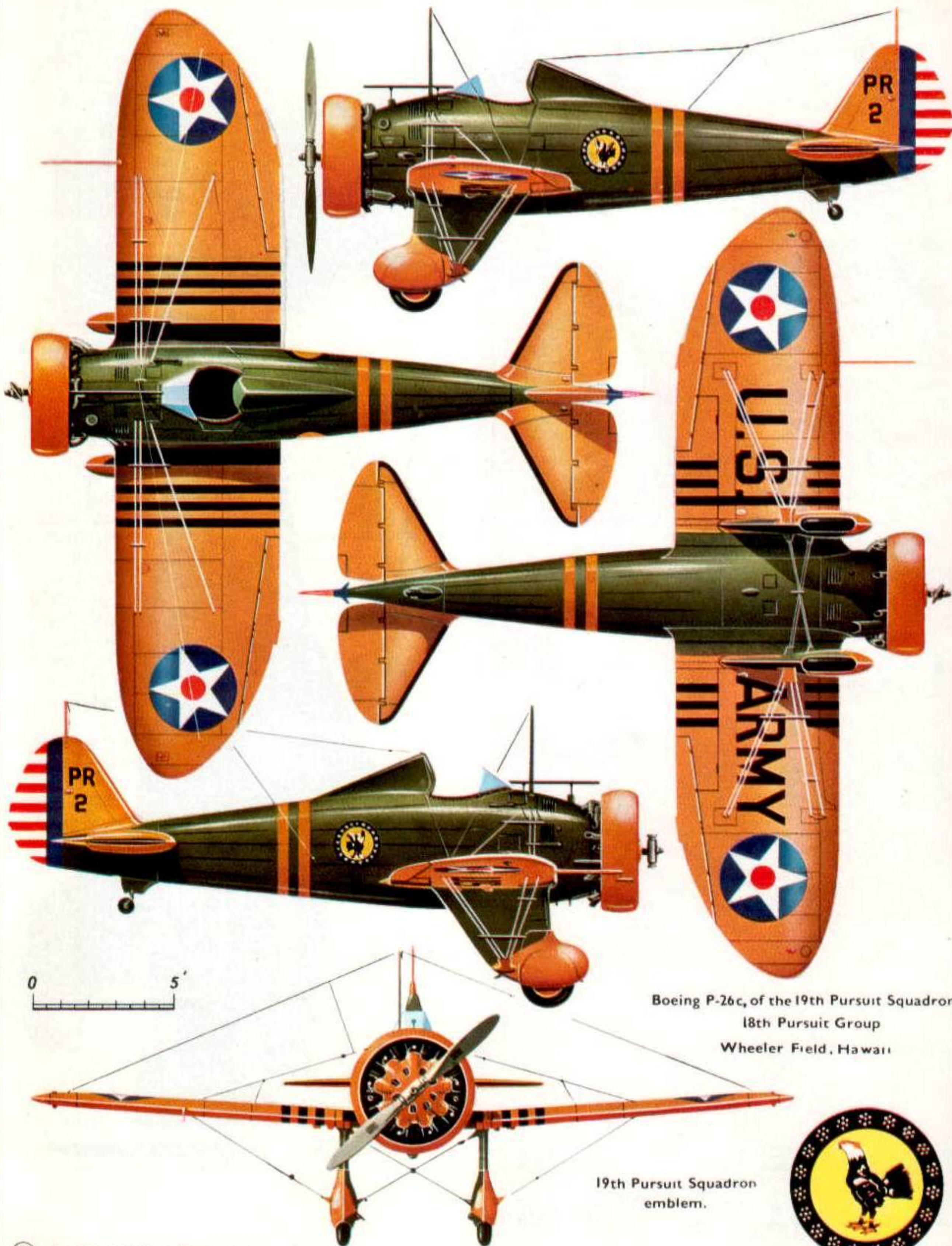


PROFILE PUBLICATIONS

The Boeing P-26A

NUMBER 14
TWO SHILLINGS





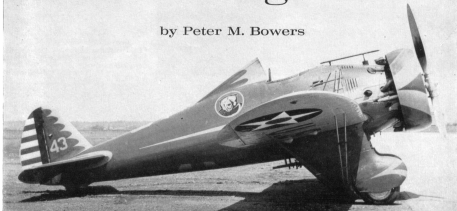
Boeing P-26c, of the 19th Pursuit Squadron
18th Pursuit Group
Wheeler Field, Hawaii

19th Pursuit Squadron
emblem.



The Boeing P-26A

by Peter M. Bowers



P-26A of the 73rd Pursuit Squadron, one of three (34th, 73rd and 95th) of the 1st Pursuit Group which carried similar squadron designs in different colours. (Peter Bowers' collection)

To be in the vanguard of progress is a rare achievement; to be part of the rearguard a distinction. To be both first and last is something of a rarity, but this is the unusual claim to fame of the diminutive Boeing P-26, the "Peashooter" to all who flew this attractive monoplane fighter of the mid 'thirties.

The P-26 was one of the best-known U.S. Army Air Corps pursuit aircraft of the years between the two world wars, and in addition to being far more advanced in construction and performance than contemporary service models it can also lay claim to a number of "firsts" and a number of "lasts".

It was the first production, all-metal, American fighter, and also the first production monoplane fighter. It was the last open cockpit fighter accepted for service with the Army; the last with a fixed under-

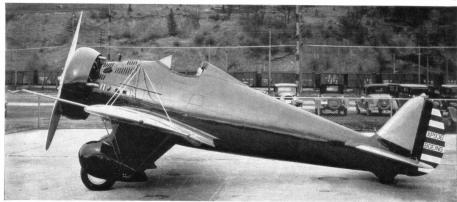
carriage and the last with an externally-braced wing.

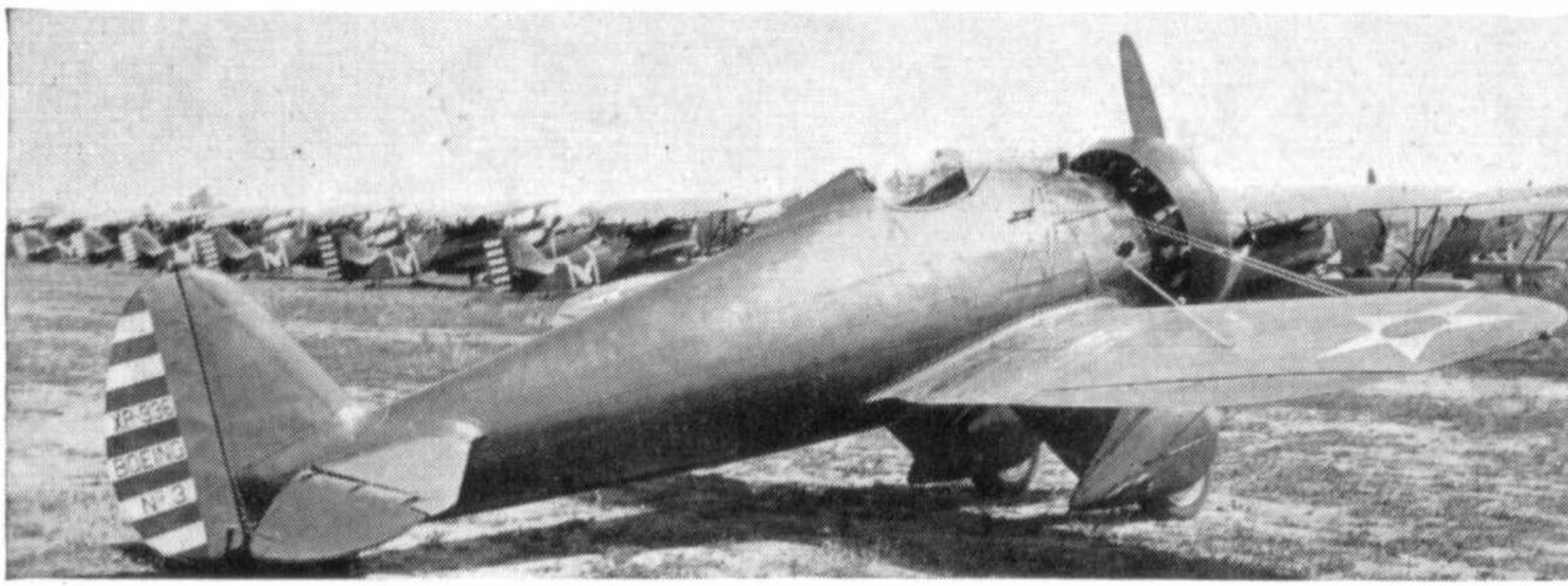
For the Boeing Company it was their last production fighter, and it brought to an end a fifteen-year period during which time Boeing was the leading manufacturer of first-line fighters for both the Army and the Navy.

