mitsubishi design and to be known also alternatively as the Mitsubishi K-99, but it is now constructed by the Aichi concern.

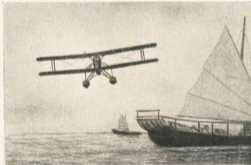
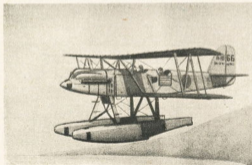
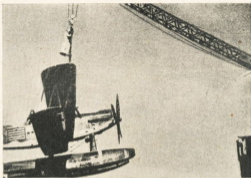
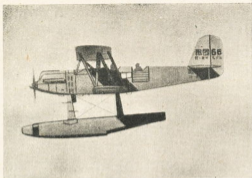
Dive brakes are fitted under the wings outboard of the undercarriage legs and hinged to the front spar. A distinctive feature is the long extension of the fin forwards along the back of the fuselage to provide stability in the dive.

A 550 lb. bomb can be slung under the centre-section of the fuselage in an extendable crutch, which is dropped during a dive-bombing attack so that the bomb clears the airscrew in a similar manner to that of the Junkers Ju 87a.

The Aichi Navy K-99 is of all-metal construction with stressed skin covering.

Parent Company: AICHI TOKAI DENKI KABUSHIKI KAISHA (The Aichi Watch and Electric-Machinery Co.), at Nagoya.

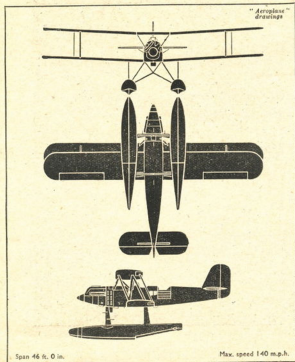
POINTS OF RECOGNITION.—Single-motor cantilever low-wing monoplane with dihedral starting some way out from the fuselage. Straight swept back leading edges, curved trailing edges with round tips. Cowled radial motor. Fairly tall single fin and rudder with straight leading and trailing edges, the fin being extended forward towards the rear of the high transparent cockpit. The tailplane has straight leading edges with marked taper; the elevators have straight trailing edges and no cut-out. Fixed single leg spatted undercarriage and fixed tailskirt.



THE KAWANISHI NAVY KT-94

One 600 h.p. Kawanishi Hiro 91 motor.

DIMENSIONS.—Span, 46 ft. 0 in.; length, 34 ft. 0 in.; height, 15 ft. 5 in.; wing area (gross), 530 sq. ft. **WEIGHT.**—Loaded, 6,100 lb. **FUEL CAPACITY.**—120 Imp. galls. **PERFORMANCE.**—Max. speed, 140 m.p.h. at 5,000 ft.; range, 550 miles at 120 m.p.h.; service ceiling, 18,000 ft.



KAWANISHI NAVY KT-94

TYPE.—Twin-float reconnaissance biplane.

CREW.—Three.

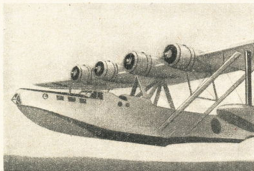
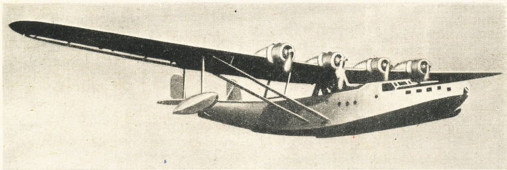
ARMAMENT.—One fixed machine-gun firing forwards from the motor cowling, and one movable machine-gun in the rear cockpit.

THE KAWANISHI NAVY KT-94 is an obsolescent twin-float reconnaissance biplane, a number of which are still in service and also used for training purposes. The machine appears to have been inspired by the Heinkel He 60 and is powered with a 600 h.p. Kawanishi Hiro 91 12-cylinder broad-arrow motor, probably copied from the old Napier Lion.

The Kawanishi Navy KT-94 is an equal-span N-strut braced biplane of very orthodox appearance. The crew of two are housed in open cockpits, but there is also a cabin inside the fuselage between them and probably a bomb-aiming window underneath the fuselage.

Parent Company: KAWANISHI KOKUKI KABUSHIKI KAISHA (Kawanishi Aircraft Co.), at Kobe.

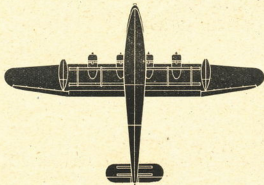
POINTS OF RECOGNITION.—Single-bay braced biplane of equal span and chord. In-line motor. Twin-braced floats. Single fin and rudder. Braced tailplane.



THE KAWANISHI NAVY H-97-1

Four 900 h.p. Mitsubishi Kinsei 4C motors.

DIMENSIONS.—Span, 131 ft. 0 in.; length, 81 ft. 0 in.; height, 20 ft. 0 in. **WEIGHT.**—Loaded, 45,000 lb. **FUEL CAPACITY.**—1,950 imp. galls.
PERFORMANCE.—Max. speed, 215 m.p.h. at 13,000 ft.; range, 1,500 miles at 165 m.p.h.; service ceiling, 26,000 ft.

"Aeroplane"
drawings

Span 131 ft. 0 in.

Max. speed 215 m.p.h.

KAWANISHI NAVY H-97-1

TYPE.—Four-motor reconnaissance flying boat.

CREW.—TEN.

ARMAMENT.—Probably two machine-guns in the nose and two machine-guns in an opening mounting after the wing. Bomb load up to about 3,500 lb. slung externally under the wings.

THE KAWANISHI NAVY H-97-1 monoplane flying-boat is a naval version of the Kawanishi transport flying-boat which was in service on various Japanese Island Air Lines before the War. One of these Kawanishi transport flying-boats, named the Ayanami (Beautiful Wave), made experimental flights from Japan to the South Pacific Islands in November, 1940. A second boat in the same class was named the Sazanami (Rippling Wave).

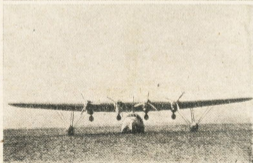
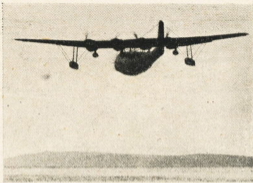
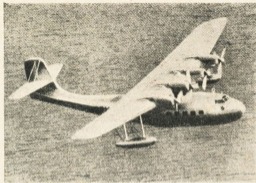
The Kawanishi H-97-1 is derived from the Sikorsky S-42 Clipper flying-boats used by Pan-American Airways on the Pacific run before the War. Powered with four 900 h.p. Mitsubishi Kinsei 4C radial motors, the H-97-1 is claimed to have a top speed of 215 m.p.h. at 13,100 ft. This performance is probably about 20 miles an hour faster than the machine is likely to achieve.

A number of these flying-boats have been met with in action in the Pacific and, undoubtedly, a fair number have been built.

The crew is accommodated in a raised cockpit in front of the wing and in an enclosed cabin aft of the fore part of the hull. The span of 131 ft. is some 13 ft. bigger than that of the Sikorsky S-42 boat, and the lines of the Japanese machine are very much slimmer.

Parent Company: KAWANISHI KOKUKI KABUSHIKI KAISHA (Kawanishi Aircraft Co.), near Kobe.

POINTS OF RECOGNITION.—High-beamed wing with dihedral, mounted on struts above hull. Straight edges, parallel leading and trailing edges to outboard of outer motors and taper on both edges of outer wing sections. Round tips. Long two-step hull. Raised cockpit. Braced tailplane with twin fins and rudders. Strut-braced wing-tip floats.



THE KAWANISHI NAVY H-97-2

Four 720 h.p. Hispano-Suiza 12 Xirs motors.

DIMENSIONS.—Span, 104 ft. 0 in.; length, 65 ft. 5 in.; height, 25 ft. 5 in.; wing area (gross), 1,410 sq. ft. **WEIGHTS.**—Empty, 21,560 lb.; loaded, 32,912 lb. **PERFORMANCE.**—Max. speed, 208 m.p.h. at 6,560 ft.; range, 930 miles at 158 m.p.h.

"Aeroplane"
drawings

Span 104 ft. 0 in.

*Max. speed 208 m.p.h.

KAWANISHI NAVY H-97-2

TYPE.—Four-motor reconnaissance flying-boat. CREW.—Six.

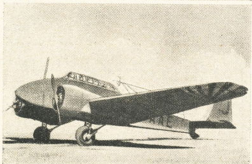
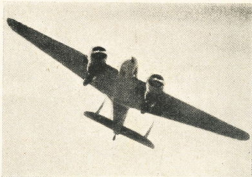
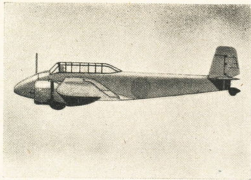
ARMAMENT.—Probably two machine-guns in the nose, two machine-guns aft of the wing and a bomb load of up to about 2,000 lb. slung externally.

THE KAWANISHI NAVY H-97-2 monoplane flying-boat is a Japanese naval version of the French S.N.C.A.S.E. Liore-et-Olivier LeO H-24-6 transport flying-boat built in France several years before the War. Little is known about the Japanese version except that it appears to resemble the French boat in almost every respect and is probably made from the same drawings. The figures and description hereafter are for the French boat in the absence of further information on the Japanese version.

The high cantilever wing is carried above the hull on a small superstructure and braced to it. The wing is entirely wood and is divided into a number of watertight compartments. The two-step hull is of metal with a vee shape bottom and upswept to the single fin and rudder.

Four 720 h.p. Hispano-Suiza 12 Xirs liquid-cooled motors are mounted in the leading edge of the wings and give a top speed of 208 m.p.h. at 6,500 ft. The radiators are slung externally under the nacelles in small streamlined housings. Accommodation for the crew of six is provided and the cabin can seat up to 24 passengers. There is a mooring compartment in the bows, then the pilots' compartment, with dual control side by side, and aft of that accommodation for the navigator and radio operator. The LeO H-24-6 was built by the Société Nationale de Constructions Aéronautiques de Sud-Est (S.N.C.A.S.E.), and the Japanese version by Kawanishi Kokuki Kabushiki Kaisha (Kawanishi Aircraft Co.), at Kobe.

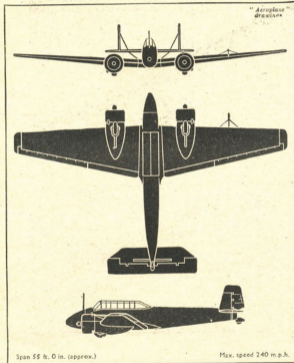
POINTS OF RECOGNITION.—Cantilever wing mounted above hull on N struts, taper and dihedral outboard of motors. Four inline motors with large radiators hung under rear of nacelles. Deep hull. Wire-braced tailplane with cut-out, placed high on single fin and rudder. Braced wing-tip floats.



THE MITSUBISHI NAVY B-96-1 OTORI (PHOENIX)

Two 550 h.p. Nakajima Kotobuki III motors.

DIMENSIONS.—Span, about 55 ft. **PERFORMANCE.**—Max. speed, 240 m.p.h.; normal range, 1,800 miles. No other details available for publication.



MITSUBISHI NAVY B-96-1 OTORI (Phœnix)

TYPE.—Two-motor medium bomber,

CREW.—Four,

ARMAMENT.—Probably two fixed machine-guns in the nose. One movable machine-gun in rear cockpit.

THE MITSUBISHI NAVY B-96-1 Otori (Phoenix) is the military version of the Otori built to the order of the Asahi newspaper for long-distance propaganda flights. The original civil version, J-BAAE, flew non-stop from Tokyo to Bangkok, 2,000 miles, in 1936.

