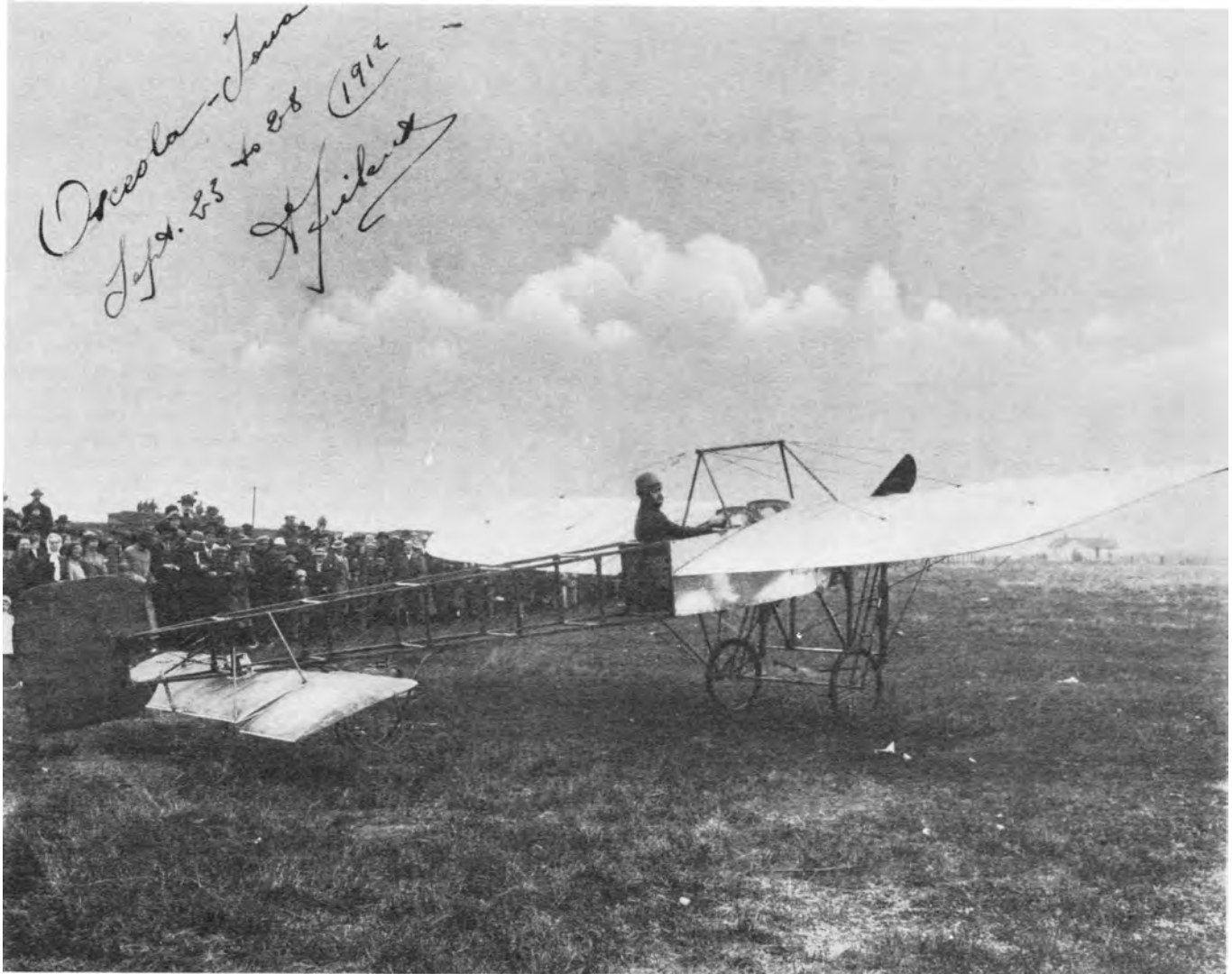


BLERIOTS - PAST AND PRESENT

By E. D. "Hud" WEEKS



September 1912. The residents of Osceola, Iowa see their first airplane, the Bleriot XI, piloted by an unidentified French barnstormer touring the U. S. The cane type tailskid was introduced in 1911. (Photo - E. E. "Hud" Weeks as are all photos except as noted.)

Some aeroplanes have so much character that world-wide admiration for them never wanes. Louis Bleriot's Monoplane, Model XI of 1909, was such an aeroplane, a happy combination of advanced ideas wrapped up in an elegant package. The Bleriot XI was the world's first successful monoplane and it left its mark somewhere on every aeroplane built thereafter right down to the present.

My curiosity concerning the high model number eleven at the early date of 1909 prompted some research on my part to see if I could date and identify the preceding ten failures. The results follow and I welcome corrections from A.A.H.S. members. The Assistant Curator, Mssr. St. Victor, of France's Musee de l'Air is

also working on a Bleriot model document and was most helpful. I might add that the early aero magazines and books were about as accurate, in matters aeronautic, as your local newspaper is today.

Bleriot I, 1901.

This early experiment was an ornithopter [1] which beat itself to death when power was applied [2]. I have not been able to locate an illustration of the attempt.

Bleriot II, 1905.

This was a Biplane tow glider on floats [3]. Louis

Bleriot associated with Henri Voisin in this experiment [4] It was a typical Voisin box-kite with front elevators. Except for the high angle of attack, it appeared to be as flyable as the later Voisins as it rested on its floats in the illustration in reference [4].

Bleriot III, 1906.

Model III was a curious circular-cell biplane mounted on floats. It was powered with an Antoinette engine driving two propellers. Flight tests made on Lake d'Enghein were not successful. A second Model III was the same airplane but with two engines. However, the craft would still not take off.

Bleriot IV, 1906.

This experiment, known as "Bleriot's Folly", was another box-kite on floats, and Bleriot retained the circular cell in the empennage. Likewise, its flight tests were not successful. As a floatplane it is illustrated in references [4] and [5]. A different Model IV was the same airplane with wheels. It crashed at Bagatelle in November 1906.

Bleriot V, 1907 March - April.

Model Number V experiment was a Canard monoplane with Taube (dove) type wing tips. An Antoinette engine powered the pusher propeller. Some short "vols" (Fr. slang, flights or hops) were accomplished with it at Bagatelle [6].

Illustrations of Model V appear in references [6], [7] and [8]. It was quite streamlined for its day, with paper used for wing cover. It was destroyed in a crash in April of 1907 after frequent modifications of the rudder and landing gear. Bleriot's engines were too heavy and his airframes were too fragile. Also, he did not know how to fly. His knowledge of the center of pressure, span/chord ratio, or propeller and wing camber was hazy. Like other French experimentors, he suspected that the Wright Brothers were then flying, but Hargrave and Langley still dominated his thinking. About all he had in his favor at this point was money, fortitude and determination.

Bleriot VI, Fall, 1907.

