

CF-OBG was the prototype Mk. V (for "Victory") Norseman and it was delivered to the OPAS shortly after VE Day.

The Saga of the Norseman

By ROBERT G. HALFORD

WHEN BOB NOORDUYN died in February of this year, he left behind him an aeronautical legacy that will ensure his name being long remembered in the aviation world. This legacy is, of course, the Norseman bushplane, which in its way is as much a design classic as the ubiquitous DC-3.

Clear endorsement of the unique qualities of the Norseman, essentially unchanged in aerodynamic design since the original aircraft was laid

down in 1935, may be found in the simple fact that hundreds of the type are still being used profitably by commercial operators in an estimated 21 countries throughout the world.

The exact number of Norsemen still flying is not known. At last count there were some 106 on the Canadian Civil Aircraft Register alone. The type is also widely used in the U.S. (especially in the new state of Alaska), as well as New Guinea and various South American countries.

Still on Sale: Nearly a *quarter of a century* after the first flight of the Mk. I prototype, it is still possible to buy a new-built Norseman V. Though serious attempts at series production of the Norseman ended when Canadian Car & Foundry Co. Ltd. sold all rights back to Bob Noorduyn in 1953, new aircraft are still being assembled, usually to order, from time to time. As recently as this spring Noorduyn Norseman Aircraft Ltd. of Montreal completed a machine, bringing to five

the number that have been built since 1953 (three by Noorduyn Norseman Aircraft*, two by Curtiss-Reid Mfg. Co. Ltd.). As the situation now stands, it appears that this most recent Norseman, a Mk. V, CF-LFR, may be the last of the breed ever built.

Individually, Norseman aircraft have also demonstrated a remarkable longevity. The Mk. I prototype, CF-AYO, saw continuous service from the time of its first flight late in 1935 until August 28, 1953, when it was written off in an accident in the Georgian Bay district of Ontario.

There are still some 15 Mk. IV's, the main pre-war production version, on the Canadian Civil Aircraft Register. Of these, the earliest appears to be CF-CRU, which bears the Serial No. 8. This particular aircraft, built in late

*Noorduyn Norseman Aircraft Ltd. has through the years been the owner of all the rights to the Norseman airplane. It has usually operated as a subsidiary company, first of Noorduyn Aviation Ltd., which after World War II sold the subsidiary and all its assets to Canadian Car & Foundry Co. Ltd., who in turn sold it back to Bob Noorduyn and his associates in 1953. It is now operated as an independent company under its own name.

A FIFTIETH ANNIVERSARY FEATURE



1936 or early 1937, is now owned and operated by McMurray Air Service Ltd. of Uranium City, Sask.

Lineage

WITH AIRPLANES, as with humans, conception and gestation are not counted in recording beginnings, and so the date of a new airplane's birth is usually that of the first flight of the prototype. However, the Norseman was a very unusual airplane in that like the DC-3, it was the right airplane at the right time.

It incorporated no revolutionary innovations insofar as design was concerned, but it is noteworthy though

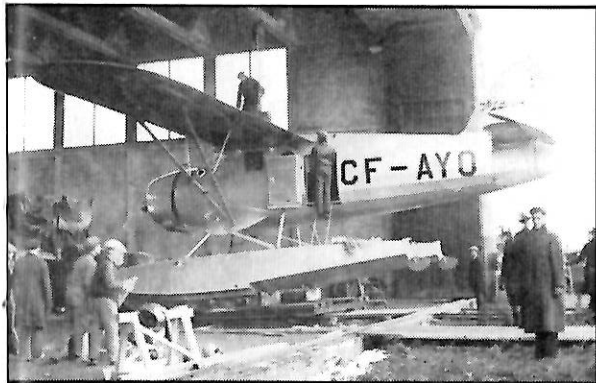
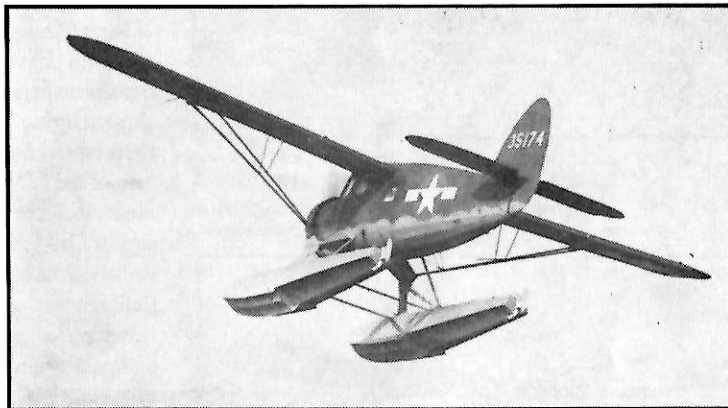
not necessarily unique in that when it appeared on the scene it was almost fully developed aerodynamically. With the exception of the powerplant changes which resulted in the production Mk. IV, the Norseman underwent few major design changes in all the long years of its life**. For this reason, the genesis of the design is of more than passing interest.