The military B-96-1 Otori is used as a medium bomber, but is rapidly becoming obsolete. It is a development of the Mitsubishi 93 two-motor bombers, which were derived directly from the Junkers S.36 built in Sweden for Japan. The corrugated metal skin of the Otori is made under Junkers patent.

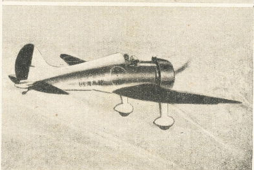
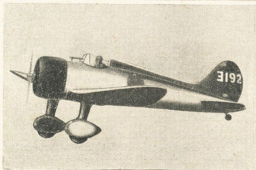
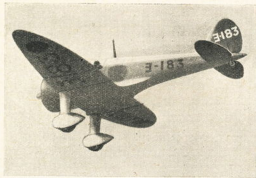
Many of these machines were used against China several years ago, but they are now relegated chiefly to training in the Japanese Navy.

The crew of up to four are seated in tandem in a raised cockpit enclosure over the wings.

The braced tailplane with twin fins and rudders is rather inefficiently braced to the fuselage and greatly resembles the earlier Junkers design. The undercarriage retracts forward into the motor nacelles. The tailwheel is fixed.

Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), Nagoya.

POINTS OF RECOGNITION.—Low cantilever wing with dihedral from roots. Straight leading and trailing edges with taper mostly on trailing edge. Two radial motors. Short nose. High transparent cockpit. High braced tailplane with twin fins and rudders. Retractable undercarriage and fixed spatted tailwheel.



THE MITSUBISHI NAVY S-96-2

One 730 h.p. Mitsubishi Kinsel motor.

DIMENSIONS.—Span, 36 ft. 0 in.; length, 24 ft. 6 in.; height, 9 ft. 9 in.; wing area (gross), 170 sq. ft. **WEIGHT.**—Loaded, 4,300 lb. **FUEL CAPACITY.**—80 Imp. galls. **PERFORMANCE.**—Max. speed, 250 m.p.h. at 9,000 ft.; range, 440 miles at 317 m.p.h.; service ceiling, 31,000 ft.

MITSUBISHI NAVY S-96-2

TYPE.—Single-seat fighter.

CREW.—One.

ARMAMENT.—Four fixed machine-guns, two in the wings and two on top of the radiator cowling.

THE MITSUBISHI NAVY S-96-2 was the first low-wing monoplane type to go into service with the Japanese Air Forces. From it all the more recent Japanese fighters have been developed.

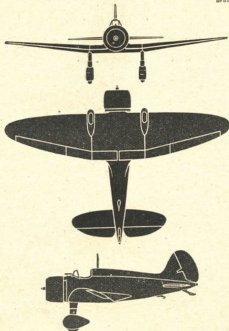
Undoubtedly the S-96-2 was based on the American Boeing P-26 single-seat fighter which was in service with the United States Army up to about 1935. The S-96-2 has been built in large numbers and became the standard Japanese Naval fighter in 1938. It has been used in large numbers over China and has also appeared in Burma in this War.

The 730 h.p. Mitsubishi Kinsei air-cooled radial motor gives the S-96-2 a top speed of 250 m.p.h. at 9,000 ft. It is considered manoeuvrable and to be easy to fly. It is also robust, as one of these aeroplanes returned from a raid on China with half of the port wing completely shot away. For naval work the S-96-2 has a deck arrester hook which pulls out from its semi-retraction inside the rear fuselage. The wing, of elliptical plan form, somewhat resembles that of a Spitfire.

Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

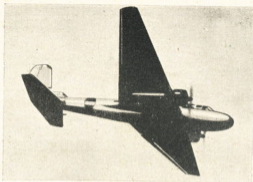
POINTS OF RECOGNITION.—Long wing of elliptical plan form placed well forward. Dihedral starts above the undercarriage legs. Short nose with cooled radial motor. Fixed single-leg spatted undercarriage and fixed tail-wheel or skid. Open cockpit over wing with headrest slung into fuselage. Rounded trailing edge to rudder. Cantilever tailplane with curved leading and trailing edges.

"Aeroplane"
drawings



Span 36 ft. 0 in.

Max. speed 250 m.p.h.



THE MITSUBISHI NAVY OB-96-4

Two 1,000 h.p. Mitsubishi Kinsei motors.

DIMENSIONS.—Span, 82 ft. 0 in.; length, 52 ft. 6 in.; height, 12 ft. 4 in.; wing area (gross), 800 sq. ft. **WEIGHT.**—Loaded, 22,000 lb. **FUEL CAPACITY.**—780 Imp. galls. **PERFORMANCE.**—Max speed, 250 m.p.h. at 10,000 ft.; range, 1,615 miles at 161 m.p.h.; service ceiling, 24,000 ft.

"Aeroplane"
drawings

Span 82 ft. 0 in.

Max. speed 230 m.p.h.

MITSUBISHI NAVY OB-96-4

TYPE.—Bomber.

CREW.—Four to seven.

ARMAMENT.—Two 7.7 mm. wing machine-guns, one 7.7 mm. machine-gun, and/or one 20 mm. cannon in dorsal turret, two 7.7 mm. free lateral machine-guns, one 7.7 mm. free ventral machine-gun, and one 7.7 mm. fixed machine-gun in the extreme tail. Total eight guns. Bomb load 2,200 lbs.

THE MITSUBISHI NAVY OB-96-4 is the latest development of the original Mitsubishi two-motor freight monoplane used by the Japan Air Transport Company. One of these machines named Soyokaze made a survey flight from Tokyo to Teheran and back in the Spring of 1939, another, J-BACI Nippon, made a limited World flight late in 1939 after the War began—keeping clear of troubled areas.

Other freight-carrying Mitsubishis of this type were J-BEOC Yamato and J-BEOG Matukaze.

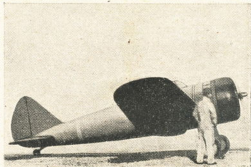
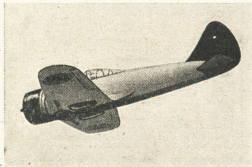
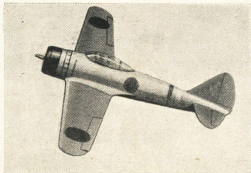
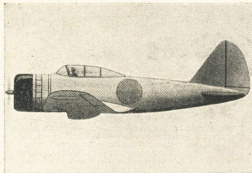
The design in the first place appears to have been based on the Junkers Ju 86, even the Junkers "double wing" has been included and can be seen in the illustrations on the opposite page.

From the freight version a military type was produced and named the OB-96. In appearance it was identical with the freighter apart from a covered loop aerial and an astro dome aft of the cockpit. This type went into service in large numbers and until recently was the standard bomber of the Japanese Navy.

A new version named OB-96-4 has a number of modifications, including Catalina-like gun blisters on each side of the fuselage and an extra large blister on top of the fuselage amidships. The side blisters are staggered, the starboard blister being much further forward than that on the port side.

Parent Company: MITSUBISHI JUKOGYO KAISHA KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

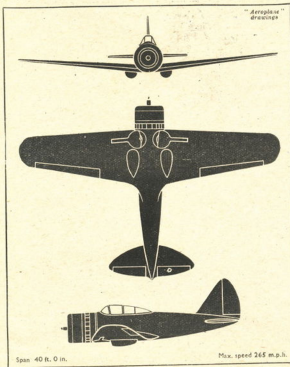
POINTS OF RECOGNITION.—Mid cantilever wing, dihedral from roots, straight leading and trailing edges, both with marked taper, ailerons slightly below wing showing daylight through gap from certain views. Two covered radial motors undershang. Long well-proportioned fuselage. Cantilever tailplanes with taper on both edges. Twin fins and rudders mounted on tailplanes and inset. Retractable undercarriage and fixed tailwheel. Blister gun turrets on latest version.



THE MITSUBISHI NAVY S-97

One 650 h.p. Mitsubishi motor.

DIMENSIONS.—Span, 40 ft. 0 in.; length, 25 ft. 0 in.; wing area (gross), 170 sq. ft. **WEIGHT.**—Loaded, 4,500 lb. **FUEL CAPACITY.**—110 Imp. galls. **PERFORMANCE.**—Max. speed 265 m.p.h. at 11,000 ft.; range, 590 miles at 225 m.p.h.; service ceiling, 30,000 ft.



MITSUBISHI NAVY S-97

TYPE.—Single-seat fighter.

CREW.—One.

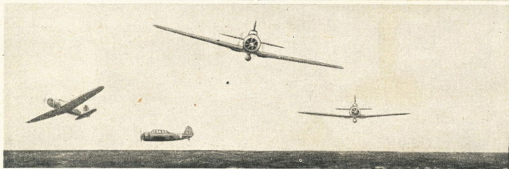
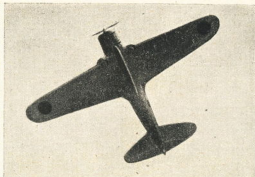
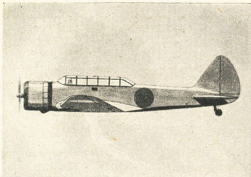
ARMAMENT.—Two fixed machine-guns in the wings.

THE MITSUBISHI NAVY S-97 was the first Japanese single-seat fighter known to have a retractable undercarriage. It is a direct development of the Nakajima Army S-97 and it shows in this way an interesting interchange of Japanese design. The 650 h.p. Mitsubishi air-cooled radial motor gives it a top speed of 265 m.p.h. at 11,000 ft., which is not a great improvement on the earlier machines with fixed undercarriages. A feature of the machine is the two external fuel tanks slung externally behind the inward retracting undercarriage under the centre section of the wing.

As well as in the Navy the S-97 is believed to be in service with the Japanese Army and it is known to have been in service in China.

Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

POINTS OF RECOGNITION.—Low cantilever wing with dihedral. Tip mostly on trailing edge. Round tips. Radial motor. Raised transparent cockpit. Low cantilever tailplane and single fin and rudder. Inward retracting undercarriage and retractable tail wheel. Two fat petrol tanks under wings.



THE MITSUBISHI NAVY G-97-1

One 900 h.p. Mitsubishi Kinsel motor.

DIMENSIONS.—Span, 50 ft. 9 ins.; length, 33 ft. 11 ins.; height, 14 ft. 2 ins.; wing area (gross), 375 sq. ft. **WEIGHT.**—Loaded, 8,500 lb. **FUEL CAPACITY.**—250 Imp. galls. **PERFORMANCE.**—Max. speed, 195 m.p.h. at 10,000 ft.; range, 470 miles at 157 m.p.h.; service ceiling, 23,000 ft.

"Aeroplane"
drawings

Span 50 ft. 9 in.

Max. Speed 195 m.p.h.

MITSUBISHI NAVY G-97-1

TYPE.—Single-motor torpedo-bomber.

CREW.—Three.

ARMAMENT.—One fixed machine-gun and two movable machine-guns in rear of cockpit. A single torpedo, 1,760 lb., can be carried under the centre section.

THE MITSUBISHI NAVY G-97-1 was used flying from aircraft carriers for the attack on the United States Navy at Pearl Harbour on December 7, 1941, together with the Aichi K-99 dive bomber.

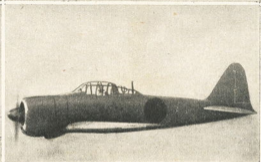
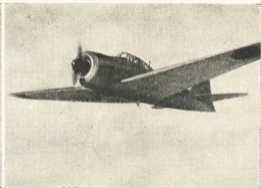
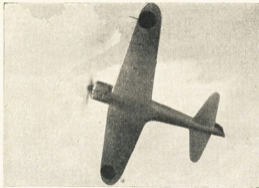
The Mitsubishi Navy G-97-1 is an orthodox low-wing cantilever monoplane with a single 900 h.p. Mitsubishi Kinsei radial motor, which gives a top speed of 195 m.p.h. at 10,000 ft. The undercarriage retracts inwards and the torpedo can be slung externally under the centre section.