This experiment, a tandem monoplane of the Langley type, was called the LIBELLULE. A descriptive front view drawing appears in reference [9], and it is illustrated in flight at a quite steep stall angle in reference [6]. At Issy, Bleriot flew the LIBELLULE approximately 184 meters, reaching an altitude of 18 meters in the process.

LIBELLULE was powered with an Antoinette engine which drove a tractor propeller. French propellers of this period were crude, being nothing but fans, metal plates welded to tubes at an angle to push air.

LIBELLULE featured deep dyhedral and the wing tips rotated for lateral control. Two fixed wire wheels in the front and a wire tail wheel provided a thoroughly adequate alighting gear. The sides and top of the fuselage appeared to be covered.

Though it crashed, LIBELLULE was considered Bleriot's initial success. It looks like an aeroplane an experienced pilot could have flown successfully with minor modifications. It appears to be in a museum in reference [10].

Bleriot VII, Fall, 1907.

This Langley-type double monoplane (wings mounted in tandem) was advanced in design, the first airplane with a completely covered fuselage, [11]. Chinese paper was the covering material. Model VII was powered with an 8-cylinder engine which drove a 4-blade tractor

propeller at the pointed nose. Flying wires appear beneath the wings in illustration [11]. The landing gear was similar to Model VI.

Another reference, Janes' 1909 [12] illustrates this airplane in detail but identifies it as a Bleriot Model IV. All references considered, this must have been a typographical error, probably a transposition of the Roman Numeral I ahead instead of after the V. No lateral control surfaces show in the above references, however, Janes states ailerons were incorporated in the wings.

At this date, as we go to press, I cannot yet accurately translate Musee de l'Air's description of VII. They recently wrote that LIBELLULE Model VI crashed at Issy 17 December 1907 and that Model VII crashed on the next day, December 18th, after making a 180 degree turn. If this is not a typing error, Bleriot was a furious experimenter.

Bleriot VIII, October 1908.

In this airplane we see many of the famous Bleriot XI, the Channel Model, features emerge. There is the bungee-sprung, castoring, main landing-gear and tail wheel. The fuselage is covered only to the ear of the pilot's seat. There is the sawhorse-type cabane structure for the landing wires [11].

Bleriot VIII was larger and taller than the Channel Model. The wing tips rotated for lateral balance. The power was a 50 h.p. Antoinette water-cooled V-8 engine.

After a 700 meter flight at Issy in Model VIII, Bleriot flew his famous cross-country hop from Toury to Artenay (France) and back. A monument at Toury marks this feat. Reference [11] shows Model VIII equipped with rotating tip elevators used on the Channel Model. However, for the Toury-Artenay flight, Bleriot had installed a horizontal stabilizer on the top rear of the fuselage and a stabilizer (combination stabilizer and elevator) below. VIII is the only Bleriot, other than Cole Palen's XI, I have seen equipped with a square "postage stamp" rudder.

Model VIII is the one shown flying in the widely reproduced photograph of Bleriot flying over a fanner plowing with a team of horses. There is something wrong with the proportions in this famous photo. My guess is it's a faked print. I don't think that Model VIII was preserved. It crashed while taxiing. Musee de l'Air wrote that Model VIII had a span of 11 meters. The second Model VIII was the same airplane with the span reduced to 8.5 meters, and in addition, had the changes inaugurated as a result of Bleriot's Toury-Artenay flight.

Bleriot IX, October 1908 - July 1909.

Janes' first annual edition of 1909 [12] provides fairly complete specifications for this model also. No where else can I find a word about it. Like VII, it probably crashed on initial tests and passed into oblivion.

It was Bleriot's biggest airplane, measuring 39 ft. long, with 269 square feet of surface. Compare this to 23 feet and 150 square feet for the Channel XI model. The power in Model IX was a 16-cylinder Antoinette engine. Total weight was 1,234 pounds against 660 pounds with pilot for XI.

Bleriot employed a vee-type fuselage in the Model IX, the forward two-thirds of which was covered. Its wings were parchment covered. All in all, it appeared to be an elongated No. XI and, except for the wing cover, one cannot see why it did not give excellent results. As in Model VIII, the control surfaces on No. IX featured rotating wing tips, twin elevators above and single stabilizer below the fuselage. The rudder on IX is a large oblong with rounded edges, a design more often seen on later models.

Bleriot X, October 1908 - early 1909.

Wilbur Wright went to France in the summer of 1908 with his 1907 Model Wright. He demonstrated complete mastery of all basic flight problems. He climaxed his visit by taking the \$4,000.00 Michelin Prize on 31 December 1908 with a 140-minute flight of 90 miles. None of the French aeroplanes, Voisin, Farman, Bleriot, Ferber, Dumont or Pelterie put up much competition.

At Le Mans, on August 15th, Bleriot was so excited at witnessing Wilbur's first figure-eights that he could not speak. Everyone present threw their hats in the air [13]. Bleriot stated then that he was going to use "wing-warp" as a means of control [14]. His rotating wing tips, with their over-balance, were probably setting up excessive drag when used for lateral control. There is no doubt that the Wright plane had a profound effect on Bleriot.

Bleriot X, August 1908 - early 1909.

Again, only in Janes' 1909 (P. 135) can I find information on Bleriot Model X. A retouched photo therein shows only the wing cells from the left side.

Model X was a Wright type biplane with a 39.5 foot span. Janes stated that steering was by twin vertical forward rudders and horizontal rear rudders. There is no mention of lateral control. It is a guess that this one 'never got out of the barn'.

Total surface area was 646 square feet. One could speculate the large Wright area of 538 feet influenced Bleriot on this biplane design and also the large area of the Model IX monoplane.

In the Spring of 1909 Bleriot evidently evaluated his progress step-by-step for he abruptly returned to the Model VIII design and set to work on a small light monoplane which was destined to become the famous "Channel" Bleriot, Model XI.

Model XI, July 1909.

Heavy water-cooled engines had always hampered Bleriot. Model XI was built smaller and much lighter than any of his previous monoplanes, to accommodate a new air-cooled 3-cylinder 25-horsepower engine, a version of the Z-cylinder engine which Anzanni had developed for motorcycles.

Starting with the fairly successful Model VIII layout, he eliminated the rotating tips and used the Wright wing warp system for lateral control. All flight surfaces and the fuselage to the rear of the pilot's seat were fabric covered. A fine Chauvier propeller was now available and was employed. A single horizontal stabilizer with elevator tips replaced his double surfaces. The rudder is to be discussed later.

Here, for the year 1909, was a fairly sophisticated aeroplane; a tractor monoplane with the pilot's seat inside the fuselage, stick and rudder control, cross-wind main landing gear and tail wheel, all with spring action, and an air-cooled power plant. Bleriot had created the plan that was to be adopted and used with **minor modifications for decades.** (see box)

Biplanes ruled the skies during World War I, largely because Tom Sopwith's 1913 "Tabloid" Biplane (speed) range 36 to 92 mph., climb 1200 fpm, fuel 3.5 hours, two passengers) proved that a fast, strong, small, easy-to-fly biplane could be built. It added up to a more practical front-line war machine. However, we can't overlook the fact that the French Deperdussin monoplane set a speed record of 124 mph (200 kilometers per hour) as early as 1913, a speed reached by few biplanes at the war's end in 1918. Monoplanes were just too hot and tricky for green pilots and bad fields, and their wire braced wings were less aerobatic.