THE DESIGN IS APPROVED

Design of the Boeing Model 248 (P-26) started in September 1931, and was the result of a series of conferences between Boeing and the Army Air Corps. It incorporated many of the features proposed by company technicians and service advisers. The original designation of Model 248 was soon dropped in favour of XP-936 (Experimental Pursuit Airplane Design 936) with the signing of an Army Bivalent Contract on 5th

The first Boeing 248 before purchase by the Army Air Corps and carrying the designation of XP-936. Note small headrest and wheel pants projecting behind landing gear legs. (Photo: Boeing)

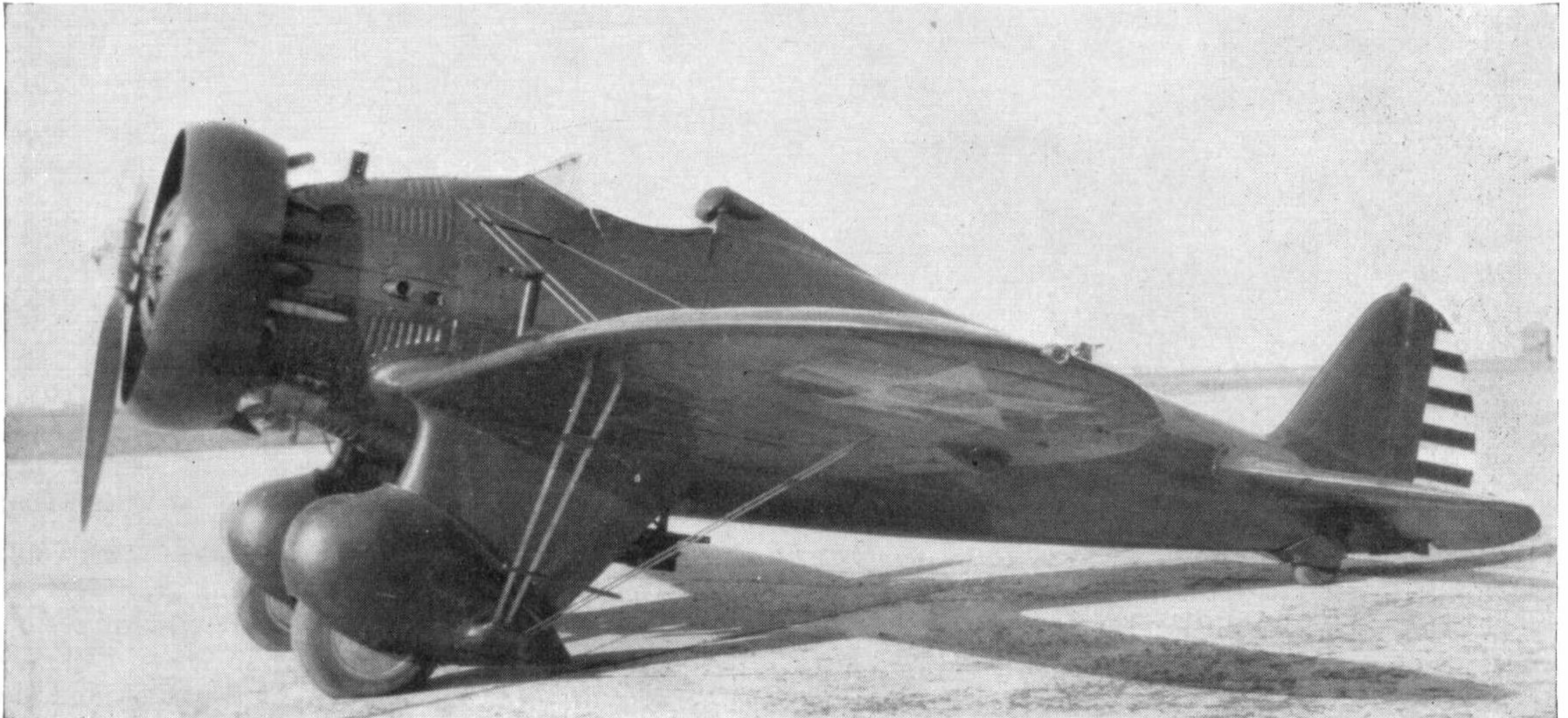




Left: Third prototype XP-936 with line-up of Curtiss Hawks in background.
(Photo: Fred C. Dickey, Jnr.)

Below: Boeing Model 248 photographed while designated YIP-26, still with original headrest.

(Peter Bowers' collection)



December 1931. This contract specified that Boeing would construct, at their own expense, three test airframes, for which the Army would provide engines, instruments and other equipment. A contract clause stated that the three airframes would remain the property of the Boeing Company.

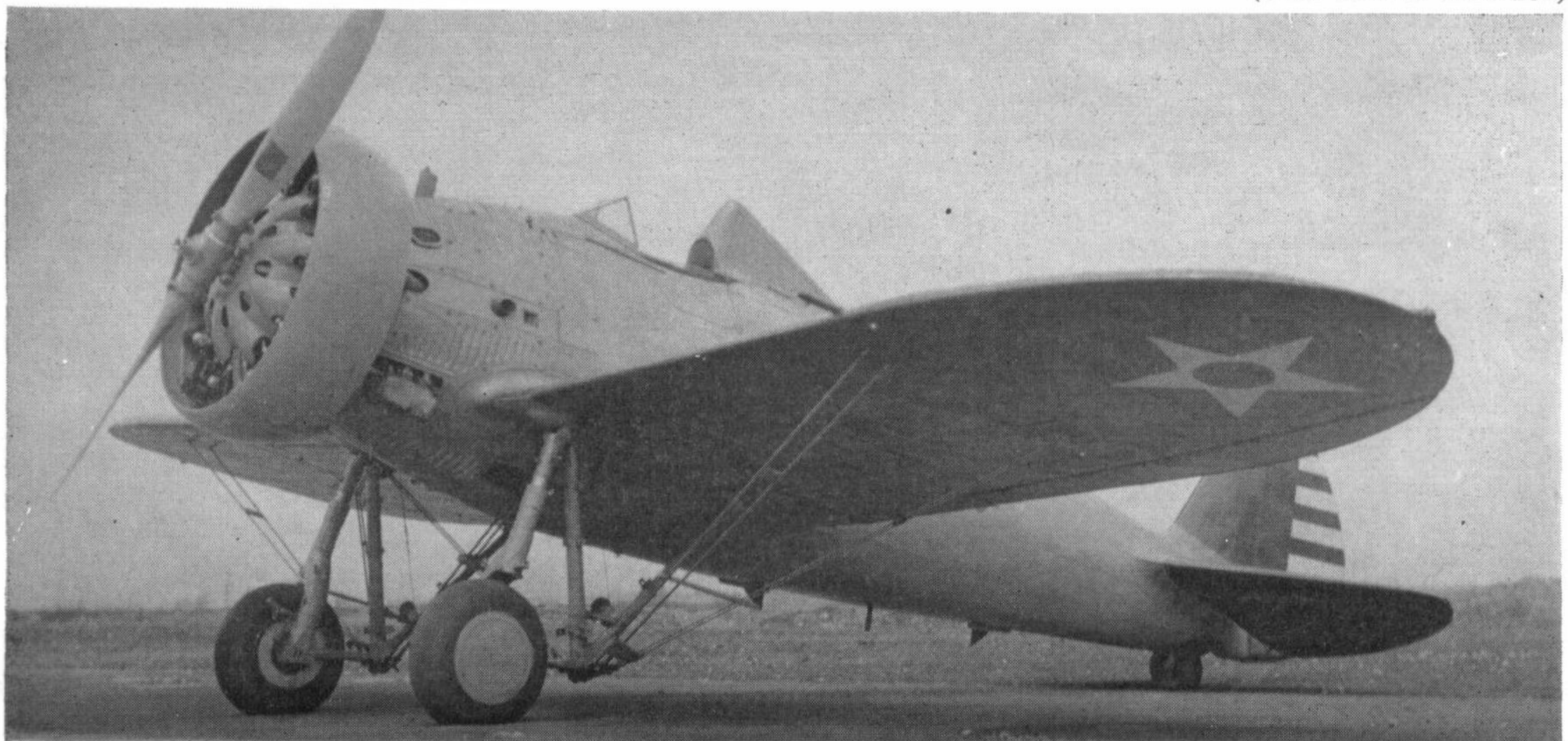
The reasoning behind this apparent hard-headed economy by the Army was the latter's reluctance to

spend limited funds for a then, radically different aeroplane to those already in service. The Model 248, therefore, was something of a speculative venture for Boeing.

The design progressed rapidly and actual construction of the first prototype began in January 1932, with the first flight taking place on 20th March. This remarkably high rate of progress in developing and

The Model 248 after redesignation to P-26 and modification to P-26A standard with high headrest. Change from olive drab to blue fuselage paint is evident in that the fuselage colour photographs lighter than the yellow of wings and tail on orthochromatic film.

(Peter Bowers' collection)



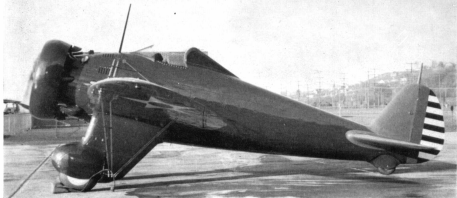
Right: First delivered P-26A demonstrating flotation bag operation during tests at Wright Field.

(Photo: U.S. Air Force)



Below: The first production P-26A, Model 266, as originally delivered with small headrest, larger than that on Model 248 but still much smaller than that used later on all P-26 series and Model 281 aircraft.