In general appearance the Mitsubishi Navy G-97-1 is not unlike the Douglas Northrop 8A5. It is built by the Mitsubishi concern to the same specification as the Nakajima G-97-2. Both types are similar in appearance and were at one time confused. The existence of the Mitsubishi G-97-1 was disbelieved until one of the type was recovered from Pearl Harbour.

The crew of three is seated in tandem in a raised cockpit enclosure and consists of pilot, radio operator and rear gunner-observer.

Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

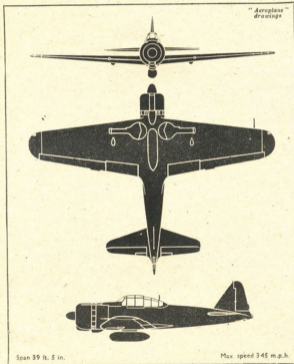
POINTS OF RECOGNITION.—Low cantilever wing with dihedral, marked taper on trailing edges, rounded tips. Cooled radial motor. Long cockpit cover. Cantilever tailplane and single fin and rudder. Retractable undercarriage and fixed tailwheel.



THE MITSUBISHI NAVY S-00

One 1,050 h.p. Mitsubishi Kinsei MK-44 motor.

DIMENSIONS.—Span, 39 ft. 5 in.; length, 30 ft. 3 in.; height, 9 ft. 0 in.; wing area (gross), 236 sq. ft.; aspect ratio, 6.1. **WEIGHT.**—Loaded, 5,140 lb. **PERFORMANCE.**—Max. speed, 345 m.p.h. at 13,100 ft.; normal range, 590 miles at 265 m.p.h.; max. range, 1,600 miles at 160 m.p.h.; service ceiling, 36,000 ft.



MITSUBISHI NAVY S-00

TYPE.—Fighter.

CREW.—One.

ARMAMENT.—Two 20-mm. cannon in the leading edge of the wing outboard of the airscrew disc, and two 7.7-mm. machine-guns on the motor cowling, firing through the airscrew disc.

THE MITSUBISHI NAVY S-00 single-seat shipboard fighter, has shown itself in action to be possessed of excellent manoeuvrability, fast climb and high ceiling so that at height it can out-perform the American Bell P-39 Airacobra and Curtiss P-40E Kittyhawk fighters. Low down the Americans hold the advantage and have exploited it to shoot down four S-00s for every U.S. aircraft destroyed by them.

The S-00 should be called the "Double Oh" and not the Zero, which is wrong. The designation follows normal Japanese practice and indicates that the machine was produced in 1940—the year 2600 of the Japanese calendar.

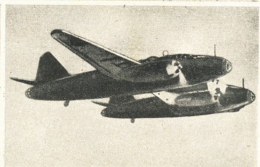
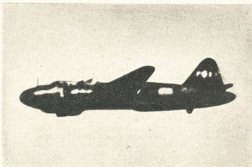
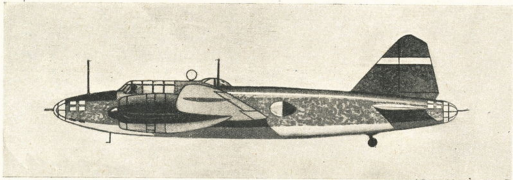
Recently, a Mitsubishi S-00, shot down in the Aleutian Islands, has been shipped back to the U.S.A., where it has been rebuilt by the U.S. Navy Department and is now being test flown. This particular aeroplane has a top speed of slightly less than 300 m.p.h., but, in this respect, it appears to be below average. Experience of action indicates that the normal top speed of the S-00 is about 345 m.p.h. at 13,100 ft. All these Japanese single-seat fighters are deficient in armour and are lightly built and have thus proved easy meat once they are in the sights.

Externally the Mitsubishi Navy S-00 is a conventional low-wing monoplane fighter with inward retracting undercarriage distinctive for its very small wheels. The motor is a 1,050 h.p. Mitsubishi Kinsei 14-cylinder two-row radial.

An interesting feature is the streamlined fuel tank which can be attached under the centre section of the fuselage. It is built of plywood and can be jettisoned when the fuel is exhausted. A bomb of 500 lb. can be substituted for the external tank.

Parent Company: MITSUBISHI JUKOGYO KAWUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

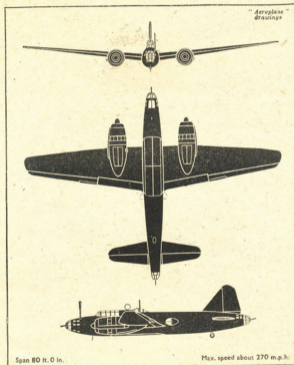
POINTS OF RECOGNITION.—Low-wing monoplane with radial motor and single fin and rudder. Appearance resembles both Gloster F.5/34 and Vultee Vanguard. Raised cockpit with sliding hood and transparent fairings. Wings have almost equal taper and rounded tips.



THE MITSUBISHI NAVY OB-1

Two 1,050 h.p. Mitsubishi Kinsei MK-44 motors.

DIMENSIONS.—Span, 80 ft. 0 in.; length, 64 ft. 0 in. **WEIGHT.**—Loaded, about 26,000 lb. **PERFORMANCE.**—Top speed, about 270 m.p.h. at 15,100 ft.; range, about 5,000 miles.



MITSUBISHI NAVY OB-01

TYPE.—Two-motor bomber.

CREW.—Up to eight.

ARMAMENT.—Large and small machine-gun in the nose. Two machine-guns in blisters on the side of the fuselage aft of wings. Large and small machine-guns in the tail. Bomb load up to 4,000 lb., or two torpedoes.

THE MITSUBISHI NAVY OB-01 is one of Japan's newest bombers. It is now in service with the Imperial Japanese Navy in considerable numbers. The Mitsubishi Navy OB-01 was first seen in action during an attack on a United States Navy transport, west of the Gilbert Islands, early in 1942. Later, it was used against Midway Island and over the Solomons and New Guinea. This bomber is approximately the same size as the Vickers-Armstrongs Wellington. It is a mid-wing cantilever monoplane with a portly fuselage and very large single fin and rudder. It is obviously derived from the Mitsubishi Army OB-97 and may even incorporate some of the same parts in its construction.

There is a rotatable gun position in the nose and two side blisters behind the wing. A further prone gun position is in the tail.

Two 1,050 h.p. Mitsubishi Kinsei radial motors are deeply cowled and housed in large nacelles, slightly underslung. The undercarriage retracts backwards into each nacelle. The tail-wheel is fixed.

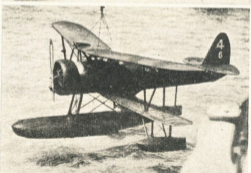
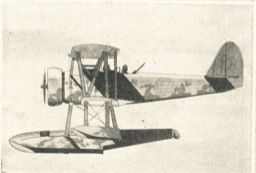
Apparently the Japanese have been operating this type from aircraft carriers, and, if so, it is one of the largest aeroplanes ever to be flown off from a ship. Bomb load of about 4,000 lb. It is equipped to carry two torpedoes.

Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

POINTS OF RECOGNITION.—Mid-wing cantilever monoplane, dihedral from roots, marked taper on trailing edge. Fat fuselage with transparent nose and tail gun positions, raised cockpit and side gun blisters. Cantilever tailplane and single fin and rudder. Two radial motors slightly underslung. Retractable undercarriage and fixed tailwheel.

Span 80 ft. 0 in.

Max. speed about 270 m.p.h.



THE NAKAJIMA NAVY KT-95

One 600 h.p. Nakajima Kotobuki motor.

DIMENSIONS.—Span, 36 ft. 1 in.; length, 27 ft. 11 in.; height, 13 ft. 1 in.; wing area (gross), 330 sq. ft. **WEIGHT.**—Loaded, 5,800 lb. **FUEL CAPACITY.**—120 Imp. galls. **PERFORMANCE.**—Max. speed, 160 m.p.h. at 11,000 ft.; range, 300 miles at 133 m.p.h.; service ceiling, 18,000 ft.

NAKAJIMA NAVY KT-95

TYPE.—Single-float reconnaissance biplane.

CREW.—Two.

ARMAMENT.—One fixed machine-gun, firing through the aircrew diec and one movable machine-gun in rear cockpit. Bomb load up to 500 lb. slung under the wings.

THE NAKAJIMA NAVY KT-95 single-float reconnaissance biplane is still in service in the Imperial Japanese Navy in fair numbers, although it is rapidly becoming obsolete. It is a direct development of the Nakajima KT-90-2, which was, in its turn, a copy of the American Vought-Corsair single-float biplane used by the American and other Navies.

The Nakajima Navy KT-95 is used chiefly as a fleet spotter and is carried on battleships and cruisers of the Japanese Navy and is designed for catapult operation.

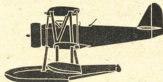
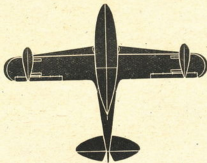
The single main float is strut-braced under the centre section of the wing and is reinforced for lateral stability by two small wing-tip floats. The crew of two is seated in tandem in open cockpits. The 600 h.p. Nakajima Kotobuki air-cooled radial motor gives a top speed of 160 m.p.h. at 11,000 ft.

The Nakajima Navy KT-95 is a distinctive type because of its very short nose, long protruding float and tall single fin and rudder.

Parent Company: NAKAJIMA HIROKI KABUSHIKI KAISHA (Nakajima Aircraft Co., Ltd.), at Ohta, Gumma-ken.

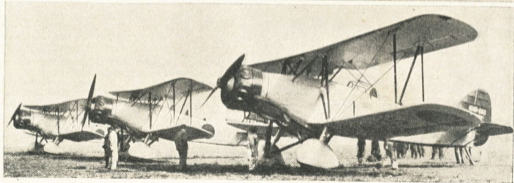
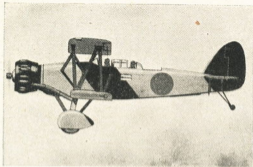
POINTS OF RECOGNITION.—Braced single-bay biplane, almost equal span. Radial motor. Large strut-braced centre float and two small braced wing-tip floats. Two open cockpits. Single fin and rudder. High-placed wire-braced tailplane.

"Aircraft drawings"



Span 36 ft. 1 in.

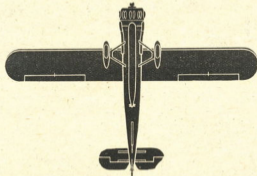
Max. speed 160 m.p.h.



THE NAKAJIMA NAVY G-96

One 600 h.p. Nakajima Kotobuki motor.

DIMENSIONS.—Span, 49 ft. 0 in.; length, 33 ft. 0 in.; height, 14 ft. 9 in.; wing area (gross), 540 sq. ft. **WEIGHT.**—Loaded, 7,300 lb. **FUEL CAPACITY.**—180 imp. galls. **PERFORMANCE.**—Max. speed, 168 m.p.h. at 8,000 ft.; range, 900 miles at 145 m.p.h.; service ceiling, 20,000 ft.

"Acrylano"
drawings

Span 49 ft. 0 in.

Max. speed 168 m.p.h.

NAKAJIMA NAVY G-96

TYPE.—Single-motor torpedo-bomber biplane. CREW.—Three.

ARMAMENT.—One fixed machine-gun firing forwards. One movable machine-gun in rear cockpit.

THE NAKAJIMA NAVY G-96 torpedo-bomber is an old single bay braced biplane which has been in service with the Imperial Japanese Navy in some numbers for a number of years. It is now being replaced by the Mitsubishi G-97-1 and the Nakajima G-97-2 torpedo bomber monoplanes.