Model XI's successful crossing of the English Channel in July 1909 solved Bleriot's financial plight. He had been a successful autolamp inventor. In the past five years he had built and crashed ten machines, spent 30,000 pounds (approx. \$150,000), and at 37 years of age was pretty well beat-up both physically and financially. [15]

The Channel flight brought in nearly 4,000 pounds (approx. \$20,000) in all. Contracts for his machines followed quickly. From 1909 to 1914 he built 800 air-planes in 40 different styles, mostly versions of Model XI, under Roman Numerals as high as XXVII.

Model XI design was beefed-up and powered with 50, 80, 100 and 160 hp Gnome and 80 hp Le Rhone engines. It was produced in both 2-place side-by-side and tandem versions. Clipped-wing models, called "Penguins", were used as trainers, throughout the War of 1914-1918. These little "grass cutters" as they were also called, were immortalized in the many accounts of the Lafayette Flying Corps that came out of the War.

Model XI versions monopolized the air meets, tours and races. They flew the Alps, won the Paris-Rome, Paris-Madrid and Gordon Bennett Cup Races in 1910. In 1911 they took the circuits of Britain and Europe with Conneau as pilot. In a XI Bis Pegoud performed the first loop.

The money rolled in and Bleriot purchased the Deperdussin Company which became one of the largest wartime aircraft producers. By the Armistice, the Societe pour Appareils Deperdussin, from which came the initials S.P.A.D., was producing 18 Spads per day, mostly of the type XIII C.1 which came into general use by French and American pursuit squadrons.

Bleriot XII, 1909.

Just a word on this model, the "Rheims Racer", a big 258 square foot surface monoplane. It was powered by an 80 hp V-8 water-cooled engine and was produced in several versions. It is shown on page 102 of Janes 1909 edition with what appears to be a 35 hp Anzani.

The Model XII had a deeper fuselage than other Bleriot's with no covering. Engine and pilot were both located underneath the high wing. A tractor propeller was chain driven. The horizontal stabilizer and elevator were again separated above and below. A dorsal fin extended along the top of the fuselage from wing to tail where the rudder was attached. There were two small horizontal surfaces on either side of the pilot, for reasons difficult to explain.

The Rheims Racer looked thoroughly flyable, and made the fastest lap time at Rheims, but crashed and burned in an attempt to beat Glenn Curtiss' full race time. Curtiss, an ex-racer, out-manuevered Bleriot with tight, diving turns at all pylons.

There does not appear to be much in basic differences in the layout of the Bleriot XII and a modern day private aircraft of today, say the Cessna 180 for instance. Both are high wing monoplanes with tractor propellers and cross-wind gear.

FOOTNOTES: [1] Victor Loughheed, VEHICLES OF THE AIR. Chicago: Reilly & Britton, 1910. P.135.

[2] Clarence Winchester, WONDERS OF WORLD AVIATION Vol. 1. London: The Fleetway House, about 1910. P. 507.

[3] Ibid, VEHICLES OF THE AIR. P. 135.

[4] Dollfus & Bouche, HISTOIRE DE L'AERONAUTIQUE. Paris: L'Illustration, 1942. P. 180.

[5] Year, Inc., Editors, FLIGHT, A PICTORIAL HISTORY OF AVIATION. New York: Simon & Shuster, Inc., 1953. P. 39.

[6] Ibid, HISTOIRE DE L'AERONAUTIQUE. P. 186.

[7] August Scherl, AVIATIK MAGAZINE. Berlin, about 1910. P. 48.

[8] John W. R. Taylor, PICTURE HISTORY OF FLIGHT. London: Hulton Press, 1955. P. 48.

- [9] Ibid, HISTOIRE DE L'AERONAUTIQUE. P. 52.
- [10] Ibid, FLIGHT. P. 52.
- [11] Ibid, HISTOIRE DE L'AERONAUTIQUE. P. 194.
- [12] Fred T. Jane, ALL THE WORLD'S AIRCRAFT, 1909.
London: Salmson, Lowe, Marston & Co., Lt.,
1909. P. 135.
- [13] Library of Congress, Marvin W. McFarland, Editor,
THE PAPERS OF WILBUR AND ORVILLE WRIGHT.
Wash.: U.S. Gov't Printing Office, 1949 P.912.
- [14] American Heritage Editors, HISTORY OF FLIGHT.
New York: American Heritage Publishing Co.,1962.
P. 152.
- [15] Ibid, WONDERS OF WORLD AVIATION, Vol. 1.
P. 509.

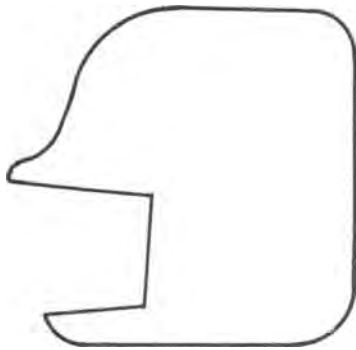
BLERIOTS FLYING TODAY

Shuttleworth Collection, Model XI, No. 14.

A letter to Squadron Leader L.A. Jackson, (RAF), at Old Warden Aerodrome, Biggleswade, Bedfordshire, England, brought a prompt and interesting reply. He has custody of the 22 aeroplanes in the Collection, the oldest of which are three monoplanes, the Anzanni-powered Channel Model XI, a 1911 Deperdussin and a 50 hp Gnome-engined Blackburn.

Richard Orme Shuttleworth lost his life in 1940 while serving in the Royal Air Force. He left this collection of aircraft in trust. These 'aeroplanes' are maintained in flying condition, which is quite a feat in these times, airplanes being highly perishable. Imagine the world's aero museums having funds to do likewise.

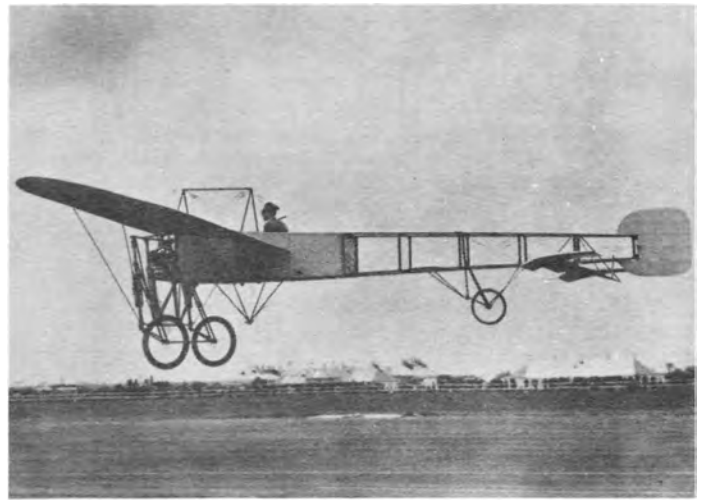
S/L Jackson describes the tip elevator position of the Shuttleworth Model XI in flight as "desperate", and the warp control as useless on the 25 hp model. Further, he states that it is a matter of history that Louis Bleriot had to creep thru a gap in the Dover Hill with his 250 feet of altitude in his cross-Channel flight. To make a flat turn in the 1909 Bleriot requires a very large area and they rarely attempt it with their airplane. It has a top speed of 38 mph.