(Photo: Gordon S. Williams)



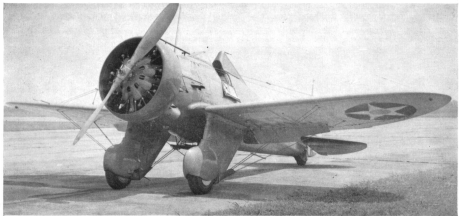
building a new, experimental design was accomplished by concentration of the company's manpower and production facilities on the project. Aircraft orders were something of a rarity in the "lean" 'thirties, and so determined was Boeing to obtain a production order, that the entire design and engineering teams set up their draughting tables in the factory alongside

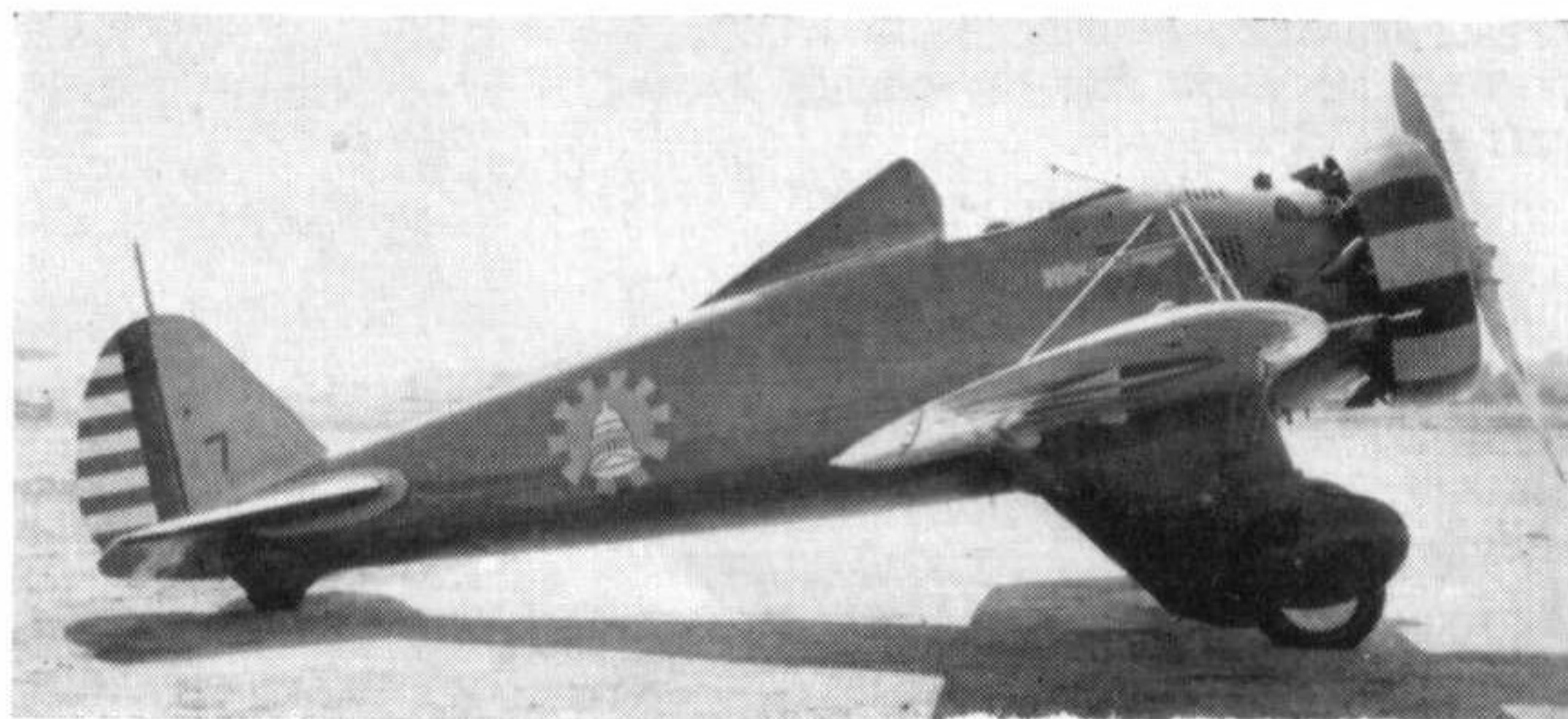
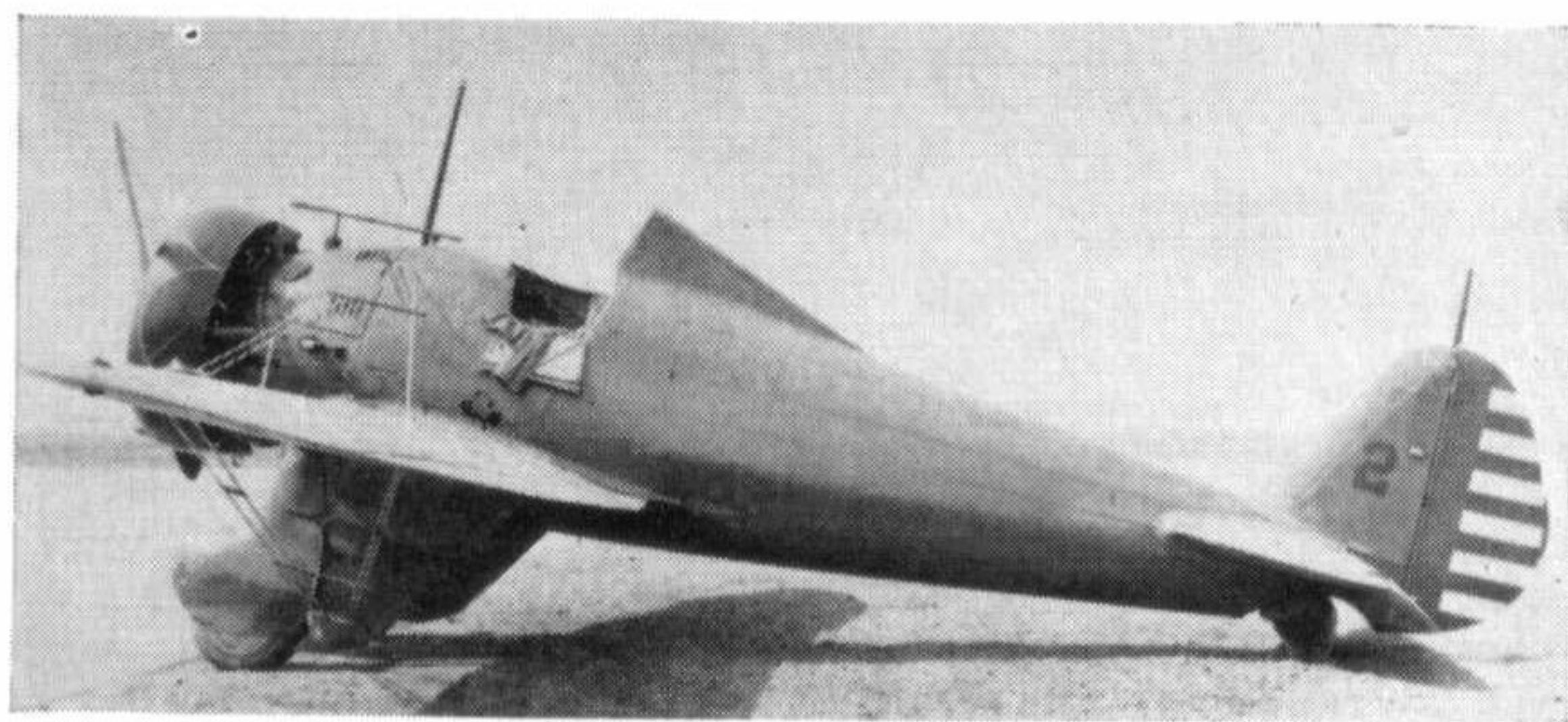
the three prototypes, ironing out difficulties as they arose.

The second airframe was completed and delivered to Wright Field for static tests before the first machine had made its maiden flight, while the third was delivered to Selfridge Field, Michigan, on 25th April, for service tests with active squadrons.