The Nakajima Navy G-96 appears to be derived from the Blackburn Ripon, the Fokker C.11-W and the Vickers Vildebeeste. Its dimensions are almost exactly the same as those of the Vildebeeste.

The equal-span wings have a very slight stagger and no sweep-back. The crew of three are seated in tandem in open cockpits. The single torpedo of 1,760 lb. is slung under the centre section of the fuselage between the tripod legs of the fixed spatted undercarriage.

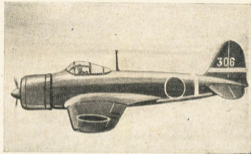
An extraordinary feature of the machine is its very small tailwheel on a very long mounting. A deck arrester hook is a standard fitting under the fuselage for operation from aircraft carriers. For this purpose, also, the wings fold for stowage below deck. Powered with a single 600 h.p. Nakajima Koto-buki radial motor, the Navy G-96 has a top speed of 168 m.p.h. at 8,000 ft.

Parent Company: NAKAJIMA HEIKOKI KABUSHIKI KAISHA (Nakajima Aircraft Co., Ltd.), at Ohta, Gumma-ken.

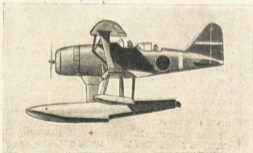
POINTS OF RECOGNITION.—Braced biplane of equal span. Radial motor. Three open cockpits. Braced tailplane and large single fin and rudder. Fixed spatted undercarriage and small fixed tailwheel with long travel.



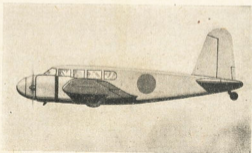
KAWASAKI ARMY 8-95 single-seat fighter, one 600 h.p. Kawasaki motor. Span, 35 ft.; max. speed, 250 m.p.h. Armament, three fixed machine guns.



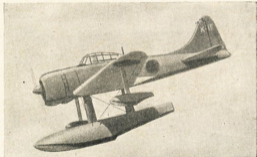
NAKAJIMA NAVY 8-01 single-seat fighter, one 1,050 h.p. Mitsubishi Kinsei motor. Max. speed, 387 m.p.h. Provisional drawing.



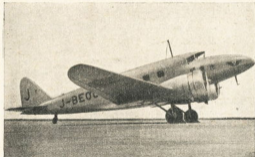
BASEBO NAVY KT-00 reconnaissance floatplane. Span, 37 ft.; height, 52 ft. 4 ins. Provisional drawing.



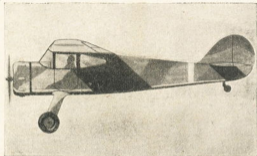
MITSUBISHI ARMY 8-97 DARAI medium bomber, two radial motors of unknown make. Span, 48 ft. 2 ins.; no other details available for publication.



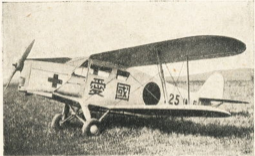
MITSUBISHI NAVY SSM-00 fighter floatplane version of the 8-00 single-seat land monoplane. Span, 39 ft. 5 ins. Believed 1,050 h.p. Mitsubishi Kinsei motor. Provisional drawing.



NAKAJIMA A.T. civil transport, two 460 h.p. Nakajima Kotobuki IIB motors. Span, 65 ft. 4 ins. Max. speed, 250 m.p.h.; range, 1,520 miles; accommodation, eight passengers.



OSAKA ARMY RK-97 army co-operation monoplane similar to the Casua Airmaster. Span, 34 ft. No other details available for publication.



YATIKAWA ARMY AMBULANCE biplane, one 150 h.p. Cirrus-Hermes IV motor. Span, 32 ft. 9½ ins. Max. speed, 112 m.p.h. Accommodation for pilot, nurse and two stretcher cases.

NAKAJIMA NAVY S-97

TYPE.—Single-seat fighter.

CREW.—One.

ARMAMENT.—Three fixed machine-guns. One on the motor cowling and one in each wing.

THE NAKAJIMA NAVY S-97 single-seat fighter monoplane was designed, like the Mitsubishi S-96-2, which it closely resembles in side view, as a carrier-borne single-seat fighter. The resemblance with the Mitsubishi S-96-2 is confined to the side view. The Nakajima Navy S-97 is very different in plan, having straight tapered wings with a large cut-out at the centre section of the trailing edge. This machine is now unlikely to be used operationally, but it is probably retained for training purposes. The Nakajima Navy S-97 is a low-wing monoplane with fixed undercarriage and single open cockpit. The 750 h.p. Nakajima air-cooled radial motor is enclosed in a long chord cowling in the nose and gives it a top speed of 270 m.p.h. at 15,000 ft.

Parent Company: NAKAJIMA HIKOKI KABUSHIKI KAISHA (Nakajima Aircraft Co., Ltd.), at Ohta, Gumma-ken.

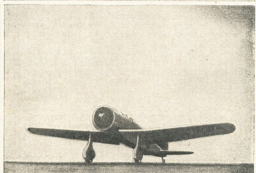
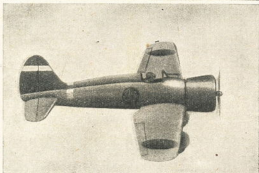
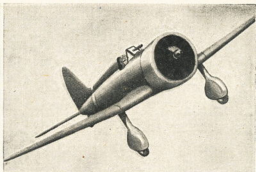
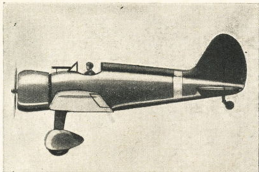
POINTS OF RECOGNITION.—Low cantilever wing, straight leading and trailing edges with slight taper, blunt tips, cut-away at trailing edge wing roots, short nose with cowled radial motor. Cantilever tailplane and single fin and rudder. Open cockpit over trailing edge. Single-leg fixed spatted undercarriage and fixed tail wheel.

"Aeroplane"
drawings



Span 35 ft. 6 in.

Max. speed 270 m.p.h.



THE NAKAJIMA NAVY S-97

One 750 h.p. Nakajima motor.

DIMENSIONS.—Span, 33 ft. 6 ins.; length, 25 ft. 7 ins.; height, 7 ft. 0 in.; wing area (gross), 160 sq. ft. **WEIGHT.**—Loaded, 4,300 lb. **FUEL CAPACITY.**—140 Imp. galls. **PERFORMANCE.**—Max. speed, 270 m.p.h. at 1,500 ft.; range, 460 miles at 233 m.p.h.; service ceiling, 32,000 ft.

NAKAJIMA NAVY SKT-97

TYPE.—Fighter reconnaissance floatplane.

CREW.—Two.

ARMAMENT.—Four machine-guns.

THE NAKAJIMA NAVY SKT-97 twin-float mid-wing strut-braced monoplane is somewhat similar to the French Latécoère 298 torpedo floatplane but with a radial air-cooled motor in place of the French machine's liquid-cooled in-line motor.

Little is known about this aeroplane, but it has probably taken the place of many of the Nakajima KT-95 float biplanes and is therefore most likely in service as a catapult fighter reconnaissance type with units of the Japanese Navy.

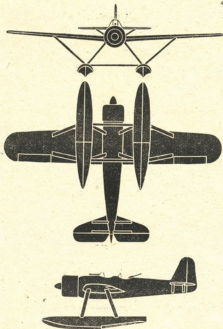
The Nakajima Navy SKT-97 is fitted with a cowled nine-cylinder air-cooled radial Nakajima motor of 750 h.p. which gives a top speed of 220 m.p.h. at 13,000 ft.

The mid-wing has a straight leading and trailing edge with slight taper and blunt tips. Slight dihedral runs from the roots. The twin floats are of wide track and are strut-braced to the fuselage at the wing roots and to the wings at a point about midway between the fuselage and the tips. They are also braced to each other. The open pilot's cockpit is above the wing and the rear gunner's cockpit is over the trailing edge. The single fin and rudder have straight leading and trailing edges with taper on the former. The strut-braced tailplane has taper on the leading edge, the elevators have straight untapered trailing edges with cut-out for rudder movement.

Parent Company: NAKAJIMA HIKOKI KABUSHIKI KAISHA (Nakajima Aircraft Co., Ltd.), at Ohta, Gumma-ken.

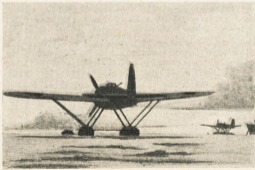
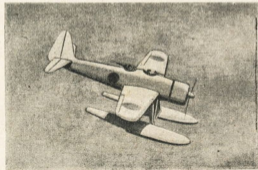
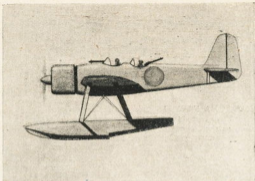
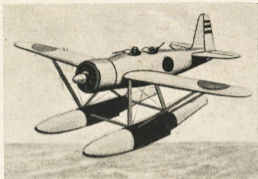
POINTS OF RECOGNITION.—Mid-wing single-motor monoplane. Slight dihedral from roots. Straight leading and trailing edges with slight taper and blunt tips. Twin wide track floats strut-braced to wings and fuselage, also to each other. Two open cockpits. Single fin and rudder. Strut-braced tailplane with taper on leading edge, straight trailing edge to elevators and cut-out for rudder movement.

Aeroplane
drawings



Span 36 ft. 9½ in.

Max. speed 220 m.p.h.



THE NAKAJIMA NAVY SKT-97

One 750 h.p. Nakajima motor.

DIMENSIONS.—Span, 36 ft. 7½ ins.; length, 33 ft. 6 ins.; height, 11 ft. 5 ins.; wing area (gross), 185 sq. ft. **WEIGHT.**—Loaded, 5,500 lb. **FUEL CAPACITY.**—85 Imp. galls. **PERFORMANCE.**—Max. speed, 250 m.p.h. at 15,000 ft.; range, 325 miles at 190 m.p.h.; service ceiling, 27,000 ft.

NAKAJIMA NAVY G-97-2

TYPE.—Torpedo-bomber.

CREW.—Two to three.

ARMAMENT.—Two fixed machine-guns and one or two movable machine-guns. One torpedo.

THE NAKAJIMA NAVY G-97-2 is one of the two standard Japanese Navy torpedo bombers. It was built to the same specification as the Mitsubishi Navy G-97-1 torpedo-bomber, and both types are generally similar and have a Northrop appearance.

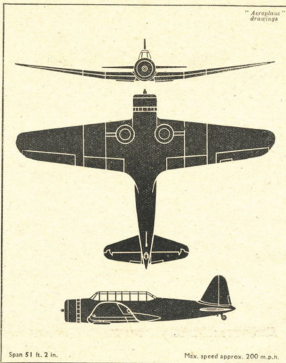
The Nakajima G-97-2 has a low cantilever wing with straight taper on leading and trailing edges, broad rounded tips and large trailing edge fillets. Dihedral starts outboard of the wide centre section and the wing is believed to fold upwards at a point roughly half-way between the fuselage and the wing tips. Flaps are fitted.

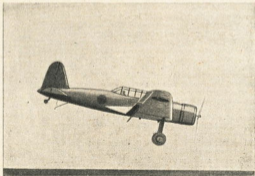
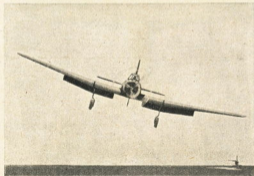
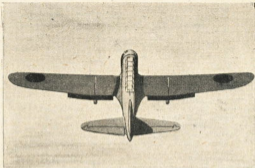
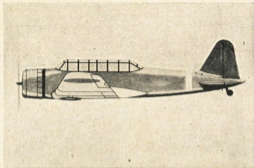
The short nose houses a completely cowled 700 h.p. Hikari air-cooled radial motor with controllable cooling. The raised transparent cockpit cover starts level with the leading edge and extends to level with the trailing edge fillet.