The rudder outline traced from a photo of Bleriot's Model XI "Channel Crosser" made after his landing near Dover.

Palen Collection - Bleriot XI, No. 56 and Bergdoll-Palen Bleriot XI

In an article for Antique Aeroplane News, Sept. 1956 Cole Palen describes finding the remains of this airplane at Laconia, N.H., less engine, wings and stabilizer. A photograph of it is shown here, before restoration. A look at another picture of the airplane



The Shuttleworth Collection Bleriot XI, Number 14, at the Farnborough Air Show with 25 hp Anzanni engine.

in flying condition and one begins to realize the work involved in these projects.

Palen uses a "Y" Anzanni engine in No. 56 and he has tried it mounted both behind and out front of the "bedstead", slang terminology for the engine/landing gear frame.

Like Squadron Leader Jackson, Palen says about his first flights, "Rudder, wing warp and threatening words gave no corrective action. The thing seemed to be absolutely unmanageable and useless as an aeroplane." He uses a tail wheel instead of a skid.

Most A.A.H.S. Members and antiquers have heard of or read about Cole Palen, and many have visited his replica-World War I aerodrome in the woods near Rhinebeck, New York, where he keeps his collection of a dozen or more originals and replicas.

In writing to Cole recently for photos, I was interested to learn that he had acquired Bergdoll's original Bleriot XI with a number in the 150 series. Its Anzanni engine is in the Franklin Museum in Philadelphia, the city where Grover Cleveland Bergdoll lived. The airframe has been rebuilt. At present I have no photographs of this airplane and therefore cannot describe it.



The remains of a Bleriot XI, Number 56, as they were when they were purchased by Cole Palen for restoration.



Cole Palen's restored Bleriot XI, Number 56. The engine was installed in the rear of the "bedstead" at this time. Also the position of the tip elevators is very pronounced.

Tallman Bleriot XI.

Many people have seen this beautiful replica in movies, magazines, newspapers or on television. Many of us are fortunate to have seen it fly. It was built by master craftsman Stan Green at the Calgary Institute of Technology in Canada in the early 50s, using information supplied by Sqdn. Ldr. Jackson. Green sold it to a Frenchman, Jean Salis, who flew the Channel in it in 1959 to commemorate the 50th anniversary of Bleriot's crossing.

Tallman acquired it in France for the motion picture, LAFAYETTE ESCADRILLE. It has the late-type trailing elevators and a 65 hp Continental engine for power. The engine was moved out in front of the "bedstead" by

Tallman. Until he obtained the "right" propeller for it, Tallman described it as a "dog" in the air. It is now a strong flyer.

Provolt-Weeks Bleriot XI.

Harry Provolt, an Aircraft & Engine Mechanic and antique aeroplane buff, formerly of Sunland, California, and now a placer gold miner of Kingman, Arizona, acquired his Bleriot XI from a man named McKenzie, of Boston, who happened to be in Santa Paula, California for a day or so to settle his brother's small estate.

McKenzie reported that his brother had obtained the airplane from John B. Moisant. It had been crashed and stored for years. As an aside, Matilda Moisant, pilot



Admirers of Frank Tallman's Bleriot XI replica, "Hud" Weeks at left and Peter M. Bowers, at Chino Airport. Trailing type elevators are fitted.



The Provolt-Weeks Bleriot XI, 2s, with a 45 hp Continental engine as used in the motion picture LAFAYETTE ESCADRILLE. (Photo - Ed Maloney)



The Weeks Bleriot XI, as it is today, taking off with a 65 hp Continental engine and a tail skid. (Photo - Shane Collection)

sister of John, resides today in this same area, Southern California.

McKenzie, if Provolt had his name correct, had the Bleriot factory nameplate in his pocket and insisted on keeping it as a souvenir. It listed Type XI, Serial No. 2s.

Those who have seen Provolt's restoration of an Ace Biplane and his replica Fokker Triplane, both now owned by Louis Anderson of Mansfield, Missouri, can appreciate the quality of the workmanship on the Bleriot XI.

He flew it first with a 45 hp Continental engine, then installed a 65 hp Continental and rented it to Tallman for the movie, LAFAYETTE ESCADRILLE. The engines were each mounted back of the "bedstead".

This replica has the early 1909-type tip elevators. Provolt wrote in the log book, "Do not exceed 40 MPH. Tip elevators have too much lead and can scoop on you." His remarks on flight characteristics are typical; "In smooth air it is delightful. In rough air or wind, real hairy."

I learned of this Bleriot from Tallman, who said it was a stronger flyer than his own replica. So, when Provolt disposed of his aircraft to go into mining in 1960, I acquired it and stored it at Tallman's facility at Flabob Airport near San Bernardino.

In the fall of 1961 I trucked it east and stored it in my garage at home. Provolt had sold the engine, so I installed another 65 hp Continental engine, completely refinished all wood and metal parts and got it back in the air by the Spring of 1962.

An early Omega Model 50 hp Gnome 7-cylinder engine, on loan from Don Lockwood of Chicago, will eventually hang on the front of this Bleriot. At present it soaks up oil in the garage while waiting the return of rotary expert Jack Canary from an assignment in Bonn, Germany. It is hoped to browbeat him into overhauling it. Even with Billy Parker's detailed instructions, I can't get the timing gear off to release the back crank case plate, from which side one has to get the internal mechanism out of this type of engine.

Jean Salis' Bleriot XI Replica.

I have received but a single letter from Monsieur Salis, with a postcard photo of his Bleriot replica. It is powered with a modern French engine, a Potez.

Salis is the one who re-enacted Bleriot's 1909 Channel flight on the 50th anniversary. Sqdn. Ldr. Jackson originally put me in touch with Salis and writes that the plane flies like a modern light-plane with the Potez engine.

Salis is an airport operator 60 miles from Paris, at Le Ferte Alais Aerodrome, near the Seine and Oise Rivers. Col. Rougevin-Baville, Conservateur de Musee de l'air in Paris, writes -"Jean Salls a la passion

des vieux avions" or, like all of us, he loves old aeroplanes.'

Tom Miller Bleriot Replica.

Of this airplane I have only a newspaper clipping indicating that it was recently built using parts from 12 different airplanes and no attempt was made to closely duplicate a Model XI. It appears to be of steel tubing construction which departs considerably from the Model XI framework around the "bedstead".