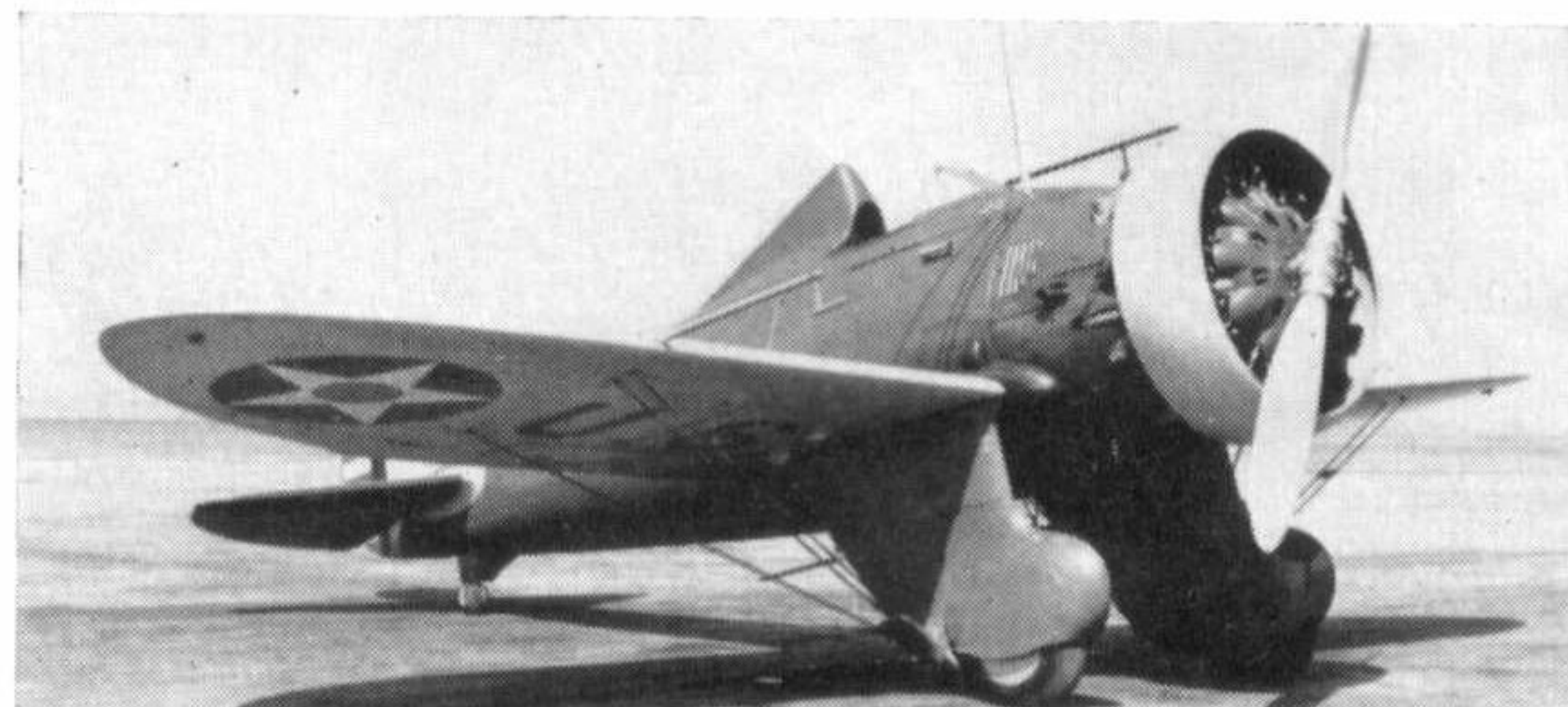
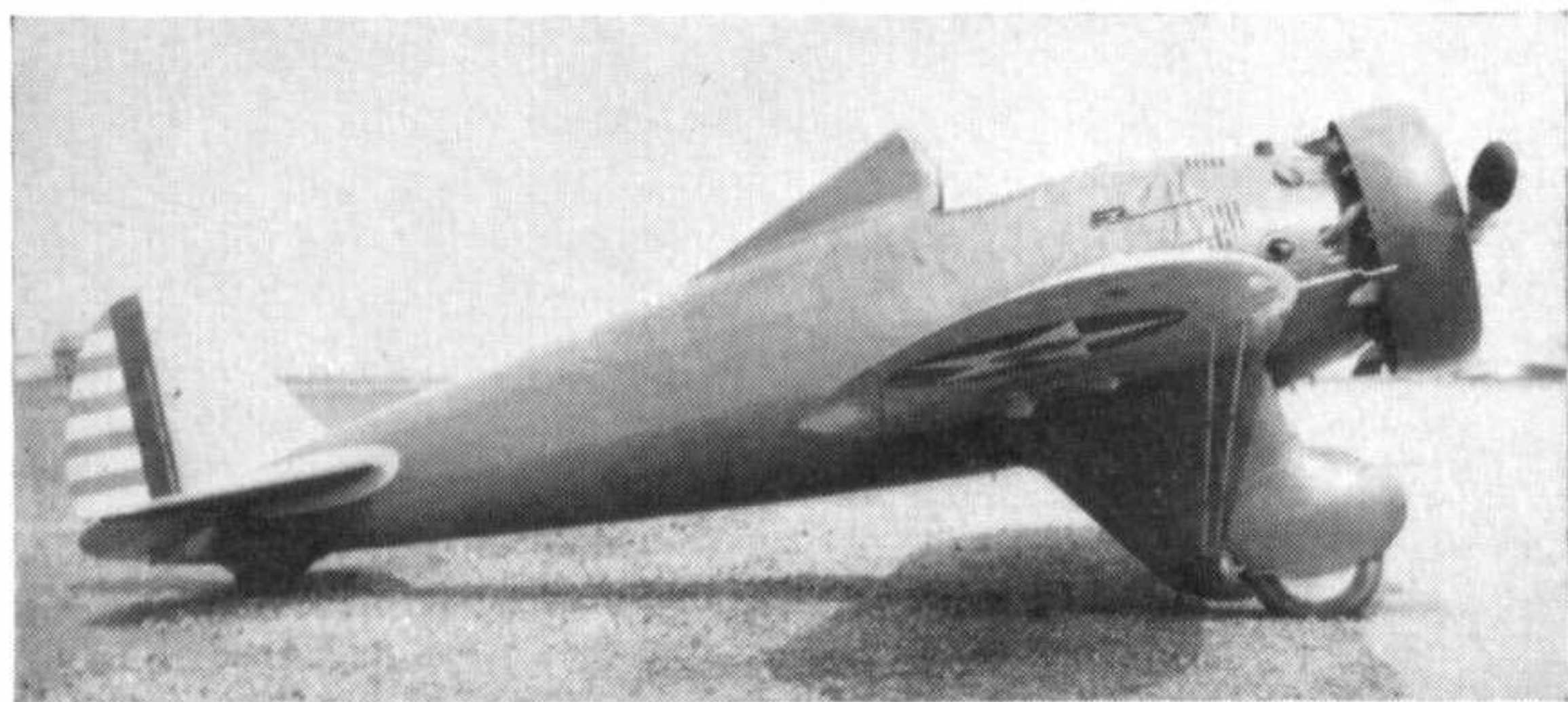
P-26A with wing flaps lowered and pilot's access door on port side open. Note bomb rack between undercarriage legs.

(Peter Bowers' collection)





Left: P-26A showing open access door and scalloped paint finish on Townend ring. Right: P-26A of the Bolling Field detachment. Colour scheme can be found on page 11. Aircraft was stationed on Golling Field, across the Potomac River from the White House. (Photos: A. U. Schmidt and Peter Bowers' collections)



Standard P-26As showing headrest profile. Note that some P-26s did not have radio mast.

(Peter Bowers' collection)

Shortly after flight tests of the two XP-936s began the Army, satisfied with performance and structural durability, purchased the three prototypes under a standard purchase contract signed on 15th June 1932, and assigned the designation of XP-26. This was soon changed to the service test designation of YIP-26 and eventually to plain P-26.

STRUCTURAL DETAILS

The P-26 was an entirely new design venture for Boeing, and while structural features drew heavily on other all-metal models such as the Monomail, the 202/205 fighter and the 218, the use of wire-braced wings and a fixed undercarriage seemed to be a backward step in view of the company's experience with retractable landing gear and cantilever wings.

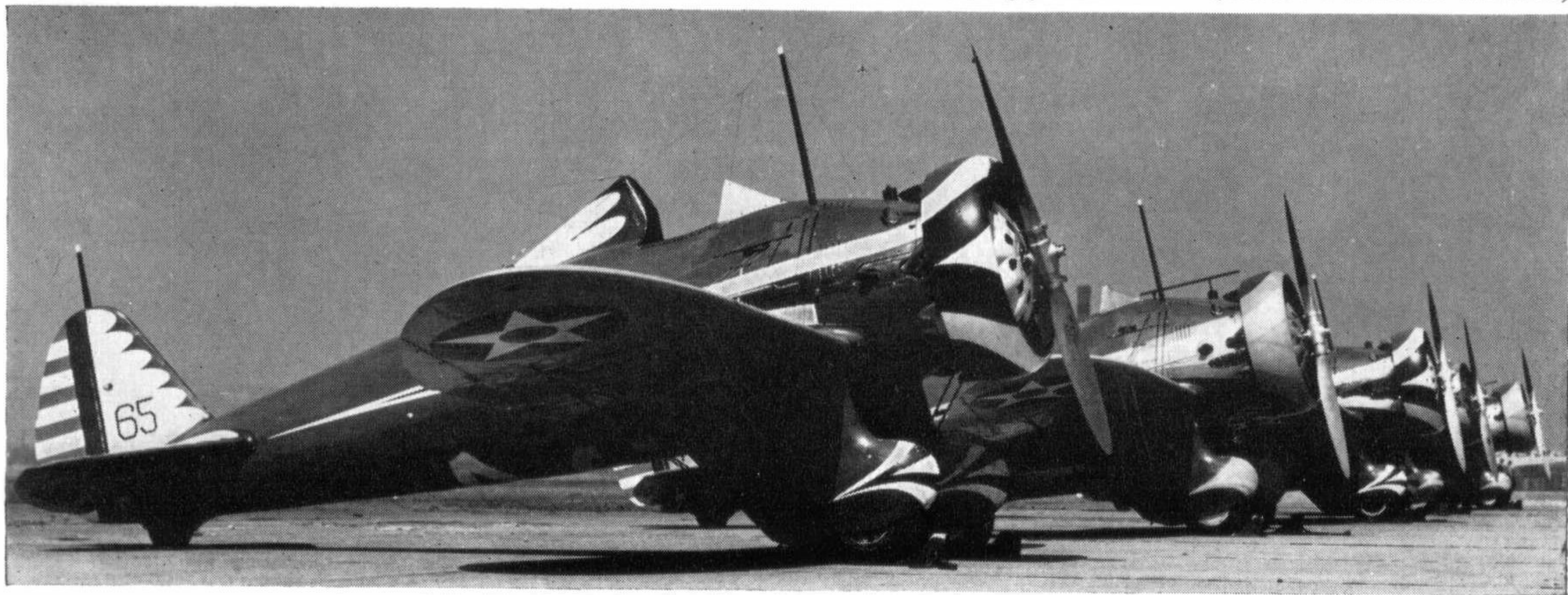
However, the external bracing allowed a lighter structure and wires produced less total drag than rigged struts. The fixed undercarriage added drag but reduced weight and structural complexity, and provided a low anchor point for the flying wires.

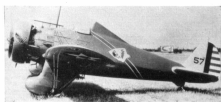
The rear portion of each undercarriage leg consisted of an inverted tubular bipod fastened to the front and rear wing spars. The flying wires were attached to the apex, and the wheel pivoted about the apex on an arm, with the landing loads being absorbed through the oleo shock absorber strut connecting the wheel axle to the front spar. The entire lower portion of the landing gear was enclosed by a streamlined wheel fairing, or "pant". A removable spreader bar was supplied to keep the undercarriage rigid when the aeroplane was in for service with wings removed or wires slack. One of the two flyable XP-936s was converted to a single strut type of undercarriage leg by the Army.

Fuselage was of a semi-monocoque type with aluminium bulkheads, hat-section longerons, skin stiffeners and skin. The nine-cylinder Pratt & Whitney SR-1340G radial, air-cooled engine, was bolted to the firewall and enclosed in a Townend ring.

The wing, low-set on the fuselage, was of low-aspect ratio with a thin section. Two main spars, built up of

P-26As from the 34th (foreground) and 73rd (second aircraft) Pursuit Squadrons photographed circa 1936. Note differences in cowling and stripe colours. Interruption of striping on first a/c caused by replacement cowling panel. (Photo: Gordon S. Williams)





Left and right: P-26As of the 94th Pursuit Squadron, 1st Pursuit Group. Left aircraft was finished blue, the above green.
(Photos: Fred C. Dickey, Jr.)