Sowing the Seed: To find the beginnings of the Norseman it is necessary to trace the aeronautical career of Robert B. Cornelius Noorduyn, for the Norseman design was uniquely his own creation. Some time during the 20 years he spent assimilating aircraft design and production experience and know-how before coming to Montreal to initiate the Norseman project, the seed was sown.

Bob Noorduyn was born at Nijmegen, Holland, in 1893 and after receiving his formal education in his homeland and in Germany, he immediately emigrated to England where in 1913 he entered the aircraft industry

**With the exception of the CanCar-developed Mk. VII, about which details are given later in this article.

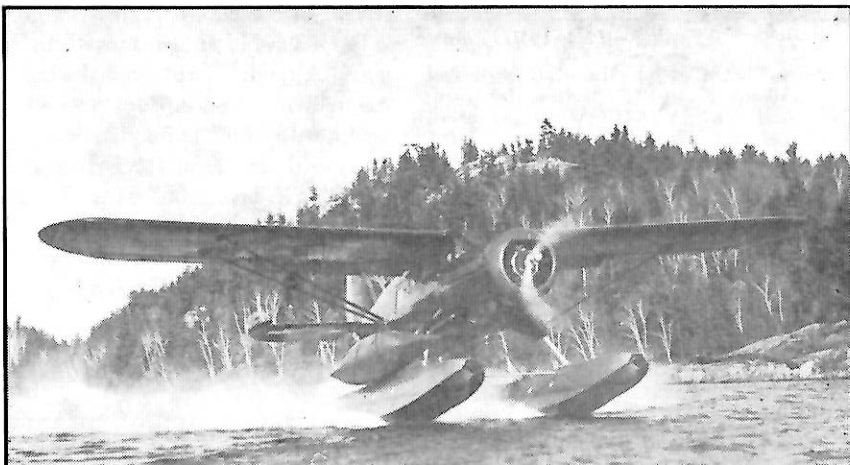
A USAAF UC-64B following take-off at Montreal. "B" differed from "A" only in that it was factory fitted with floats. Only six were built.



—Photo by J. F. Sears

The prototype Mk. I, AYO, is shown in its original silver paint, in 1935. This aircraft was first operated by Dominion Skyways. It remained in use until mid-1953.

A familiar northland sight: an Austin Airways Norseman V "on the step". Over 100 Norsemen are still registered in Canada.





—Photo by J. F. Sears

Only three Mk. II Wright-powered Norsemen were built. The first one was CF-AZA, above, at Cartierville.

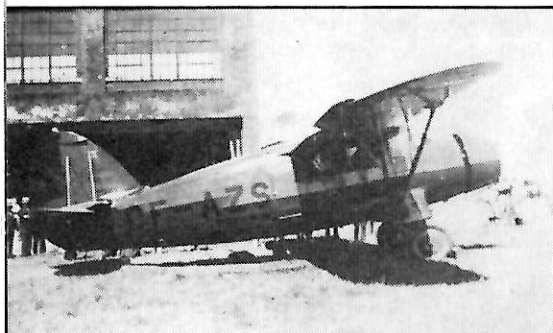


—National Defence

The repainted prototype, AYO, is shown prior to delivery to its first operator, Dominion Skyways, in January 1936. It was written off in August 1953.