BLERIOTS DISPLAYED & STORED

Musee de l'Air, Paris, France.

Col. Baville wrote in answer to my question on model numbers, that they now display -

Bleriot XI bis, flown by Pegoud, Serial No. 686
Bleriot XI bis, a military model, No. 878

It is my impression also that Musee de l'Air displays the original Channel-Crosser, the Bleriot XI, Serial No. 1.

Incidentally, Col. Baville listed some of the various Model XI types as follows:

XI "Monoplace" (1 passenger) 3 cylinder Anzanni engine.
XI "Reinforced Monoplace Touisme", 50-70 hp Gnome engines.
XI bis "Monoplace Pigeon Tail", Anzanni or Gnome engines.
XI bis "Biplace en Tandem", 50-70 hp Gnome engines.
XI bis "Biplace side-by-side", 50-70 hp Gnome engines.

The mystery of the Serial No. 2s on my own Bleriot restoration remains unexplained after this change of letters with Col. Baville. The correspondence, however, gives me the urge to go and see these historical aircraft.

Royal Aeronautical Society Nash Collection.

Mr. Ash Hughes, Custodian of the Royal Aeronautical Society Nash Collection, very kindly wrote me about their two Bleriot's. The 1910 Model XI bis, with a 25 hp 6-cylinder Anzanni engine, he described as "no history available."

Probably the history of this one is contained in a



The nameplate for Bleriot XXVII, Serial Number 453, from the Nash Collection. Brass with raised, polished letters and black background. Original width 3".

letter from A.R. Weyl, dated 1 April 1954 which I discovered while searching in my files for Bleriot information. Weyl stated that he built a faithful Bleriot XI replica, to Mr. Nash's order, in the 1930s. He said that he obtained data from Mr. Louis Bleriot himself and that he had the help of Hubert Latham's French mechanic. Weyl, who died recently, was one of the Fokker Company engineers during World War I.

The other in the Nash Collection is a Bleriot XXVII Racer, with a 50 hp Gnome engine. Its factory nameplate is shown in one of the photos here. The airplane had been Le Blanc's Gordon Bennett Racer and was found in crates at Le Havre, France. Its speed was reported as 78 mph. I feel certain this, the best of the eleven aircraft in the Nash Collection is the Bleriot illustrated in the August 1, 1952 AIRFACTS MAGAZINE as being on display at the Farnborough Aircraft Show.

Smithsonian Museum Bleriot XI.

The Smithsonian's 50 hp Gnome powered Bleriot XII had been piloted by the exhibition pilot, Demonjoz, and

was for many years stored in the Roosevelt Field Collection on Long Island. When this field was closed in 1951, the Smithsonian Institution obtained Demonjoz's Bleriot, Baldwin's RED DEVIL and a modified Curtiss biplane pusher which they restored to original configuration and now display. (Cole Palen obtained the remaining six aircraft of the Roosevelt Field Collection).

There are several Bleriot owners suffering the loss of the aircraft nameplates. Some industrious "collector" lifted the nameplate from the Demonjoz Bleriot while in storage in Suiteland, Maryland awaiting restoration. This airplane could be restored by recovering and replacing the tires and bungees.

Ford Museum Bleriot XI.

The Ford Museum's Bleriot from Sioux City, Iowa, where it was owned by Edward N. Costello. Mr. Costello stored it with the Ford Museum when Henry Ford was setting up the Dearborn Collection many years ago. A photo of this one can be obtained from the Museum. Roger Bolt, Ford Research specialist, wrote that this was a 1909 Anzanni model converted to a 50 hp Gnome-powered model and if this is so, they likewise converted it to the cane-skid and triangle-cabane structure which was not introduced until 1911.

Air Force Museum Hall-Bleriot XI.

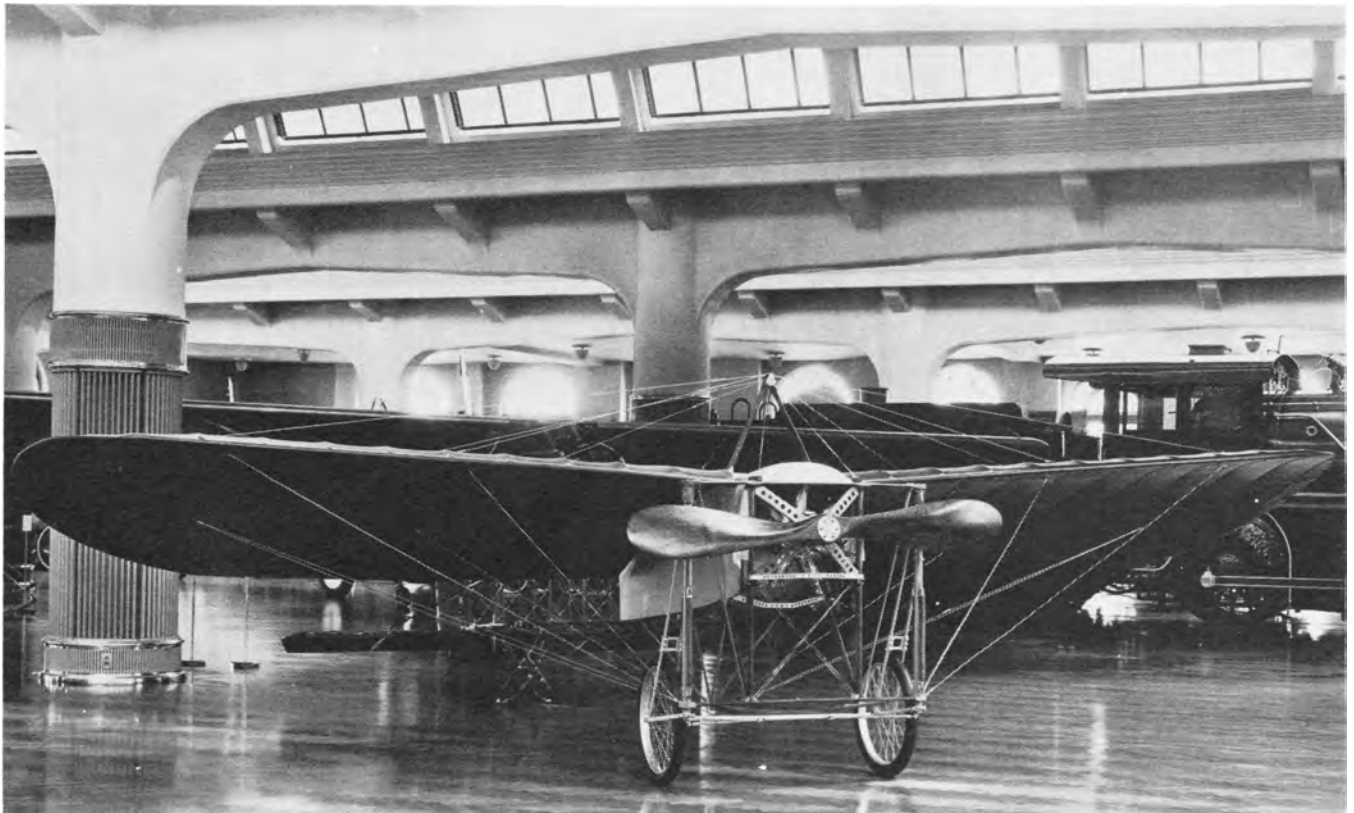
The ageless, Ohio Early Bird, Ernie Hall, wrote that he had built three Bleriot's over the years, the last and best of which is a Bleriot XI replica now displayed at the Air Force Museum, Wright-Patterson Air Force Base, Dayton, Ohio.