Left: P-26A, standard a/c, lacks radio mast. Right: P-26A, 550-h.p. Wasp, of the 20th Fighter Group (Squadrons 55th, 77th and 79th).
Details of a/c on page 12. (Photo: Richard Ward)

sheet and angle duralumin, supported dural ribs, to which was riveted closely-spaced spanwise stringers and the metal skin. It was externally braced with stainless steel front and rear lift and drag wires attached to the fuselage and undercarriage legs. Tail surfaces, fully cantilevered structures, were of single spar construction with a dural skin attached to a Warren-truss of stamped dural sheet ribs.

PROTOTYPE PERFORMANCE

When undergoing service tests at Wright Field the XP-936 weighed 2,119 pounds empty and 2,789 pounds loaded. Flight tests revealed a maximum level speed of 227 m.p.h. at 10,000 feet; 210 m.p.h. at 20,000 feet and 174 m.p.h. at 27,800 feet, the aircraft's service ceiling. Absolute ceiling was 28,900 feet; initial climb rate 2,300 ft./min., and cruising speed 193 m.p.h.

It is interesting to compare the covered performance of the XP-936 with that of the Boeing P-12F*, the last production biplane for the Army, which was in production at the time the monoplane fighter was delivered. Powered with a slightly later version of the

same engine that gave it only a 20-h.p. advantage, the XP-936 was just 39 lb. heavier than the P-12F but 27 m.p.h. faster. It outclimbed the biplane by 476 feet per minute, but fell 800 feet short of the P-12's absolute ceiling.

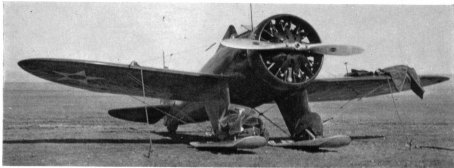
PRODUCTION BEGINS

Before service tests of the XP-936 were completed the Army decided to go ahead with it in an improved form. On 7th November 1932 a new specification was issued for a fighter which incorporated the best features of the Model 248 with the improvements found desirable during the test programme. The three prototypes completed the series of acceptance tests but never entered squadron service.

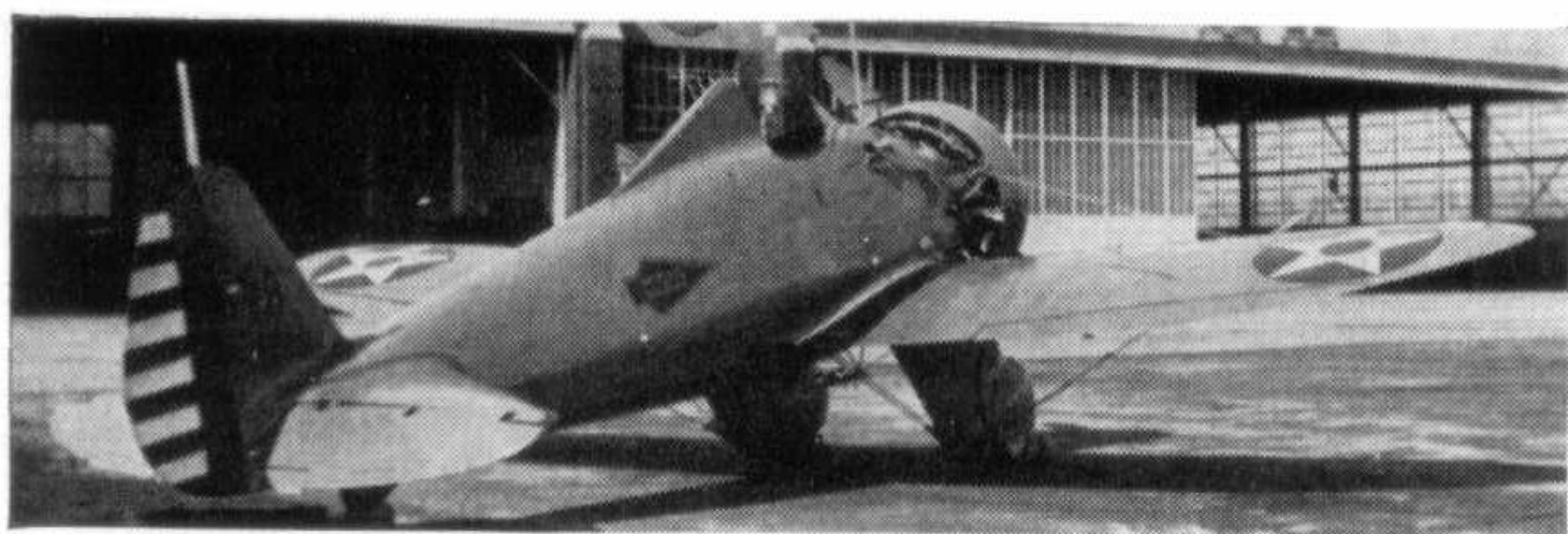
A contract for the modified design, the Model 266A, P-26A, was awarded on 28th January 1934. One hundred and eleven aircraft were ordered, and this was later increased to a total of 136, the additional aircraft being completed as P-26Bs and 26Cs. This was the largest order placed for a single aircraft type since the Boeing MB-3A of 1921.

Rare photograph shows P-26A on skis.

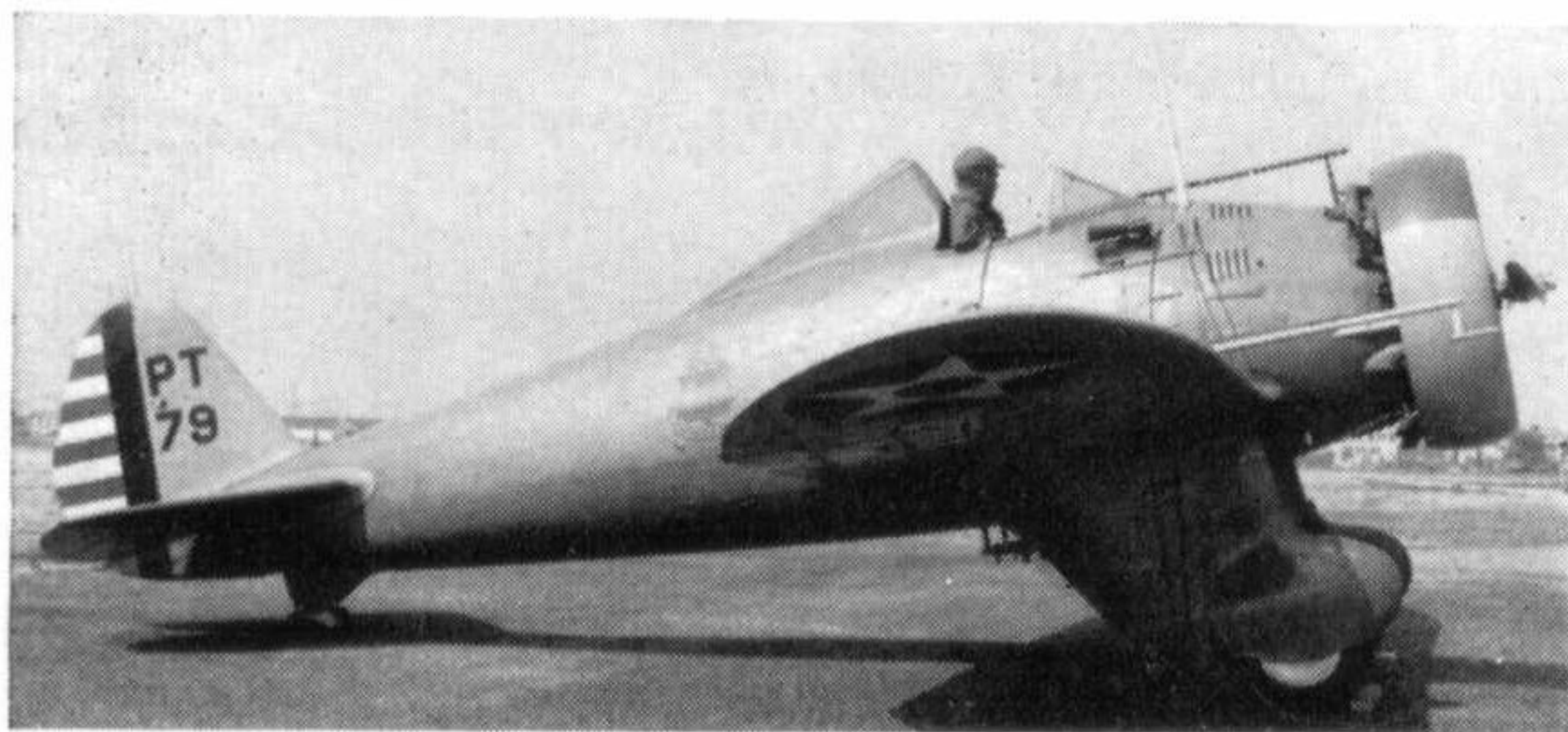
(Fred C. Dickey, Jr., collection)



*See Profile Number 2 for the P-12 story.