The cantilever tailplane and elevators are triangular in shape and have no cut-away. The single fin and rudder sit on top of the fuselage. The undercarriage retracts inwards and the tail-wheel is fixed. The torpedo is externally carried under the centre section. A deck arrester hook is fitted under the rear of the fuselage.

Parent Company: NAKAJIMA HIKOKI KABUSHIKI KAISHA (Nakajima Aircraft Co., Ltd.), at Ohta, Gumma-ken.

POINTS OF RECOGNITION.—Low cantilever wing with straight taper on both edges, rounded tips, large trailing edge fillets, dihedral from outboard of centre section. Radial motor. Long raised cockpit. Cantilever tailplane and single fin and rudder. Retractable undercarriage and fixed tailwheel.





THE NAKAJIMA NAVY G-97-2

One 700 h.p. Hikari motor.

DIMENSIONS.—Span, 51 ft. 2 ins.; length, 34 ft. 6 ins. No other details available for publication

KAWASAKI ARMY KB-97

TYPE.—Light reconnaissance bomber.

CREW.—Two.

ARMAMENT.—One or two fixed machine-guns and one movable machine-gun.

THE KAWASAKI ARMY KB-97 is a single-motor light reconnaissance bomber in the Fairey Battle class, but with a fixed undercarriage and a lower all-up weight. This aeroplane, which does not seem to have been based on any previous design of Kawasaki's, has been used in large numbers in China and it is believed to form the backbone of the light bomber squadrons of the Japanese Army.

The Kawasaki KB-97 is a conventional all-metal mid-wing cantilever monoplane with a fixed spatted undercarriage, an in-line motor, and a single fin and rudder.

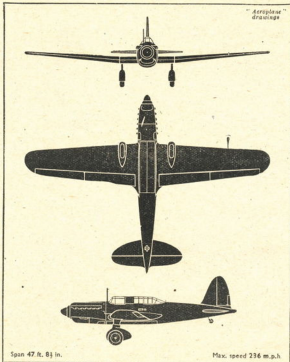
The crew of two are accommodated in a long transparent raised cockpit above the wing. There are two versions of this aeroplane, the most widely used type being that shown here, the only difference between the two types being that the rear transparent panels on the cockpit of the version shown are replaced by a shorter blacked-in section. The wing has moderate straight taper on both leading and trailing edges, rounded tips, and large trailing edge fillets. Dihedral starts above the undercarriage legs. Split flaps are fitted.

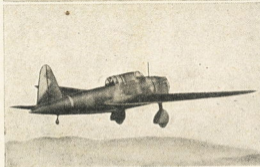
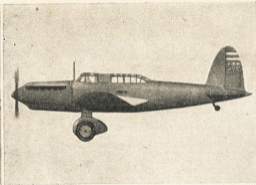
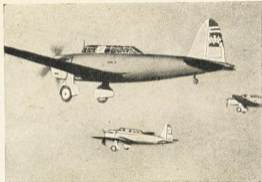
The nose is deep in order to house the large 900 h.p. Kawasaki twelve-cylinder liquid-cooled motor with its radiator immediately behind the large airscrew spinner. The long raised cockpit cover starts level with the leading edge and finishes some way behind the trailing edge. The cantilever tailplane and elevators as well as the tall fin and rudder all have curved edges similar to the Heinkel He 111.

The fixed spatted undercarriage is of the single-leg type and quite short, the tailwheel is also fixed.

Parent Company: KAWASAKI KOKUKI KOGYO KABUSHIKI (Kawasaki Dockyard Co.), at Kobe.

POINTS OF RECOGNITION.—Mid cantilever wing with straight taper, rounded tips and trailing edge fillets, dihedral from above undercarriage. Deep nose with in-line motor. Long raised cockpit cover above wing. Single fin and rudder and cantilever tailplane and elevators all with curved edges. Fixed spatted single-leg undercarriage and fixed tailwheel.





THE KAWASAKI ARMY KB-97

One 900 h.p. Kawasaki motor.

DIMENSIONS.—Span, 47 ft. 8½ ins.; wing area (gross), 295 sq. ft. **WEIGHT.**—Loaded, 7,000 lb. **FUEL CAPACITY.**—100 Imp. galls. **PERFORMANCE.**—Max. speed, 236 m.p.h. at 13,000 ft.; range, 490 miles at 206 m.p.h.; service ceiling, 25,000 ft.

KAWASAKI ARMY OB-97

TYPE.—Heavy bomber.

CREW.—Five to seven.

ARMAMENT.—Two cannon and four machine-guns.

THE KAWASAKI ARMY OB-97 two-motor heavy bomber monoplane is one of the lesser known Japanese aeroplanes and has not been reported in this war, although it may have been used and not recognised.

The OB-97 is a low-wing cantilever monoplane with two radial motors, a single fin and rudder and retractable undercarriage. The wing has straight leading and trailing edges with marked taper on the former and only slight taper on the latter. There is dihedral from the roots and the tips are rounded. Flaps are fitted.

The nose of the fuselage is not unlike the nose of the Russian DB-3F, having many transparent panels, the raised cockpit also resembles that of the DB-3F, apart from the fact that the Kawasaki OB-97's is somewhat longer.

The cantilever tailplane has marked taper on the leading edges, while the trailing edge of the single elevator, which protrudes some way behind the fuselage, is straight.

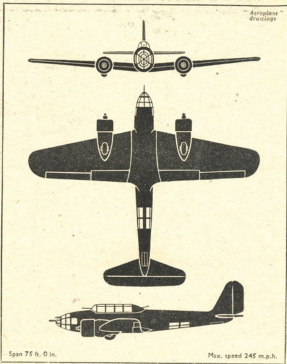
The tall single fin has marked taper on its leading edge and the rudder, like the elevator, is aft of the rear end of the fuselage. Two 820 h.p. Kawasaki 98 radial air-cooled motors are mounted in the wings and the undercarriage retracts into the motor nacelles. The tailwheel is retractable.

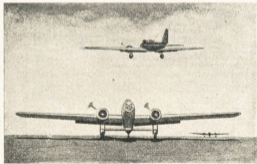
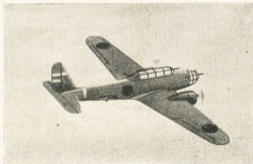
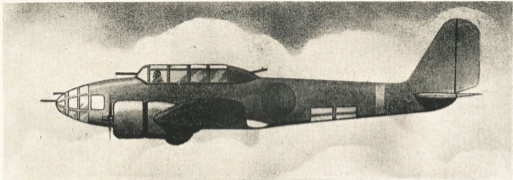
A 20-mm. cannon and a 7.7-mm. machine-gun are mounted in the extreme nose, while another 20-mm. cannon is fixed in front of the cockpit. Rear protection is given by two 7.7-mm. machine-guns mounted in the rear of the cockpit and by a 7.7-mm. machine-gun with a restricted field of fire mounted in the underside of the fuselage about half-way between the wing trailing edge and the tailplane.

Bomb load, 4,400 lb.

Parent Company: KAWASAKI KOKUKI KOGYO KABUSHIKI (Kawasaki Dockyard Co.), at Kobe.

POINTS OF RECOGNITION.—Low cantilever wing with marked taper on the leading edge, dihedral from roots and rounded tips. Two radial motors. Transparent nose. Long raised cockpit cover. Single fin and rudder with cantilever tailplane. Rudder and elevator are aft of rear end of fuselage. Retractable undercarriage including tailwheel.





THE KAWASAKI ARMY OB-97

Two 820 h.p. Kawasaki 98 motors.

DIMENSIONS.—Span, 75 ft. 0 in.; length, 62 ft. 0 in.; height, 12 ft. 6 ins.; wing area (gross), 665 sq. ft. **WEIGHT.**—Loaded, 20,900 lb. **FUEL CAPACITY.**—510 Imp. galls. **PERFORMANCE.**—Max. speed, 245 m.p.h. at 15,000 ft.; range, 1,250 miles at 210 m.p.h.; service ceiling, 24,500 ft.

MITSUBISHI ARMY OB-97

TYPE.—Heavy bomber.

CREW.—Five to seven.

ARMAMENT.—Six movable machine-guns and one fixed machine-gun.

THE MITSUBISHI ARMY OB-97 heavy bomber is standard equipment of many Japanese Army bomber squadrons.

Based on both Douglas and Martin designs, the Mitsubishi OB-97 is a mid-wing two-motor monoplane of conventional form. Although first produced in 1937 this machine is well armed and has quite a good performance. From it the new OB-92 has been developed.

The Mitsubishi OB-97 has often been referred to (especially in the U.S.A.) as the Nakajima 19, but although this is not accurate, it seems probable that this aeroplane is the Mitsubishi 19, as the Mitsubishi Troop Transport (Army Y-98) and civil air liner is called the MC-20, and is obviously a transport version of the OB-97.

The rather thick mid-wing has straight leading and trailing edges with marked taper on both, rounded tips and dihedral from the roots. Flaps are fitted and there are landing lights mounted in the leading edge of both wings.

The fuselage is deep with a fairly long nose with transparent panels. The extreme transparent section of the nose appears to rotate in order to increase the field of fire of the two 7.7-mm. fixed machine-guns which are mounted in it.

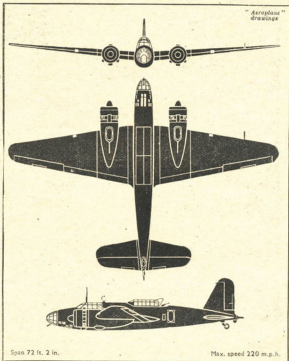
Above the trailing edge of the wing is a raised cockpit with two rear movable machine-guns and two lateral movable machine-guns. A fixed machine-gun is mounted in the extreme end of the fuselage behind the large single fin and rudder.

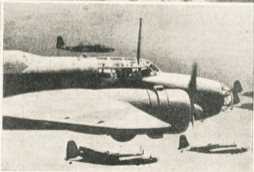
The undercarriage retracts forwards into the nacelles of the two 870 h.p. Mitsubishi IV radial air-cooled motors. The tailwheel is fixed.

The large bomb compartment under the centre section holds 4,000 lb. of bombs.

Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

POINTS OF RECOGNITION.—Mid cantilever wing with dihedral from roots and sharp taper on leading and trailing edges. Round tips. Deep fuselage, raised main cockpit and another raised cockpit over trailing edge. Two radial motors. Cantilever tailplane and tall single fin and rudder. Retractable undercarriage and fixed tailwheel.





THE MITSUBISHI ARMY OB-97

Two 870 h.p. Mitsubishi IV motors.

DIMENSIONS.—Span, 72 ft. 2 in.; length, 51 ft. 8 in.; height, 11 ft. 11 in.; wing area (gross), 675 sq. ft. **WEIGHTS.**—Empty, 10,450 lb.; loaded, 21,000 lb. **FUEL CAPACITY.**—810 Imp. galls. **PERFORMANCE.**—Max. speed, 220 m.p.h. at 10,000 ft.; range, 2,480 miles at 186 m.p.h.; service ceiling, 21,000 ft.

MITSUBISHI MC-20 (ARMY Y-98)

TYPE.—Transport.

CREW.—Two to four.

THE MITSUBISHI MC-20 (ARMY Y-98) is an orthodox low-wing monoplane of all-metal construction, designed for civil transport duties, but now in service with the Japanese Army for transporting parachute troops. The MC-20 appears to be a transport version of the Mitsubishi OB-97 heavy bomber, which is believed to be the Mitsubishi Type 19.