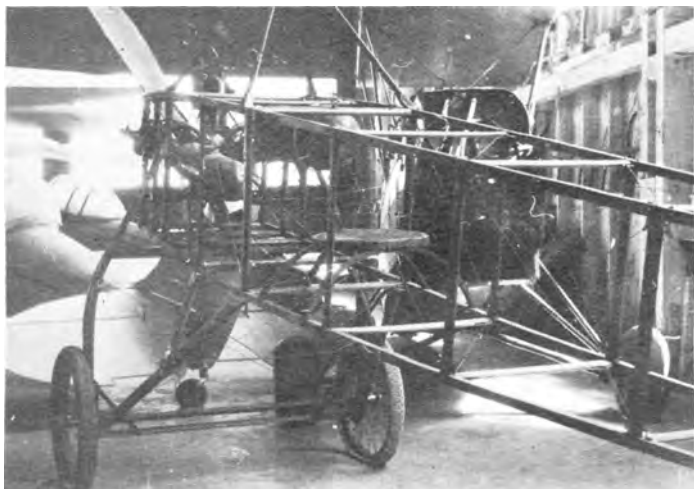
The following Bleriotics are early home-built airplanes in various stages of preservation:

Pratt-Hopkinson Bleriot XI.

This one contains an honest-to-goodness Anzanni fan

A 1909 Model XI Bleriot in the Ford Museum, Dearborn, Mich. (Photo - The Henry Ford Museum)





The Pratt-Hopkinson Bleriot XI with Anzanni fan engine.

engine. A man named Pratt had stored this Bleriot for years near Ottawa, Canada where it was built about 1910. It had never developed enough speed to take off, and was modified with ailerons at one time. The landing gear is not the XI type.

Keith Hopkinson, now head of the Experimental Aircraft Association in Canada, now has the airplane.

Wilhelm-Hall Bleriot XI.

Now undergoing restoration in California. Correspondence with Wilhelm and Hall prior to its shipment to the West Coast reveals that it was Ernie Hall's first Bleriot home-built. A 2-cylinder air-cooled Detroit engine failed to make it flyable. Hall said that he had taken many liberties with the XI plan.

Mathiesen (American) Bleriot XI.

Many A.A.H.S. members know or have read of James (Jim) Mathiesen's collection of aircraft, now stored at San Jose Airport, California. His Bleriot is covered only for display. It was built sometime in 1911 or 1912. The plans and possibly some of the parts were supplied by an American Aero Supply house. The engine is an early Elbridge 4-cylinder in-line type, which I would love to see spit some smoke and fire someday.

RESTORATION & REPLICA TIPS

Selection of Elevators

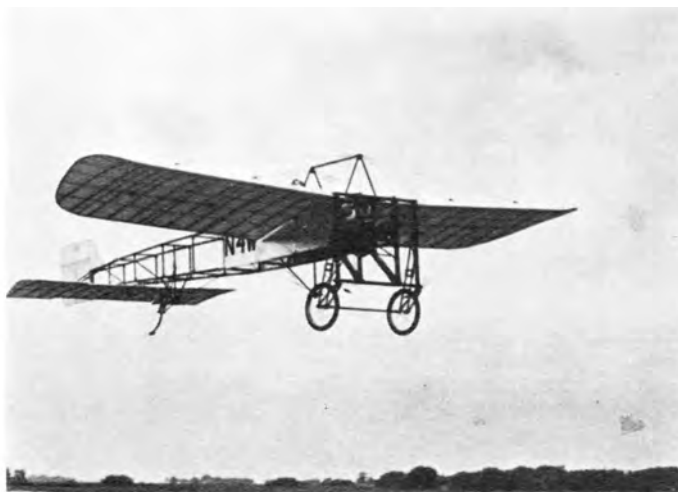
Most everyone agrees that one is better off to build up the later (1911) type horizontal stabilizer with trailing elevators if a Bleriot is to be flown. The 1909 type rotating tips rock too far back of the leading edge and when over-controlled can create excessive drag. At slow speeds one is bound to over-control at times. I intend to build the later type for flying my own Bleriot and keep the 1909 style for display purposes only.

Tail Wheel

The 1909 Bleriot XI had a spring action, swiveling, bicycle type wheel of large diameter. I used a Good-year tire, size 20 x 2.125, and this makes taxiing difficult. Also, on landing it just rolls and rolls. (Palen wrote that he jumps out and drags the ship to a stop). Although both Tallman's and mine have tail wheels, when we fly the airplanes we install the tail skid. The skid mounts on the tail wheel axle, thus retaining the spring action. The top of the skid is anchored back with bungee and very little shock is



The Palen Bleriot XI being tuned. Note that the engine is forward of the "bedstead".



Weeks-Bleriot XI in flight at about 35 mph, with the stick forward to keep the tail up.

transmitted to the fuselage on a landing.

With the skid one stops very fast in landing, as these airplanes are really tail heavy when the large air-foil stabilizer is not providing lift as in flight. It has about the area of a midget airplane wing and has much camber. A note of caution; landings should be made on grass as the skid will burn off rapidly on concrete.

Location of Engine.

Both Tallman and Palen have relocated the engines forward of the "bedstead" to overcome tail heaviness. My own engine is behind the framework and I feel that though having it ahead of the "bedstead" may help performance, it is not enough to justify the change in appearance. Only a few of the 50 hp Gnome engines were originally installed in front and a cowl at the top was then used to keep the castor oil out of the pilot's face.

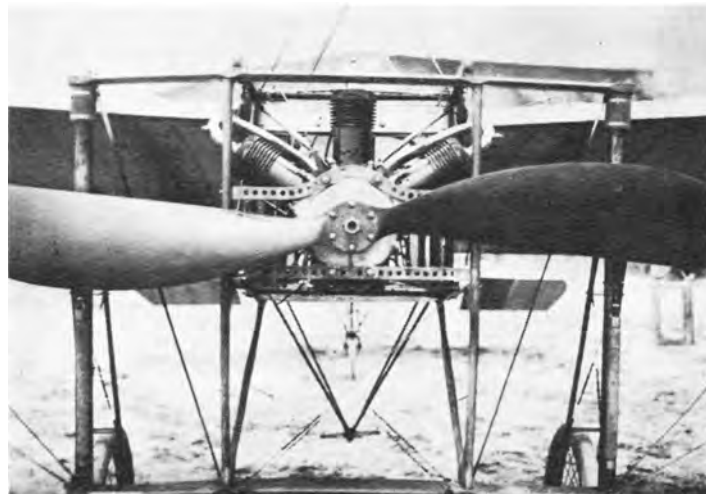
It is as Palen writes: "A Bleriot XI flies level at climb attitude; it climbs in a stall attitude." I found that adjusting the attack angle of the horizontal stabilizer had little effect.