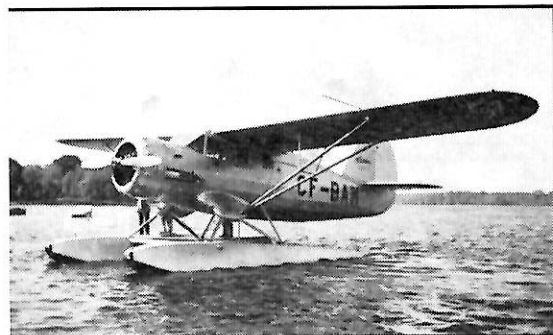


AZE was the second Mk. II. It was bought by the late Robert Cockran as his personal prospecting aircraft.



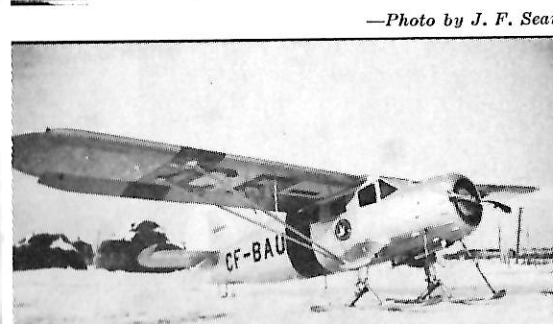
—Photo by J. F. Sears

The third and last Mk. II, AZS. A smooth cowling was a recognition feature of these Wright Norsemen.



—Photo by J. F. Sears

Above, BAM, first Mk. III, powered by 550 hp Wasp "C". Below, the number one Mk. IV, "H" Wasp powered.



—Photo by J. F. Sears

as an apprentice at Sopwith Aviation Ltd. He later moved to Sir W. G. Armstrong Whitworth and then to British Aerial Transport Co. Ltd. It was while with this latter firm that he first became associated with an aircraft of commercial design.

He joined the Fokker organization in 1920 and went to the U.S., at that time as assistant to Anthony Fokker, later becoming representative and manager in the U.S. for the Fokker company. During the period that Noorduyn was associated with Fokker, he was responsible for, among other things, the design of the Fokker Universal.

First Design Experience: This appears to have been his first original design experience with the high-wing single-engine monoplane configuration that later came to be accepted as the "standard" for what eventually evolved into the "bush" airplane. It should be pointed out, however, that the Universal was not designed particularly as a bush airplane. Indeed, the idea of a specialized airplane for operations in undeveloped areas did not develop clearly until some time later. The Universal was simply representative of the state of the art and the outcome of what was thought to be the design requirement for a commercial airplane of the period, for service in the U.S.

In 1929, Noorduyn moved to Bellanca Aircraft Corp. and during his tenure with this company was closely associated with the design and production program for the Bellanca Skyrocket. The layout and general appearance of the Skyrocket make it clear that the thinking that was to result in the Norseman was already beginning to take shape.

Noorduyn left Bellanca in 1932 for

a two year stay with Pitcairn Aircraft Inc. It is obvious that during this period Bob Noorduyn must have been sorting out in his mind the idea for the Norseman, if he had not actually already begun to work on it. So it was that in 1934 he moved to Montreal and formed a company called Noorduyn Aircraft Ltd. to design and develop the airplane that was to become the Norseman.

The Requirement: He knew, from interviews with operators and from his experience with Fokker and Bellanca, that there was a requirement for a high-wing single-engine monoplane of rugged construction with a capacious cabin, and able to get into and out of confined areas with a respectable load. And of great importance, it had to be readily convertible from wheels to floats to skis as conditions demanded.

Up to that time, most of the available airplanes had been designed as landplanes, to meet the somewhat less strenuous conditions of U.S. operations from airfields. Float and ski versions were straightforward adaptations of the basic landplane versions. Often an airplane that was an acceptable performer on wheels, left much to be desired when fitted with floats.

There were exceptions, of course. All of the current airplanes possessed one or more of the desired attributes of the ideal bushplane, but none combined the whole list in one neat package. This is what Noorduyn set out to do in the Norseman.

Cutting Metal: Design work went ahead quickly and it was soon far enough advanced to start work on the first airplane. To undertake production of the Norseman, another company, Noorduyn Aviation Ltd., was formed in 1935.



—Photos by J. F. Sears

Though BAU was the first Norseman to be powered by the Wasp "H" (R) and therefore the prototype Mk. IV, when it was bought by Canadian Airways they already owned a "C" Wasp which was installed in place of the "H" (L).