The MC-20 seems to be based on the Douglas DC-2, which is built in Japan under licence by the Nakajima Company, and little effort has been made to hide this fact. In its original form the MC-20 had accommodation for eleven passengers and was presumably designed for operation on the air routes of the Japan Air Transport Company. Certain modifications have since been made, including the removal of the main entrance door in the port side and the fitting of vertical hand rails on either side of the doorless entrance now used by parachutists.

Parachutists making raids on Allied positions are known to have been dropped from the Y-98 type of transport.

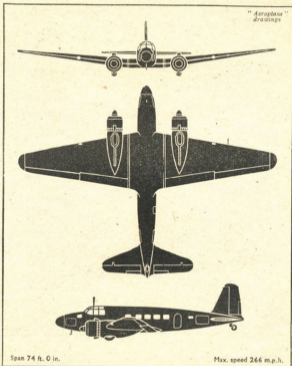
The wing is of all-metal construction and built in three parts, a narrow centre section and two outer panels. The leading and trailing edges are straight and both have sharp taper. Dihedral starts outside the centre section.

The fuselage is of oval section and is a monocoque structure with a freight hold in the extreme nose; immediately behind come the crew's quarters, aft of which is the cabin with accommodation for eleven passengers when used as a civil transport.

The tail unit is almost the same as that of the Douglas DC-2. The two radial motors come well in front of the leading edge and the undercarriage retracts forward into the nacelles. The tail-wheel is fixed.

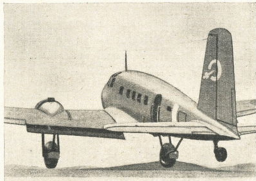
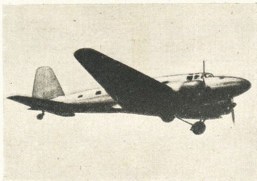
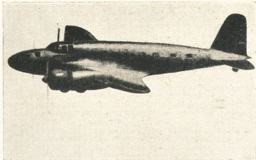
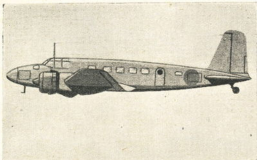
Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

POINTS OF RECOGNITION.—Low cantilever wing with dihedral outboard of centre section. Sharp taper on leading and trailing edges. Single fin and rudder. Cantilever tailplane triangular in shape. Two radial motors. Retractable undercarriage and fixed tailwheel.



Span 74 ft. 0 in.

Max. speed 266 m.p.h.



THE MITSUBISHI MC-20 ARMY Y-98

Two 850 h.p. Mitsubishi Kinsel motors.

DIMENSIONS.—Span, 74 ft. 0 in.; length, 52 ft. 8 in.; height, 16 ft. 0 in.; wing area (gross), 753 sq. ft. **WEIGHTS.**—Empty, 11,900 lb.; loaded, 18,300 lb. **PERFORMANCE.**—Max. speed, 266 m.p.h.; range, 3,240 miles at 195 m.p.h.; service ceiling, 25,000 ft.

MITSUBISHI ARMY KB-97 KARIGANE (Wild Goose)

TYPE—Light reconnaissance bomber.

CREW.—Two.

ARMAMENT.—Two fixed machine-guns and one or two movable machine-guns.

THE MITSUBISHI ARMY KB-97 KARIGANE (Wild Goose) is a light reconnaissance bomber version of the high speed civil communications monoplanes Kamikaze (Divin Wind) and Asakaze (Morning Wind) built for the Asahi Newspaper.

The Kamikaze J-BAAI in 1937 flew 9,900 miles from Tokyo to Croydon in 94½ hours. The photographs on the opposite page show, top left, the Kamikaze flying over Japan; top right, the standard military version, the KB-97; lower left, the Kamikaze taxiing in on arrival at Croydon; and lower right, the Kamikaze at Croydon.

Both military and civil types are identical apart from the fact that the tall radio mast on the cowling of the civil type is not always fitted to the military version.

The Karigane is a cantilever low-wing monoplane with radial motor, single fin and rudder and fixed undercarriage.

The wing is set far forward and has a wide chord at the roots, dihedral starts above the undercarriage legs. The leading edge is almost straight, but there is marked taper on the trailing edge. The tips are round and there are large trailing edge fillets. Flaps are fitted under the centre section.

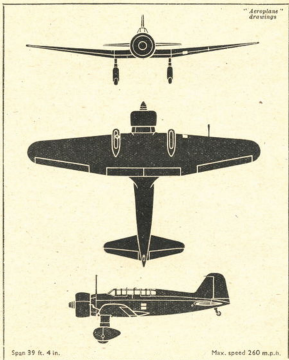
The nose houses a cowled 550 h.p. Nakajima Kotobuki III radial air-cooled motor. The raised cockpit cover starts some way back and the rear windows are some distance behind the trailing edge. Aft of the rear window the cockpit cover is faired into the well-proportioned fin and rudder.

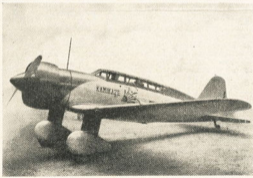
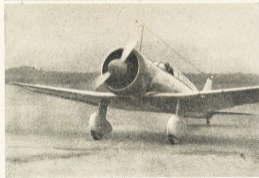
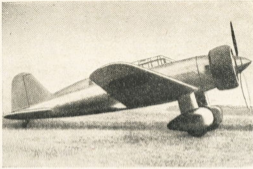
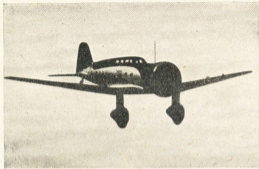
The cantilever tailplane is set low on the fuselage and has taper on the leading and trailing edges.

The single-leg type undercarriage has large spats and the fixed tailwheel is of the fully castoring type.

Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

POINTS OF RECOGNITION.—Low cantilever wing, broad at roots, marked taper on leading edge, round tips and large trailing edge fillets. Dihedral from above undercarriage legs. Radial motor. Single fin and rudder and cantilever tailplane. Fixed spatted undercarriage and fixed tailwheel.





THE MITSUBISHI ARMY KB-97 KARIGANE (Wild Goose)

One 550 h.p. Nakajima Kotobuki III motor.

DIMENSIONS.—Span, 39 ft. 4 ins.; length, 26 ft. 11 ins.; height, 11 ft. 4 ins.; wing area (gross), 215 sq. ft. **WEIGHT.**—Loaded, 5,750 lb.
FUEL CAPACITY.—180 imp. galls. **PERFORMANCE.**—Max. speed, 260 m.p.h.; range, 1,490 miles.

MITSUBISHI ARMY KB-98 KARIGANE IIM

TYPE.—Light reconnaissance bomber.

CREW.—Two.

ARMAMENT.—Two fixed machine-guns and one movable machine-gun.

THE MITSUBISHI ARMY KB-98 KARIGANE IIM is the light reconnaissance bomber version of the Mitsubishi Karigane II. The Karigane II, produced in 1938, is a development of the original civil Karigane, and one of the Mark II Kariganes, J-BACL, is used by the Domei News Agency for high-speed communications.

The Karigane II is fitted with an 800 h.p. Mitsubishi A.14 motor in place of the Karigane's 550 h.p. Nakajima Kotobuki III. The general lines are improved by the additional foot in length and cleaner motor cowling.

The civil Karigane II and military Karigane IIM differ in detail, mainly in motor, crew's accommodation, tail unit and undercarriage. A 900 h.p. Mitsubishi Kinsei radial air-cooled motor is fitted to the military Karigane IIM in place of the Karigane II's 800 h.p. Mitsubishi A.14.

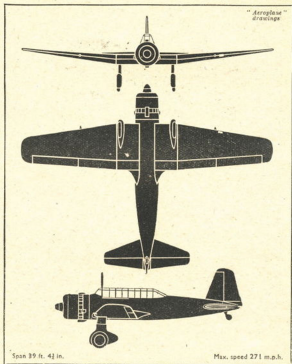
The cockpit of the communications Karigane is similar to the original Karigane, but in the military Karigane the cockpit cover does not continue aft to form the fin, it drops behind the trailing edge to provide a rear gun position.

The single fin and rudder on the Mitsubishi Karigane IIM is higher than on the other Kariganes, and the sides of the undercarriage spats are now cut away on the outside showing the wheels.

The photographs on the opposite page show the military version in three views and the communications version in the lower left illustration.

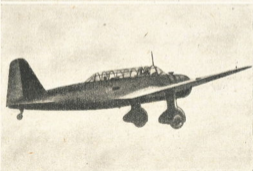
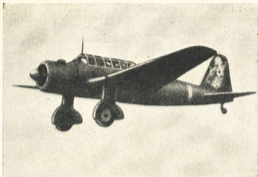
Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

POINTS OF RECOGNITION.—Low cantilever wing with straight taper on both edges, blunt tips, and large trailing edge flaps. Dihedral from above undercarriage legs. Radial motor. Cantilever tailplane and single fin and rudder. Fixed single-leg spatted undercarriage and fixed tailwheel. Civil type.—Raised cockpit faired into leading edge of fin. Military type.—Raised cockpit does not run into leading edge of fin.



Span 39 ft. 4½ in.

Max. speed 271 m.p.h.



THE MITSUBISHI ARMY KB-98 KARIGANE IIM

One 900 h.p. Mitsubishi Kinsei motor.

DIMENSIONS.—Span, 35 ft. 4 $\frac{1}{2}$ ins.; length, 27 ft. 11 ins.; height, 11 ft. 6 ins.; wing area (gross), 258 sq. ft. **WEIGHT.**—Loaded, 5,050 lb.

PERFORMANCE.—Max. speed, 271 m.p.h. at 10,000 ft.; range, 1,490 miles at 200 m.p.h.

MITSUBISHI ARMY KB-98 KARIGANE III

TYPE.—Light reconnaissance and close support bomber. CREW.—Two.

ARMAMENT.—Two fixed machine-guns and one movable machine-gun.

THE MITSUBISHI ARMY KB-98 KARIGANE III light reconnaissance and close support bomber is developed from the earlier Karigane and Karigane II types but does not closely resemble them.

In side view the fuselage and tail unit of the Karigane III is similar to the Westland Lysander. It is a short, fat aeroplane having a wing span nearly seven feet greater than the Karigane II, but at the same time its length is nearly two feet less than the earlier Karigane.

In service in large numbers the KB-98 Karigane III is a low-wing cantilever monoplane with a single radial motor, single fin and rudder and a fixed spatted undercarriage.

The wing has straight leading and trailing edges with marked taper on the leading edge only, dihedral from above the undercarriage legs, round tips and large trailing edge fillets. Flaps are fitted and built-in slots are cut through the wing some distance from the tips.

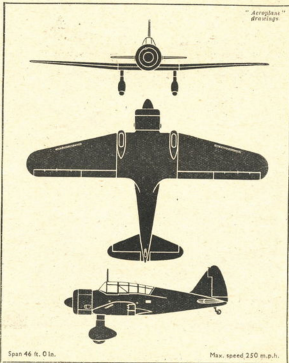
The fuselage is very deep with a short nose housing the radial 500 h.p. Mitsubishi Kinsei air-cooled motor.

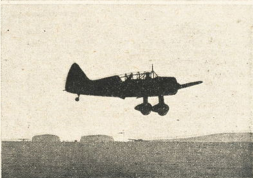
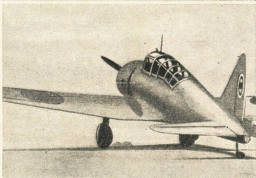
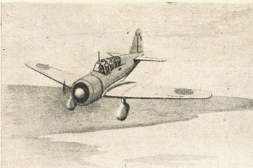
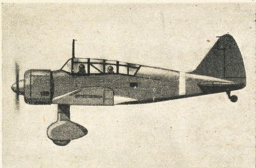
The covered cockpit above the wing is high, but the top line of the fuselage drops abruptly aft of the cockpit.