Power Plant Choices.

It is safe to stall along over an ample grass field in straight, low flight with an old antique engine up front. But if you are going to leave the field or fly over areas where a landing cannot be made at once, you are asking for it with only single ignition and ancient metal.

Cover and Maintenance.

My own Bleriot had a very light weight fabric with a minimum of clear nitrate dope to save weight, but it had a rough textured surface. I painted all surfaces with clear enamel to obtain a smooth, easy-to-keep clean surface and to preserve the transparent effect. All the ribs in a Bleriot XI wing can be seen as it passes overhead. Enamel thinner will remove the enamel if you need to make a nitrate patch. Then enamel the patch. The sides of the fuselage are covered with light aluminum back to the seat. Only the last section is fabric. The Gnome engines, with their castor oil lubricant, were very hard on fabric. Even with our gasoline engines one encounters oil, heat and wear and tear from adjustments. With aluminum covering, one wipe and you are spick and span again. It does not show up in photographs and adds very little weight.



The original Bleriot XI "Channel Grosser" with Anzanni engine and large propeller.

The maze of wires and turn buckles can be kept bright and polished with clear lacquer. I used Pettit Marine Bakspar varnish on the wood and Yacht Gloss black on the metal. These high grade finishes will simulate a spray job if your room is free of dust and your brushes are clean. As long as the airplane is kept out of the sun, which is the worst enemy of any finish, the paint and varnish will stay bright and new indefinitely.

Propellers.

In using an original-type engine the pitch, diameter, area and pattern shape data should be available and Wayne Carlson of San Bernardino and other good propeller men will make one reasonably.

The problems start when attempting to use a modern high-speed engine. The old engines turned lots of pitch and diameter at low rpm. A Continental 65 hp engine in today's Cub turns a little stick that looks awful on a Bleriot. I ordered a 72 X 30 from Carlson and sent him a photo of a Chauvier wide-area Bleriot prop. It looks appropriate for the machine and it will eventually give 40 mph air-speed at about 2400 rpm.

I have been trying to make do with some overhauled Case magnetos and did not discover until late last Fall they were cutting out and misfiring. In the meantime, due to lack of power, I was buying another prop, checking compression, checking for carburetor ice and cylinder heating, trying to figure out why I was stalling out at full throttle. At times it flew well, at times it was a dog. Finally the mags developed a steady drop and we located the trouble.

There are now two new Bendix mags installed and good weather is awaited to try 72 X 30 and a new 80 X 25 prop Carlson built for me. Provolt had used an 80 inch diameter prop but he had broken it. He feels that the 80" diameter is important on a Bleriot so that the tips, which do the work, are out past the framework and operating in undisturbed air.

Tallman uses a 70 X 30; his Bleriot had a modern small diameter propeller on it earlier and flew very poorly with it.

The dihedral of the Bleriot XI wing is built into the front spar, which is rounded as it extends from the Number One rib of each wing. This round end slips into a tube across the top of the fuselage. Care must be taken when inserting them, and a jig must be used to keep the wing tip at the right height after insertion. Until the landing wire is hooked, you can crack a spar if the wing is allowed to drop a few inches.

BLERIOT FLYING TIPS

Member Willis Nye suggested that A.A.H.S. Members might like some "ground dual" on the Bleriot Model XI in event one day they had the opportunity to fly one of these wing benders. Fortunately, Frank Tallman had told me that Bleriotics are "Rudder" airplanes. These planes take off and land around 25 mph. There is no aileron effect from the wing-warp until you are going about 35 mph.

On our first hops we found that a little gust of 10 mph may raise one wing quite alarmingly. You simply boot the rudder into the high wing and the craft should slowly roll back to level. So, between 25 and 35 mph you really ride the rudder. After 35 mph the wing-warp control aids balance.

The elevator is sensitive but some Curtiss Pusher experience kept me out of trouble here. I'm looking forward to trailing elevators. The tip type have a soft rather than positive feel.

Landings are a cinch in the Model XI. With the spring action gear one can "dump them in" and only feel a soft bounce. With the cross-wind landing gear, the heading can be 20 to 30 degrees off and it will set down and roll out nicely.

In the takeoff, under 30 mph, the stick must be held well back and try to force it off the ground. The elevator angle opposes the stabilizer angle sharply. Then, at 35 mph, push the stick forward or cut back the power to keep them from climbing sharply.

The big wing with its deep camber wants to go up quickly at low speeds. My own Bleriot XI is very lightly loaded, with very short exhaust stocks and no carburetor scoop or screen; in other words, no extra iron. It also has a 3-gallon fuel tank and carries only three quarts of oil in the crank case. Pilot weight is 170 pounds.

Being a novice on the Bleriot, I went to the file for some flight instruction. AMERICAN AERO Vol. IV, #1, April 6, 1912, had an article by Earle Ovington starting on page 7, entitled "How to Operate a Bleriot Monoplane" (Reprinted herewith. Edit.). Ovington went right to the point when he wrote:

"For instance, assume I'm flying horizontally and strike an air hole which tilts me toward the left at a dangerous angle. I do three things:

1. I push the rudder over with my right foot to increase the speed and lift off my left or lower wing.
2. I push my lateral control lever hard over to the right.
3. I push my elevator forward to make the machine drop for more speed and control."

It's quite obvious that Ovington considered the Bleriot a rudder airplane; he rated its movement first when in trouble.'

HOW TO FLY A BLERIOT

(The following is a complete extract of "How to Operate a Bleriot Monoplane" by Earle L. Ovington as it appeared in the April 6, 1912 issue of AERO Magazine.)

Editor's Note--This article should interest the large majority of our readers and be particularly useful to those who are building monoplanes or desire to learn more about their control. The author, Earle L. Ovington, has probably covered more miles in a monoplane during the past season than any other aviator in America. He was also the most successful exhibition

monoplane flier, the \$10,000 prize in the Boston Globe Tri-State aeroplane race at the Boston meet being among his winnings.

The systems of control of almost all practical aeroplanes are essentially the same. In other words actual flying machines of the present day employ a vertical rudder to steer in the horizontal plane, one or more elevators to steer in the vertical plane and some form of manually operated lateral control device. To be sure one machine may steer by means of a cross-bar operated by the feet, while another will operate through a wheel, as in an automobile. For lateral stability one manufacturer prefers to use one contrivance, while another employs a different one. The fundamental principle, however, of all machines is practically the same.