Above: P-26A with Wright Field fuselage marking.
Below: P-26A of 20th Pursuit Group. (Peter Bowers' collection)

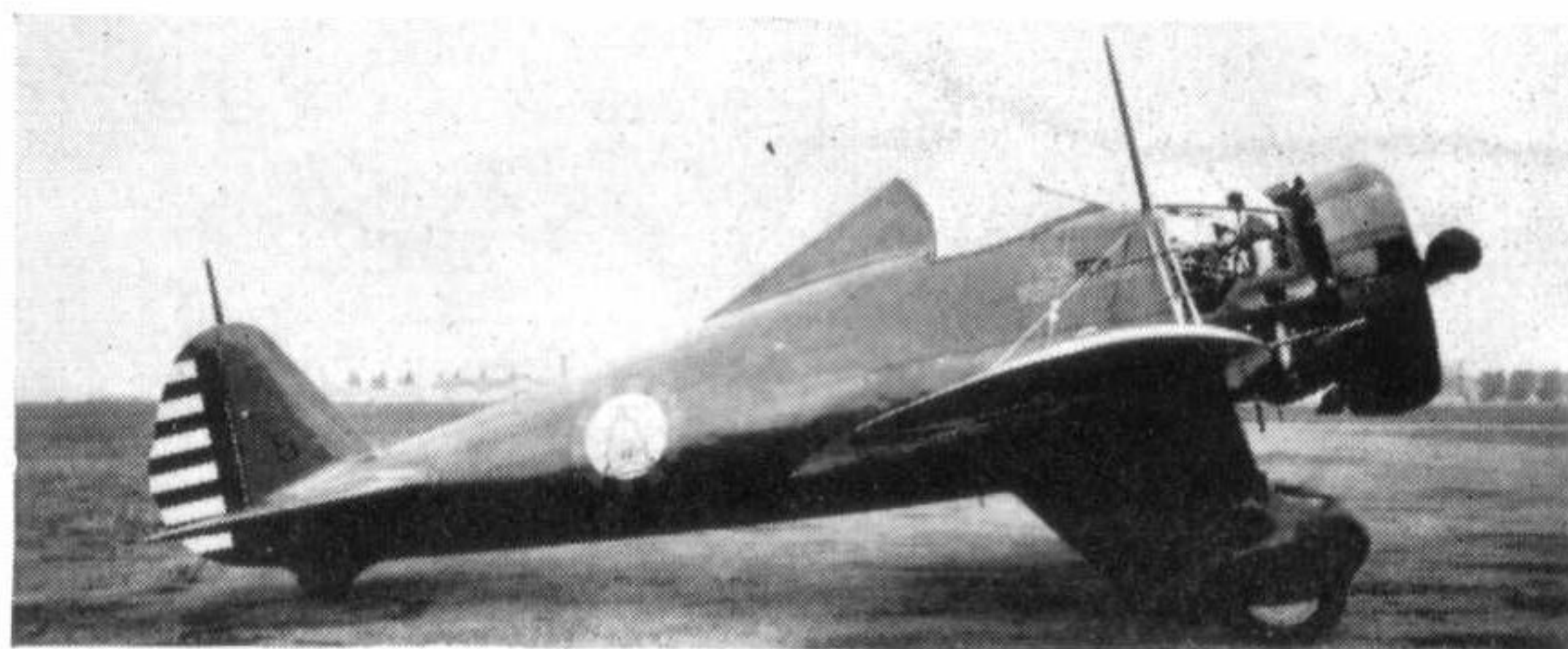


Outwardly the P-26A differed from the prototypes only in that the wheel spats did not project aft of the undercarriage strut fairing. Originally, the P-26A had the low, streamlined headrests of the prototypes, but these were strengthened and increased in height by eight inches for pilot protection after one of the early production aircraft went over on to its back following a landing on soft ground. The pilot was killed without serious damage to the aircraft. Delivery of later production machines was delayed until the modification was completed.

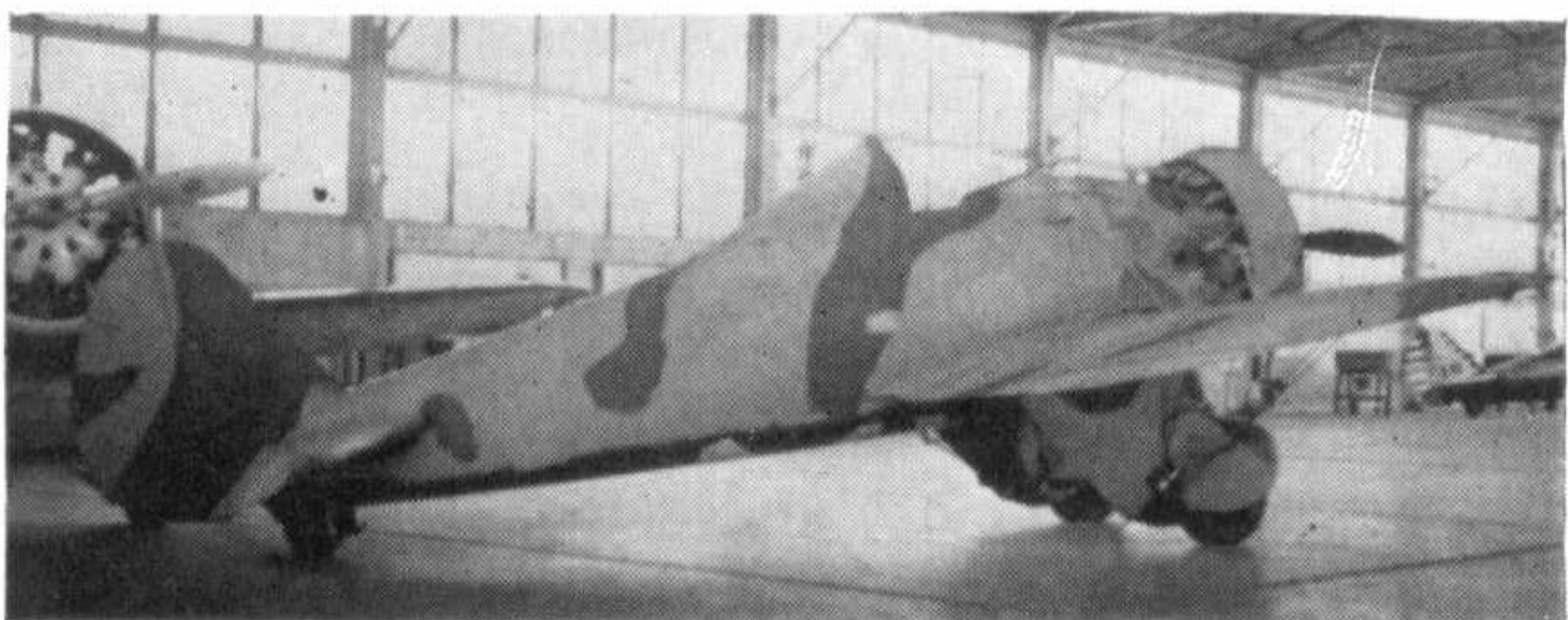
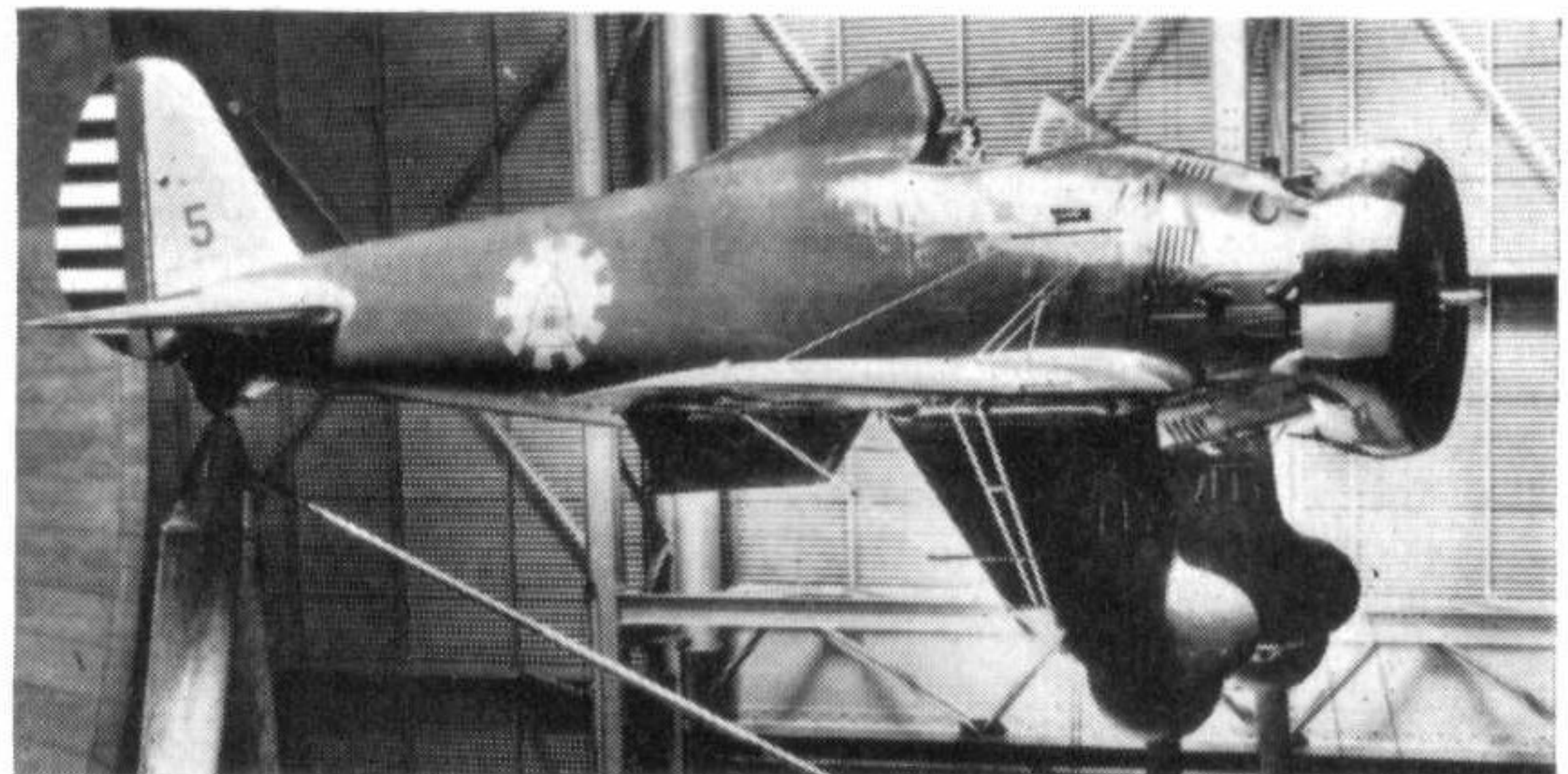
Internally, the P-26A wing structure was considerably revised and operational equipment such as flotation gear and radio was added. The first production P-26A made its maiden flight on 10th January 1934, and was delivered to the Army on 20th June 1935. Powerplant was a single Pratt & Whitney Wasp R-1340-27 engine rated at 500 h.p. at 2,200 r.p.m. at 7,500 feet. It drove a Hamilton Standard, two-blade, adjustable pitch propeller.