The cantilever tailplane has taper on the leading and trailing edges and the large single fin and balanced rudder are of pleasant appearance. The fixed spatted undercarriage is of the single-leg type and the fixed tailwheel is fully castoring.

Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISEI (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

POINTS OF RECOGNITION.—Low cantilever wing with sharp taper on leading edge, dihedral from above undercarriage legs, round tips and trailing edge fillets. Radial motor. Deep, short fuselage. Cantilever tailplane and large single fin and rudder. Fixed single-leg spatted undercarriage and fixed tailwheel.





THE MITSUBISHI ARMY KB-98 KARIGANE III

One 900 h.p. Mitsubishi Kinsei motor.

DIMENSIONS.—Span, 46 ft. 0 in.; length, 26 ft. 2½ in.; height, 11 ft. 9 in.; wing area (gross), 290 sq. ft. **WEIGHT.**—Loaded, 7,800 lb. **FUEL CAPACITY.**—140 imp. gals. **PERFORMANCE.**—Max. speed, 250 miles at 11,000 ft.; range, 280 miles at 208 m.p.h.; service ceiling, 23,000 ft.

MITSUBISHI ARMY OB-98

TYPE.—Heavy bomber.

CREW.—Four to five.

ARMAMENT.—Forward gun turret and open dorsal gun position. Bomb load 2,200 lb.

THE MITSUBISHI ARMY OB-98 two-motor low-wing heavy bomber, of very ugly appearance, appears to have been based on the old Mitsubishi Army B-93 and on the Mitsubishi Navy B-96-t Otori. It is distinctive chiefly for the large gun turret in the nose and the swept-back straight taper of its wings.

Of all-metal construction with corrugated metal covering, the OB-98 is a low-wing cantilever monoplane with dihedral from the motors. The leading and trailing edges both have straight taper, there are fillets at the trailing edges and the wing tips are blunt.

The fuselage is built on the same lines as the Otori but has a large spherical gun turret in the nose, a shorter cockpit cover and an open dorsal gun position.

The tailplane is set high on the fuselage and is strut braced, the elevators protrude beyond the fuselage in Arado fashion.

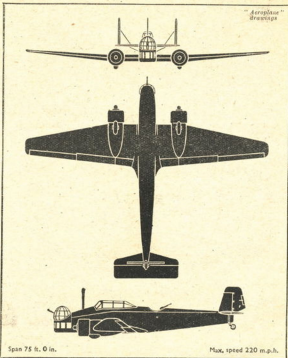
The twin fins and rudders are mounted on the tailplane some way in from the tips and are strut braced.

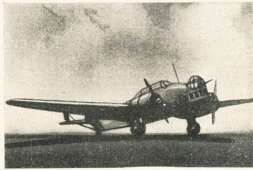
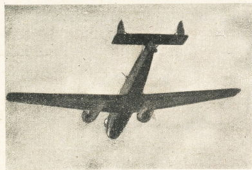
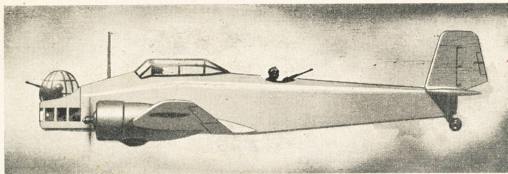
Two 750 h.p. Mitsubishi air-cooled radial motors supply the power. The undercarriage retracts forwards into the motor nacelles. There is a fixed tailwheel.

This Mitsubishi Army OB-98 is certainly one of the world's ugliest aeroplanes.

Parent Company: MITSUBISHI JUKOGYO KABUSHIKI KAISHA (Mitsubishi Heavy Industries, Ltd.), at Nagoya.

POINTS OF RECOGNITION.—Low-wing cantilever monoplane with straight taper and blunt tips, dihedral from motors. Two radial motors. Spherical turret in nose. Short raised cockpit. Braced tailplane and twin-braced fins and rudders. Retractable undercarriage and fixed tailwheel.





THE MITSUBISHI ARMY OB-98

Two 750 h.p. Mitsubishi motors.

DIMENSIONS.—Span, 75 ft. 0 in.; length, 59 ft. 0 in.; height, 15 ft. 1 in.; wing area (gross), 685 sq. ft. **WEIGHT.**—Loaded, 21,000 lb.
FUEL CAPACITY.—480 Imp. galls. **PERFORMANCE.**—Max. speed, 220 m.p.h. at 15,000 ft.; range, 1,180 miles at 185 m.p.h.; service ceiling, 25,000 ft.

NAKAJIMA ARMY T-94

TYPE.—Reconnaissance bomber.

CREW.—Two.

ARMAMENT.—One fixed machine-gun and one movable machine-gun.

THE NAKAJIMA ARMY T-94 single-motor reconnaissance bomber biplane has seen much service in China, but it is believed to be used now for advanced training. In appearance it resembles Waco types.

This aeroplane is a strut and wire-braced biplane with wings of unequal span and chord. The upper wing has straight leading edges and curved trailing edges with rounded tips and a large cut-away in the trailing edge centre section above the pilot's cockpit. Ailerons are fitted to the upper wing only.

The lower wing is much smaller than the upper wing and has straight leading and almost straight trailing-edges, with rounded tips. The upper and lower wings are braced together by a set of N struts on either side of the fuselage.

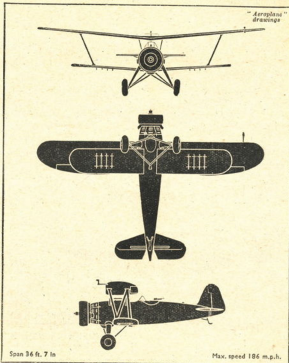
A radial air-cooled 550 h.p. Nakajima Kotobuki III motor with N.A.C.A. cowling is fitted in the nose of the short deep fuselage, which has open cockpits for both members of the crew; each cockpit has a large windshield. There is also a windshield on the top wing centre section.

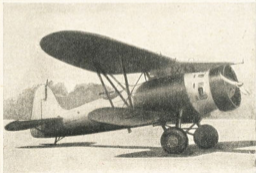
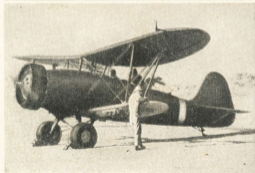
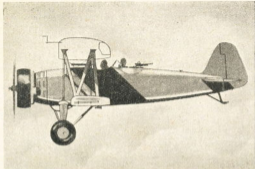
The single fin and rudder are wide at the base, but both taper sharply towards the apex, and the braced tailplane is placed high on the fuselage.

The undercarriage is fixed and there is a fixed tail skid. Racks for light bombs are placed under the lower wings and there is a large pitot head mounted on the wing tip of the port upper wing.

Parent Company: NAKAJIMA HIKOKI KABUSHIKI KAISHA (Nakajima Aircraft Co., Ltd.), at Ohta, Gumma-ken.

POINTS OF RECOGNITION.—Single-bay braced biplane of unequal span and chord. Single radial motor. Two open cockpits. Braced tailplane. Single fin and rudder. Fixed undercarriage and tail skid.





THE NAKAJIMA ARMY T-94
One 550 h.p. Nakajima Kotobuki III motor.

DIMENSIONS.—Span, 36 ft. 7 ins.; length, 24 ft. 5 ins.; height, 9 ft. 2 ins.; wing area (gross), 322.5 sq. ft. **WEIGHT.**—Loaded, 5,720 lb.
FUEL CAPACITY.—104 Imp. galls. **PERFORMANCE.**—Max. speed, 186 m.p.h. at 15,000 ft.; range, 470 miles at 150 m.p.h.; service ceiling, 25,000 ft.

NAKAJIMA ARMY S-97

TYPE.—Fighter. CREW.—One. ARMAMENT.—Two fixed machine-guns.

THE NAKAJIMA ARMY S-97 single-seat single-motor monoplane fighter is the aeroplane on which the Mitsubishi Navy S-97 and S-100 seem to have been based.

The Nakajima Army S-97, although an old type with fixed undercarriage, is still in service and some have been destroyed in action. The lower right-hand photograph on the opposite page shows a Nakajima Army S-97 which was shot down in Burma by the Royal Air Force and American Volunteer Group.

This aeroplane is a straightforward cantilever monoplane with single radial motor, raised cockpit, cantilever tailplane and single fin and rudder, and a fixed spatted undercarriage. The wing has straight taper on leading and trailing edges and marked dihedral from the roots. The tips are round and there are fair-sized fillets at the trailing edge roots.

The fuselage is short with an 800 h.p. Hikari radial air-cooled motor in the nose. The controllable cooling gills are actually behind the leading edge of the wing.

The transparent raised cockpit cover is above the wing and not unlike that of the Focke-Wulf Fw 190 in shape.

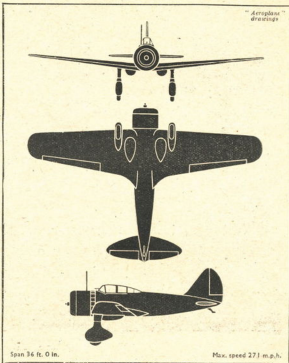
The leading edge of the fin has taper and the trailing edge of the rudder is curved. The leading edge of the cantilever tailplane is some way behind the base of the fin.

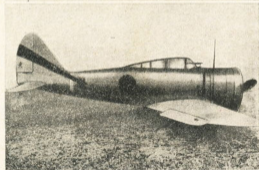
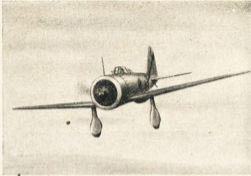
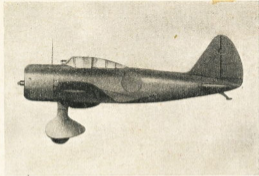
The spatted undercarriage is of the single-leg type and there is a fixed tailskid.

Two streamlined petrol tanks are fitted flush against the underside of the wing, one either side of the centre section.

Parent Company: NAKAJIMA HEIKOKI KABUSHIKI KAISHA (Nakajima Aircraft Co. Ltd.), at Ohta, Gumma-ken. This aeroplane is also built by Kawasaki as the S-97 with an 850 h.p. Kawasaki motor, and a similar monoplane is the Mitsubishi S-97 with a 650 h.p. Mitsubishi motor. All three types appear to be identical apart from the motors.

POINTS OF RECOGNITION.—Low cantilever wing with straight taper, round tips and trailing edge fillets. Dihedral from the roots. Cowled radial motor in short nose. Raised cockpit cover. Single fin and rudder and cantilever tailplane. Single-leg spatted undercarriage and fixed tailskid. Two petrol tanks under wing. Radio mast on starboard side of motor cowling.





THE NAKAJIMA ARMY S-97

One 800 h.p. Hikari motor.

DIMENSIONS.—Span, 36 ft. 0 in.; length, 24 ft. 0 in.; height, 8 ft. 0 in.; wing area (gross), 140 sq. ft. **WEIGHT.**—Loaded, 4,400 lb. **FUEL CAPACITY.**—134 Imp. galls. **PERFORMANCE.**—Max. speed, 270 m.p.h. at 15,000 ft.; range, 340 miles at 234 m.p.h.; service ceiling, 33,000 ft.

SHOWA ARMY SB-99

TYPE.—Fighter-bomber.

CREW.—Two to three.

ARMAMENT.—Two fixed forward firing cannons, one fixed and one movable machine-gun.

THE SHOWA ARMY SB-99, claimed by the Japanese to be the Showa Type 98, is really the United States Vultee V-11GB attack bomber known in the U.S. Army as the YA-19. In addition to the Japanese copy the V-11 is in service with the Air Forces of Brazil and Turkey, and in a modified form with the U.S.S.R.