Work on the prototype started early in 1935 and late in the same year the first machine took to the air for the first time with the late John McDonough at the controls.*** This aircraft was CF-AYO, Norseman Mk. I, powered by the Wright R-975-E2 Whirlwind rated at 420 hp at sea level. There must have been a negligible amount of development work required because AYO was sold and delivered to Dominion Skyways in January of 1936.

Just one Mk. I was built and this was quickly followed by the Mk. II, which was also powered by the 420 hp Wright Whirlwind (R-975-E3). Only four Norsemen all told were powered by the Wright engines, three of these — AZA, AZE and AZS — being Mk. II's.

Time of Trouble: By this time, it was becoming uncomfortably clear that with the 420 hp Wright engine, the Norseman was undeniably underpowered. The embryo company was faced with a major crisis: if it did not provide sufficient power in the airplane

to give the take-off performance the operators were demanding, it could count on an early collapse. Fortunately, the day was saved by the development and introduction of the Mk. III variant powered by the 550 hp Pratt & Whitney Wasp SC1, colloquially known as the "C" Wasp. The Noorduyn company survived to go on to greater things and to carve for itself an everlasting niche in aviation history.

There is considerable disagreement among those associated with the Norseman in its early days as to how many Mk. III's were built, and which airplane was the first Mk. IV.

It is generally accepted that BAM, the No. 5 airplane, was the Wasp C powered Mk. III prototype. It appears also that the next three airplanes may all have been Mk. III's insofar as structural and gross weight limitations were concerned, but one of them is understood to have become the first to be powered with the Wasp R-1340 S3H1 engine and therefore the prototype of the Mk. IV series.

J. F. Sears, an engineer on the Norseman almost from its beginnings, (now manufacturing project engineer for Bristol Aero-Industries, Winnipeg) has notes indicating that BAU, the No. 6 airplane, was the prototype Mk. IV. Oddly enough, however, BAU was bought by Canadian Airways, who had a Wasp SC1 which they wished to put to use and therefore installed it in BAU in place of the H Wasp, which had made this airplane the prototype Mk. IV. BAU thus reverted to the Mk. III classification.

BAU was followed by BAV and BAN, both of which are thought to have been Mk. III airframes, but powered by the H Wasp. The picture of this period of production is further confused by the fact that all of the

early airplanes were eventually converted to Wasp H power, and some of the original Wright-powered machines also spent a period with Wasp C power.

In any event, it appears that machine No. 9, BAW, marked the beginning of series production of the Mk. IV.

More Power: The Mk. IV was essentially the same in most major respects as the Mk. III, except that it had the more modern and more powerful Wasp H (600 hp for take-off) in place of the Wasp C. The introduction of the Wasp engine achieved the desired result insofar as take-off performance was concerned, but at the expense of a very slight decrease in allowable payload in all configurations. This was mainly due to the difference in weight between the H Wasp and the earlier engines and while it was possible to absorb some of this additional weight by increasing the gross weight to the Mk. IV's 6450 pounds, of necessity there was some nibbling at the payload.

However, in still air conditions, at sea level, fully-loaded the Mk. IV sea-plane could get off the water in 22 seconds as compared to 26 seconds for the Mk. II. And then, as now, short take-off ability was much appreciated in a bushplane, so that the slight decrease in payload was a penalty well worth accepting in exchange for quicker take-off and climb-out.

Apart from the different powerplants, the various models of these early Norsemen had a number of other distinguishing features. The Mk. I had a gross weight of 6050 lbs. and was fitted with Edo 6235 floats. With the Mk. II and III, the weight went up to 6235 lbs., but the floats remained the same. The Mk. I and II all had the spline type of undercarriage shock

***This flight was the only one made by McDonough. Thereafter the test flights were carried out by E. Leigh Capreol who, within a day or so of the maiden flight was appointed permanent test, development and sales pilot for Noorduyn, a position he retained until 1945. "Cap" Capreol is now manager of Montreal Airport, Dorval, P.Q.

THE NORSEMAN RECORD

Model	No. Produced
Mk. I	1
Mk. II	3
Mk. III	4(?)
Mk. IV (inc. 7 USAAF YC-64)	92(?)
Mk. VI	
UC-64A	746
UC-64B	6
Other	15
	767
Mk. V (for "Victory")	55
Mk. VII	1
Total	923