Armament consisted of the standard two 0.30-inch machine guns, or one 0.30-inch and one 0.50-inch

Second photograph of ski-equipped P-26A. This unit also had similar skis fitted to their Boeing P-12s. Martin B-10 twin-engined bombers in background also had skis.



P-26A of Bolling Field Detachment; one view shows engine mounting, second shows a/c in NACA wind tunnel.

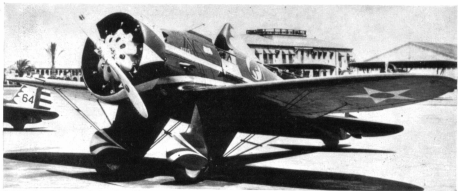


P-26A of the 34th Pursuit Sqdn. in special camouflage used during "War Games". (Peter Bowers' collection)

machine gun. Provision was made for two 100-lb. or five 30-lb. bombs slung under the fuselage and wings.

The last P-26A of the initial order for 111 was delivered on 30th June 1934, and the unit price per aircraft in such quantities, less engine and government-furnished equipment (GFE) was 9,999 dollars, compared with 10,197 dollars for the P-12E biplane in similar quantities.

With the P-26As in regular service, the Army



P-26A of the 73rd Attack Squadron, kicking mule insignia. Note 17th Attack Squadron insignia below headrest.

(Photo: Fred C. Dickey, Jr.)

became dissatisfied with the relatively high landing speed of 82.5 m.p.h. and, as a result, experimental flaps were developed by the Army and fitted to one aeroplane, reducing the speed to 73 m.p.h. Boeing fitted these flaps to all the P-26As then in service and on the 26Bs and Cs still on the production line. Service models were returned to the Boeing plant for retrofit installations.

All P-26 models had been withdrawn from regular squadron service and relegated to mechanic training schools when World War II began. Most of those stationed overseas were sold to the governments of the Philippines and Panama, and two were sold to Guatemala. The Philippine P-26As of the 6th Pursuit Squadron went into action against the Japanese soon after Pearl Harbour was attacked, and one is credited with shooting down one of the attacking bombers. Several of the Panamanian P-26s were acquired by Guatemala in 1943-43 and were still in service as trainers in 1957. One was obtained by the Air Museum of Claremont, California, where it is P-26A, serial number 33-136, in a close flight view. Note how headrest would protect pilot.

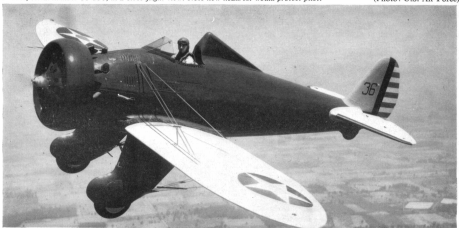
now on display in its original markings, and a second was obtained by the U.S. Air Force Technical Museum, Wright-Patterson AFB, Dayton, Ohio.

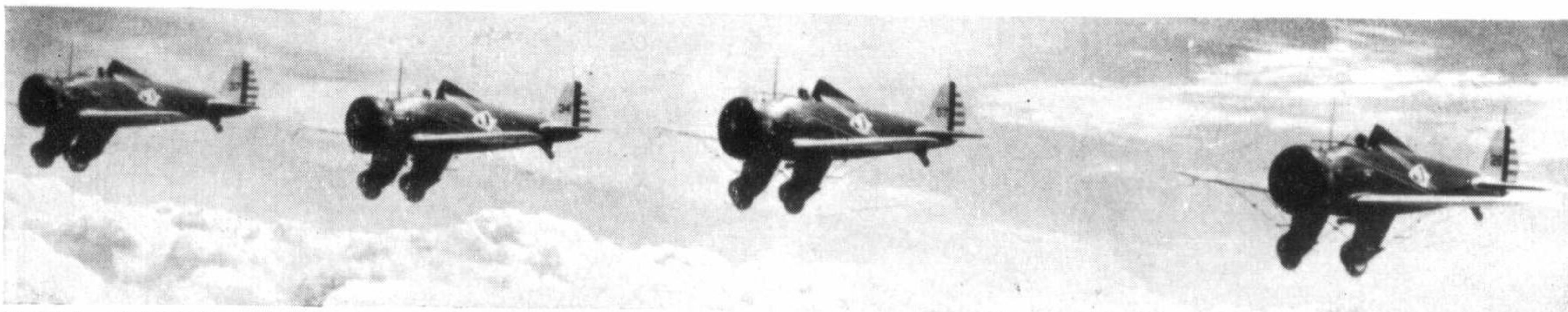
Two of the twenty-five aircraft added to the first P-26A order were completed as P-26Bs (Model 266A), differing only from the 26A in being fitted with fuel injection Wasp R-1340-33 engines and a number of fuel system revisions. The first 26B was delivered to the Army on 20th June and the second on 21st June 1934.

After the fuel injection system had been satisfactorily tested in service, the Army decided to adopt it for the P-26Cs, many of which became P-26Bs upon completion of the modifications. The cost of a P-26B/C was 14,009 dollars, less engine and GFE.

Twenty-three of the 25 aircraft added to the original 111 P-26A order of 28th January 1934, were built as P-26Cs (Model 266) and so little did they differ from the As that the factory model number was not changed. The first P-26C was delivered on 10th February 1936, and the last on 7th March. After about a year in service many of the P2-6Cs were converted

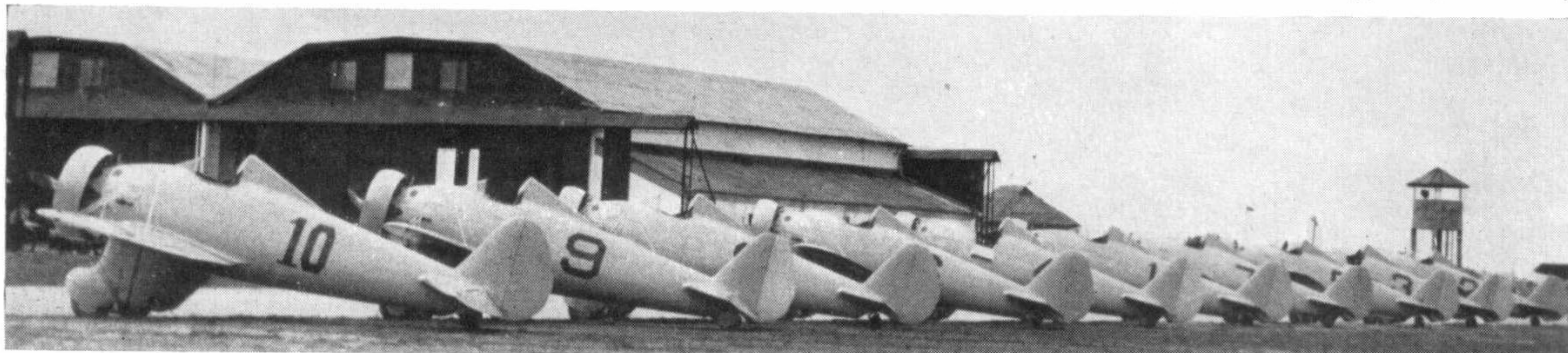
(Photo: U.S. Air Force)





P-26As of 94th Pursuit Squadron in line abreast formation.

(Fred C. Dickey, Jr., collection)



Line-up of ten Model 281s at Canton, China. The first crashed during a demonstration by an American pilot, and the remaining nine were eventually overcome by superior Japanese forces. Below: Refuelling a Model 281 from drums and hand pumps in China.

(Photos: Herbert Poncetti)