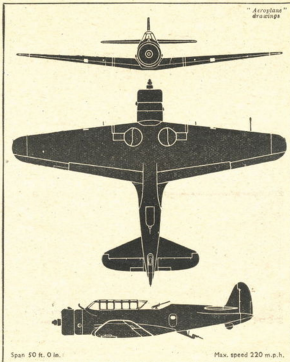
The Showa Army SB-99 is a rather clean low-wing all-metal cantilever monoplane with single fin and rudder, long transparent raised cockpit, and a retractable undercarriage.

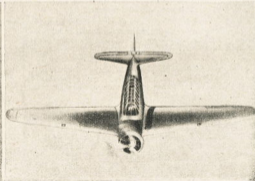
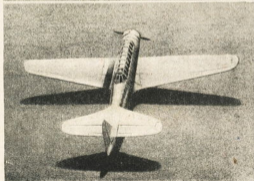
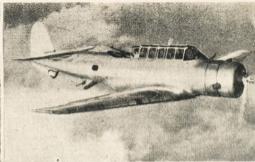
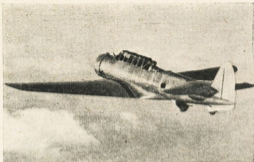
The Cyclone motor fitted in the original Vultee V-11 has been replaced by an 890 h.p. Japanese Showa radial motor.

The wing, which is quite thick at the roots, has straight leading and trailing edges with taper on both and fairly broad blunt tips. There is dihedral from the roots and a large fillet at the trailing edge of the wing where it meets the fuselage. The raised cockpit extends from the leading edge of the wing to the rear of the trailing edge fillet. The rear panels of the cockpit cover slide forward to give free movement to the rear gunner, while a panel in the underside of the fuselage aft of the wing can be lowered to form an open machine-gun position to protect the underside of the tail. The cantilever tailplane is placed well forward in front of the fin and rudder, and lies on top of the fuselage which has a flat top aft of the cockpit. The fin is extended below the fuselage and incorporates a streamlined housing for the fixed tailwheel.

Parent Company: SHOWA HIKOKI KOGYO KAISHA (Showa Aircraft Co. Ltd.), at Tokyo-Seisakusho and Heijo-Seisakusho.

POINTS OF RECOGNITION.—Low-wing cantilever monoplane with dihedral from roots, straight leading and trailing edges, both with taper, broad blunt tips. Long transparent raised cockpit. Cantilever tailplane placed far forward and on top of fuselage. Straight leading and trailing edge to tailplane with very marked taper on leading edge and none on trailing edge. No cut-out in elevators. Cowled radial motor. Tail single fin and rudder with fin extension below fuselage containing housing for fixed tailwheel. Inward-retracting undercarriage.





THE SHOWA ARMY SB-99

One 850 h.p. Showa motor.

DIMENSIONS—Span, 50 ft. 0 in.; length, 37 ft. 5½ in.; height, 9 ft. 11 in.; wing area (gross) 384 sq. ft. **WEIGHTS**—Empty, 6,375 lb.; loaded, 9,712 lb. **FUEL CAPACITY**—396 Imp. galls. **PERFORMANCE**—Max. speed, 220 m.p.h. at 6,800 ft.; range, 950 miles at 180 m.p.h.; service ceiling, 26,500 ft.

TATIKAWA ARMY K-95-1

TYPE.—Advanced trainer.

CREW.—Two.

THE TATIKAWA ARMY K-95-1, the latest known type of Japanese advanced training biplane, is of orthodox design and is in service in large numbers and appears to share with the Nakajima T-94 light reconnaissance bomber the job of training the Japanese air crews up to their operational standards.

The K-95-1 is a strut- and wire-braced single bay biplane of composite construction with wings of unequal span, the upper wing is carried above the fuselage on splayed out N struts and the upper and lower wings are joined by one set of N struts on either side of the fuselage. The ailerons are also strut-connected.

The motor is a cowled 350 h.p. Type 95 nine-cylinder air-cooled radial. The undercarriage is of rather complicated layout with low-pressure wheels fitted with mudguards, and the tailwheel is fixed. Normal strut-braced tailplane and single fin and rudder are fitted.

To prepare pupils for flying the K-95-1, the K-95-2 primary trainer is in service. Also built by Tatikawa the K-95-2 is a light strut and wire-braced biplane of equal span fitted with a 150 h.p. uncowled seven-cylinder Type 95 air-cooled radial motor.

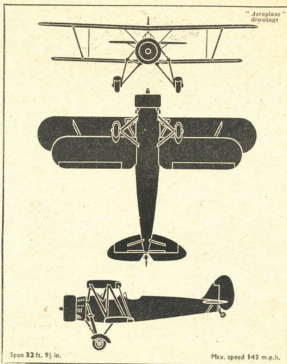
The K-95-2 is of similar construction to the K-95-1, has the same wing span, but weighs considerably less and has a top speed of some 37 m.p.h. less.

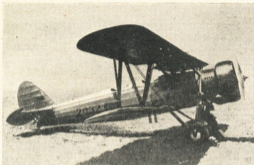
The Tatikawa K-95-2 is not considered sufficiently important to be shown in the three view drawings, but the two lower illustrations on the opposite page show the K-95-2.

Both types made by: TATIKAWA HIKOKI KABUSHIKI KAISHA (Tatikawa Aircraft Co. Ltd.), at Tokyo.

POINTS OF RECOGNITION.—THE TATIKAWA K-95-1. Braced biplane of unequal span. Cowled radial motor. Fixed undercarriage. Single fin and rudder and braced tailplane.

THE TATIKAWA K-95-2. Braced biplane of equal span. Uncowled radial motor. Fixed undercarriage. Single fin and rudder and braced tailplane.





UPPER PHOTOGRAPHS.

DIMENSIONS.—Span, 32 ft. 9 1/2 ins.;

length, 26 ft. 5 ins.;

height, 11 ft. 6 ins.

WEIGHTS.—Empty, 2,178 lb.; loaded, 3,214 lb.

PERFORMANCE.—Max. speed, 145 m.p.h.; range, 416 miles; service ceiling, 21,520 ft.

LOWER PHOTOGRAPHS.

DIMENSIONS.—Span, 32 ft. 9 1/2 ins.;

length, 26 ft. 3 ins.;

height, 9 ft. 10 ins.

WEIGHTS.—Empty, 1,364 lb.; loaded, 1,980 lb.

PERFORMANCE.—Max. speed, 105 m.p.h.; service ceiling, 17,585 ft.

THE TATIKAWA ARMY K-95-1

One 350 h.p. Type 95 motor.

THE TATIKAWA ARMY K-95-3

One 150 h.p. Type 95 motor.

TOKYO GASU DENKI (HITACHI) T.R.1

TYPE.—Transport.

Crew.—Two.

THE TOKYO GASU DENKI (HITACHI) T.R.1 civil-transport monoplane appears to be developed from the Airspeed Envoy which is built in Japan by the Mitsubishi Company as the Mitsubishi Hinazuru (Young Crane). It is a low-wing cantilever monoplane of all-metal construction with accommodation for two pilots side by side and four passengers. The T.R.1 is powered by two 240 h.p. Tokyo Gasu Denki Jimpu 5A nine-cylinder air-cooled radial motors enclosed in narrow diameter cowlings with helmets for the cylinder heads. The simple undercarriage is retractable as is the steerable tailwheel.

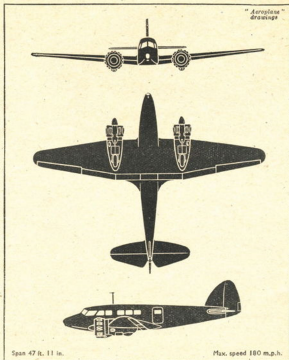
Although there is no evidence that the T.R.1 has been put into service in any numbers, it must be regarded as a possible communications type.

The T.R.1 is of quite simple design and construction. It has a straightforward fuselage of duralumin monocoque structure, the wing, which is built in three sections, has straight leading and trailing edges with slight taper and rounded tips, the long narrow chord ailerons can also be used as flaps. The single fin and rudder and cantilever tailplane and elevators all have curved leading and trailing edges.

Made by: TOKYO GASU DENKI KABUSHIKI KAISHA (Tokyo Gas and Electrical Engineering Co. Ltd.), at Ohmori, near Tokyo. The aircraft manufacturing side of this company has since been taken over by Hitachi Kokuki Kabushiki Kaisha (Hitachi Aircraft Co. Ltd.), a company formed by the separation of the aircraft and aero-engine sections of the original company.

The only other known types built by the Tokyo Gasu Denki are the long-range monoplane Koken and a copy of the de Havilland Fox Moth. The Hitachi Company builds a training biplane known as the T.2 and is reported to have under development an eight-seat transport monoplane fitted with two Hirth or Argus 450 h.p. motors, and known as the H.T.3.

POINTS OF RECOGNITION.—Low-wing cantilever monoplane with fair dihedral. Straight leading and trailing edges with slight taper and round tips. Two cowled radial motors. Cantilever tailplane with curved leading and trailing edges and cut-out for rudder movement. Tail single fin and rudder with curved leading and trailing edges. Backward-retracting undercarriage and retractable tailwheel.



Span 47 ft. 11 in.

Max. speed 180 m.p.h.



THE TOKYO GASU DENKI (HITACHI) T.R.1.

Two 240 h.p. T.G.D. Jimpu SA motors.

DIMENSIONS.—Span, 47 ft. 11 ins.; length, 24 ft. 9 ins.; height, 9 ft. 0 ins.; wing area (gross), 269 sq. ft. **WEIGHTS.**—Empty, 3,014 lb.; loaded, 5,500 lb. **PERFORMANCE.**—Max. speed, 180 m.p.h.; range, 1,120 miles at 155 m.p.h.; ceiling, 19,680 ft.

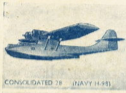
JAPANESE TYPE NAMES

Type	Japanese Name	Japanese Symbol
Ambulance	Byōinki	B
Army Co-operation	Rikugun Kyōryoku	RK
Dive Bomber	Kyūōki	K
Fighter	Sentōki	S
Float Seaplane	Suijō Hikōki	SH
Flying-boat	Hikōsen	H
Heavy Bomber	Omoshi Bakudanki	OB
Light Bomber	Karui Bakudanki	KB
Reconnaissance	Teisatsuki	T
Reconnaissance Float-plane	Kaijō Teisatsuki	KT
Torpedo-bomber	Gyōraiki	G
Trainer	Kyōrenki	K
Transport	Yusōki	Y

CAMOUFLAGE AND MARKING

Japanese aircraft are mostly painted light grey or light green on all surfaces, or dark green on upper surfaces with light grey undersides. Some types are known to be camouflaged with grey and green on upper surfaces. The red disc (rising sun) appears on the wing tips of both upper and lower surfaces and in most cases on either side of the fuselage. Where the red disc appears on a dark background it has a thin white outline. Coloured identification bands run round the fuselage near the tail on some types. In some instances horizontal white stripes appear on the fin and rudder.

FOREIGN DESIGNS IN JAPANESE SERVICE



CONSOLIDATED 28 (NAVY 14-98)



DOUGLAS DC-2



DOUGLAS DC-3



FIAT BR-20 (NAVY 08-98)



HEINKEL He 111K (ARMY 08-98)



HEINKEL He 116 (ARMY 7-98)



JUNKERS Ju 52/3m (ARMY 7-98)



LOCKHEED 14



MESSERSCHMITT Me 109a (ARMY 5-01)



MESSERSCHMITT Me 110 (NAVY 5-01)



POTEZ 6302 (ARMY 8-01)



SEVERSKY 3PA (NAVY 5-98)

All these types of foreign aeroplanes are in service with the Japanese Air Forces. American and German types predominate, but the Italian Fiat BR-20 is used as a torpedo-bomber and the French Potez 63a as a fighter-bomber. The He111K used by the Japanese Army has radial motors.