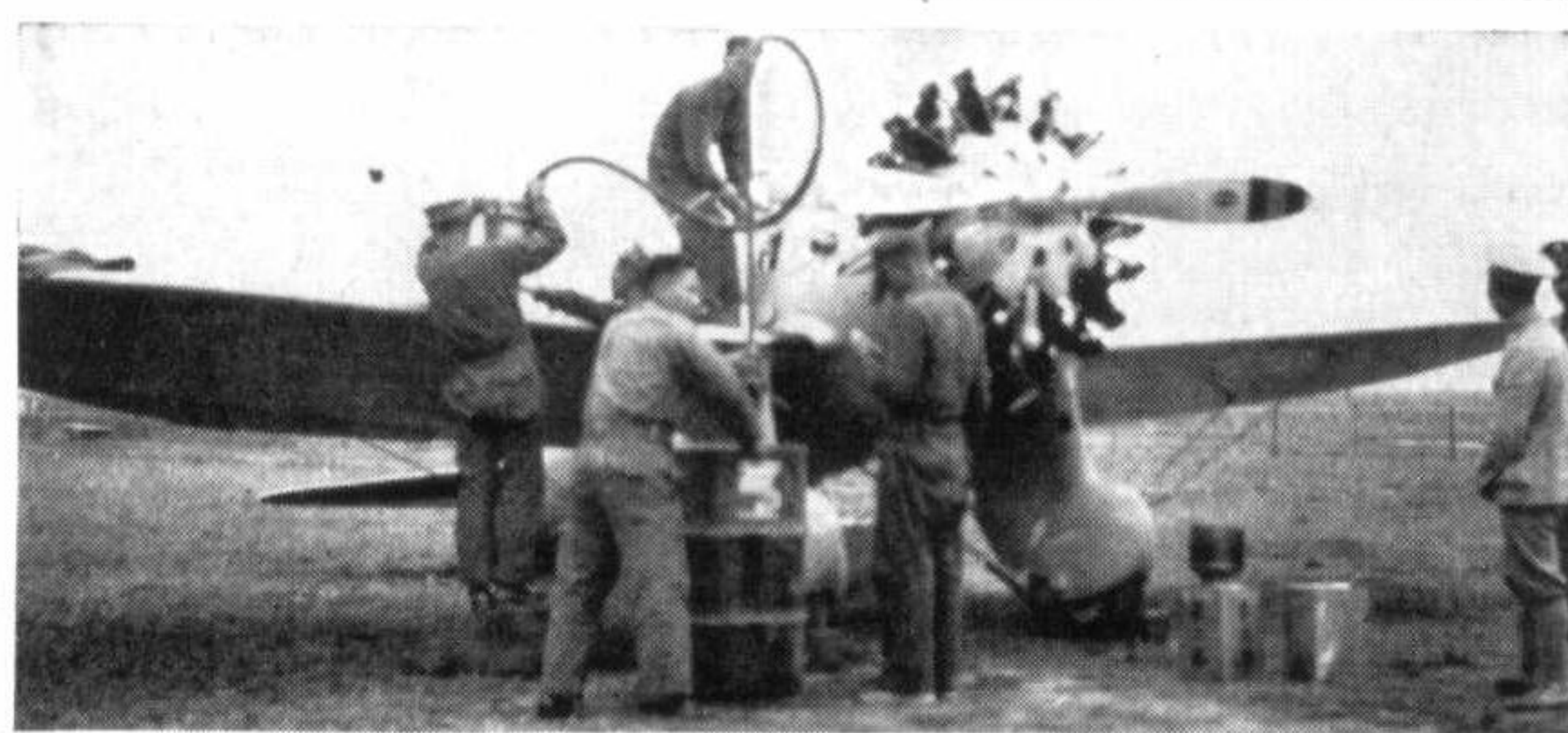
to 26B standards by installation of the fuel injection engine and revision of the fuel system and its controls.

THE EXPORT "PEASHOOTER"

The Model 281 was an export version of the XP-936 and P-26A series, differing only in the details of military equipment. First flight of the Model 281 was made on 2nd August 1934, and early tests indicated that the landing speed was excessive for the small and unimproved fields from which the fighter would be expected to operate. Split-type wing flaps were developed and installed, and were also tested by the Army for comparison with the experimental flaps that the Army had installed on the standard P-26A.

Only twelve export "Peashooters" were completed and sold: one to Spain and eleven to China. The first Chinese aircraft reached its destination on 15th September 1934, and the last was shipped on 16th January 1936. One Chinese fighter was supplied with an alternate landing gear using large, low pressure tyres to permit operation from muddy fields.

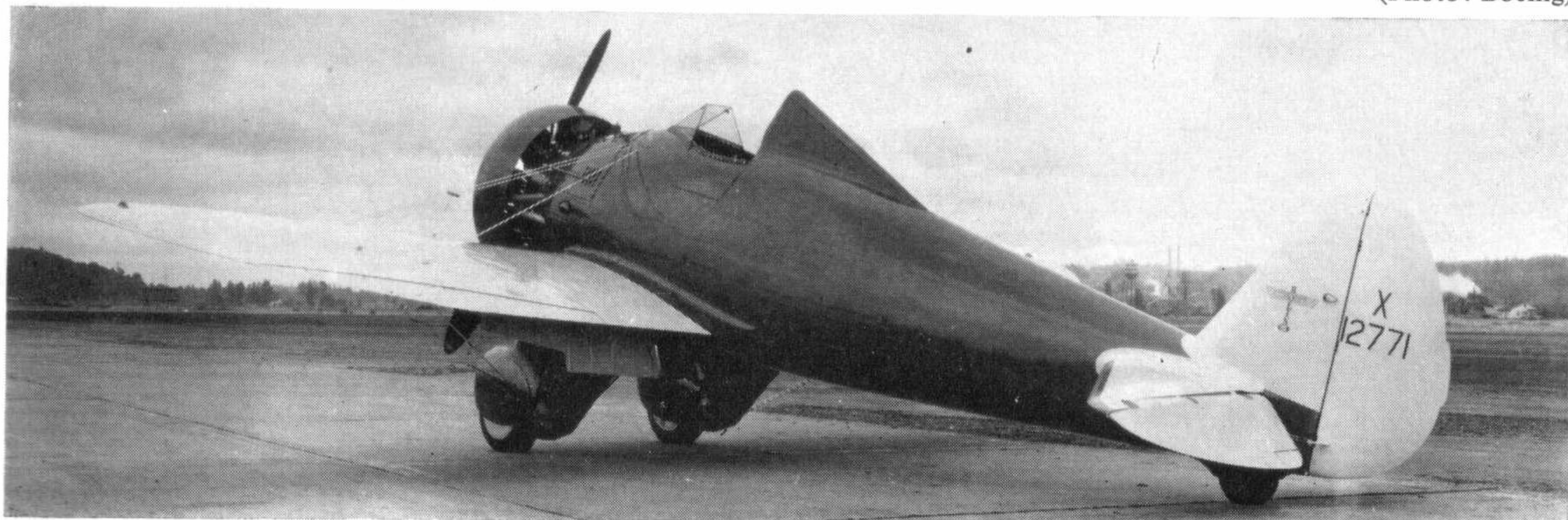
One Chinese squadron operating the Model 281 was continuously in action against the Japanese invaders



on the Chinese mainland, and a considerable number of kills was registered before the fighter was forced out of service through lack of spares.

The Boeing P-26 served as front-line equipment in its various marks with a number of Army Air Corps pursuit and attack squadrons at home and overseas, before being finally replaced by the Curtiss P-36A and Seversky P-35 in 1940. Among the squadrons equipped were the 3rd, 16th, 17th, 18th, 19th, 20th, 27th, 32nd, 34th, 38th, 55th, 73rd, 77th, 79th, 94th and 95th. In its time the fighter was one of the world's most advanced aircraft and it established several military speed and altitude records.

First Boeing Model 281, export version of the P-26A. This aircraft was used by Boeing to develop a flap design that was eventually fitted to all 26As and Cs. (Photo: Boeing)



Richard Ward draws attention to the fact that the illustration on the opposite page represent the results of recent research and should be regarded as superseding material prepared by him for publication elsewhere. ►

Boeing P-10a, 11th Pursuit Squadron, 1st Pursuit Group



11th Pursuit Squadron



1st Pursuit Group



Boeing P-10a,
11th Pursuit Squadron,
1st Pursuit Group



11th Pursuit Squadron



Boeing P-10a,
Group Commander's plane,
11th Pursuit Group

Boeing P-10a,
11th Pursuit Squadron,
11th Fighter Group



11th Attack Squadron



11th Pursuit Group

Boeing P-10a,
11th Attack Squadron,
11th Attack Group



Boeing P-10a,
11th Attack Squadron,
11th Attack Group

11th Attack Group



11th Pursuit Group



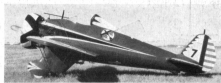
11th Attack Squadron



Boeing P-10a,
11th Attack Squadron



Boeing P-10a, 11th Attack Squadron



Above: P-26As recovered from Guatemala by The Air Museum and U.S.A.F. Museum respectively. Left a/c has blue fuselage and red/white striping and Thunderbird insignia of 34th Attack Squadron. Right a/c has black and white striping and olive drab fuselage (Photos: North American and E. M. Sommerich). Below: Air Force photo of an actual P-26A of 34th A. Sqdn. shows that true markings were different from those on both restorations.

SPECIFICATION

	DIMENSIONS				PERFORMANCE					WEIGHTS		ENGINE	FUEL
	Wing Span	Length	Height	Wing Area	Max. Speed 6,000 ft.	Cruising	Landing	Climb F.P.M.	Service Ceiling	Empty	Loaded	Pratt & Whitney	Gallons
	ft. in.	ft. in.	ft. in.	sq. ft.									
P-26 (XP-936)	27 5	23 9	7 6	150	277	193	82.5	2,230	27,800	2,120	2,789	R-1340-21 525 h.p.	105
P-26A	27 11½	23 10	10 5	149.5	234	200	73	2,360	27,400	2,196	2,955	R-1340-27 500 h.p.	50-106
P-26B	27 11½	23 9	10 5	149.0	235	200	73	2,360	27,800	2,301	3,060	R-1340-33 600 h.p.	107
P-26C	27 11½	23 9	10 5	149.0	235	200	73	2,360	27,800	2,332	3,074	R-1340-27	104
Model 281	27 11½	23 7½	7 10½	149.5	235	210	68	2,210	28,200	2,354	3,039	R-1340-33	—

CONSTRUCTOR'S AND SERIAL NUMBERS

Boeing Model	Military Designation	Number Built	Boeing Construction No.	Military Serial	First Flight	First Delivery	Last Delivery
248	XP-936	3	1678	32-412	20-3-32	13-3-32	25-4-32
248	XP-26	—	—	—	—	—	—
248	Y1P-26	—	—	—	—	—	—
248	P-26	—	1679 1680	32-413 32-414	—	—	—
266	P-26A	111	1804 to 1914	33-028 to 33-138	10-1-34	16-12-33	30-6-34
266B	P-26B	2	1916 1919	33-179 33-185	10-1-34	20-6-35	21-6-35
266	P-26C	23	1915, 1917, 1918, 1920 to 1939	33-186 to 33-203	—	10-2-36	7-3-36
281	None	12	1959 to 1962, 1965 to 1972	None	2-8-34	15-9-34	15-1-36