Psychologists tell us that we have two minds, our objective and our subjective mind. The objective part of our mental make-up is that which is used in ordinary every day life; we might term it our reasoning mind. It takes time for this part of our mentality to work.

Our subjective mind is that part of our mind which is ordinarily beyond the control of the individual. Some designate the operation of the subjective mind as intuition, while others say that it is instinctive. At any event, operations controlled by the subjective mind are usually performed without any conscious thinking on the part of the individual.

Unquestionably the best aviators of the present day are subjective fliers; that is, they do not stop to think every time they move the control levers of their aeroplane. And the whole object of training is to so educate the student that the movement of his control levers is absolutely instinctive, requiring no conscious effort.

I shall describe the operation of a Bleriot monoplane, because it is the machine with which I have had the most experience, although at many of the meets during the past season, I have flown the Curtiss biplane. In justice to the Curtiss machine, will say that it is the most instinctive form of control with which I am acquainted, for none of the movements of the control are at variance with what one would naturally do under the circumstances. However, if a man can fly a ticklish monoplane, he can fly about anything with a little additional practice.

Figure 1 shows a detail view of the cock-pit of my Bleriot monoplane. This machine is driven by a 70-horsepower seven-cylinder Gnome rotating motor, and is of the latest racing type. Its speed in still air is more than 70 miles per hour.

Seated comfortably upon a little chair-like seat, fitted with a four-inch hair cushion, my feet rest upon a cross-bar to which are attached the steel wires running to the vertical rudder at the tail of the machine. If I wish to go to the left, a pressure on the left foot is all that is required; on the other hand, if I wish to turn to the right, it is only necessary for me to press the right foot. Certainly this is not very difficult.

The lever which you see in the picture, surmounted by a small wheel, is the lever to which the wires are attached that run to the elevator immediately in front of the rudder at the tail of the machine. Wires also run from this lever to the wings so that wing-warping may be introduced to obtain lateral stability. Although there is a wheel at the top of this lever, it does not turn, but simply forms a convenient method of grasping this lever with either one hand or the other or both.

Racing across the ground it is only necessary for me to pull the lever towards me, after the speed has increased sufficiently, for the machine to rise rapidly. Placing the lever in a vertical position the machine flies horizontally. If I wish to descent I push the lever forward, which process elevates the tail and down I come. Neither operation is very difficult.

The most dangerous part of controlling an aeroplane of the present day is in maintaining what is called lateral stability, that is, keeping the aeroplane on an even keel. In the Bleriot this is accomplished by wing-warping. If my machine tips to the left, I push the control over to the right, which process increases the angle of incidence on the low wing and decreases the angle of incidence on the high wing, with the result that the lift on the low wing is greater than on the high wing, and there is a force introduced which tends to bring the machine back to its horizontal position. To operate the lateral control mechanism is what takes practice.

Often, in emergency case, all three controls must be actuated at once. For instance, assume I am flying horizontally and strike a so-called "air hole", which tilts me toward the left at a dangerous angle. I do three things. First, I push the rudder over with my right foot to increase the speed, and hence the lift of my left or lower wing. Incidentally the speed of the right wing is lessened and its lift consequently decreased. Second, I put my lateral control lever hard over to the right. Third, I push my elevator control forward to make the machine drop. The resulting increase of speed gives my controls greater effect. In active practice, the vertical lever actuating the lateral stability and elevator devices is moved diagonally forward and to the right, thus incorporating the two movements into one.

It is necessary for those who wish to learn to operate any deroplane to do considerable "grass-cutting" at first, in order that they may be thoroughly acquainted with the control of their machine and also become accustomed to rushing through space at a high velocity. It may seem easy to steer a machine on the ground, from one point to another, but until you have tried it in a monoplane, you do not realize how difficult it is. Even to an experienced operator, it is more difficult to steer a straight course on the aerodrome, when the machine is rolled along the ground than when flying. This is due to the fact that the rudder is designed for operation at a mile a minute, and not for slower speed on the ground; hence the surface is not very great. Incidentally a machine flying in the air offers very much less resistance to turning than one wheeling along the ground.

After one has become thoroughly acquainted with the machine, he may venture to take hops into the air.

The principal thing about which I wish to warn embryo aviators, is not to make sudden movements of their controls. In order to rise, for instance, it is not necessary to pull the control toward you six or eight inches, as usually one or two inches is all that is necessary. I have seen so many students get into a machine, give the control lever a pull towards them, and then practically stall the machine in mid-air. This results in a bad tail-slide and the machine is often reduced to toothpicks and the aviator seriously injured. Be particularly careful, therefore, to try out the various controls carefully, moving them only a short distance at a time until the desired result is accomplished.

After the student is able to make hops and keep his machine level, he is then ready to make a more extended flight. And now I wish to give another word of warning.

Before I ever went off the ground in any of my flights, however rushed I was, or however impatient was the audience, I always took plenty of time to tune up and examine my machine. First, I looked at my big GnOme motor. I turned it over slowly and felt of the play of each exhaust valve. I examined carefully the bolts which held the main supporting steel strips to the landing chassis and the wings, in order to see that these fastenings were perfectly secure. The tension of these strips is also important and should be practically uniform. Very often a distortion of the wings

makes one of these strips tight and the other loose. There is only one thing to do, and that is to make the tension uniform before venturing into the air. Don't forget to glance at the upper supporting wires, as often a turnbuckle may become loosened, and although these wires do not support the weight when the machine is in the air, still they are of great importance.

The leading edge of the wings should be absolutely parallel with the trailing edge. Squat down behind each wing and glance along these edges, and if they are not parallel adjust the upper or lower wires until they are. This is of the utmost importance for the machine will not be on an even keel when the control is at a central position unless the two wings are adjusted perfectly equal. Don't forget to take a look at the tail and see that the supports holding it in position are firm, and the nuts on the bolts secure.

After you have learned actually to fly, get up in the air a good height and stay there. Remember it is not falling that injures an aviator, but the sudden stop and his contact with Mother Earth. That saved my life a good many times and I've had some side slips where I fell 500 feet or more. I would not be here talking to you readers of AERO if I had not been flying pretty high. Personally, I have always been of the opinion that high flying is the safest, although many aviators do not agree with me. It always made me nervous to see a man taking the sparrows off the trees or brushing the cobwebs from the chimneys of surrounding houses. I never felt right until I was up from 2000 to 5000 feet, and the higher I got the better I felt. Don't forget the higher you are the better chance you will have of making a safe landing, if your motor stops accidentally. When you're flying low, the chances are there is going to be a smash if your motor ceases to operate in the air.

Speaking of the motor stopping, just remember that as soon as it ceases to operate, you must bring in the force of gravity to keep up your flying speed. In other words, point the nose of your machine down instantly; never mind how high you are or what you will bump into. You don't gain anything by keeping the machine in a horizontal plane, for it will fall anyhow, and it is much better to have it fall on a glide than to have it fall vertically. In the latter case, the use of the control is lost and a serious accident will result.

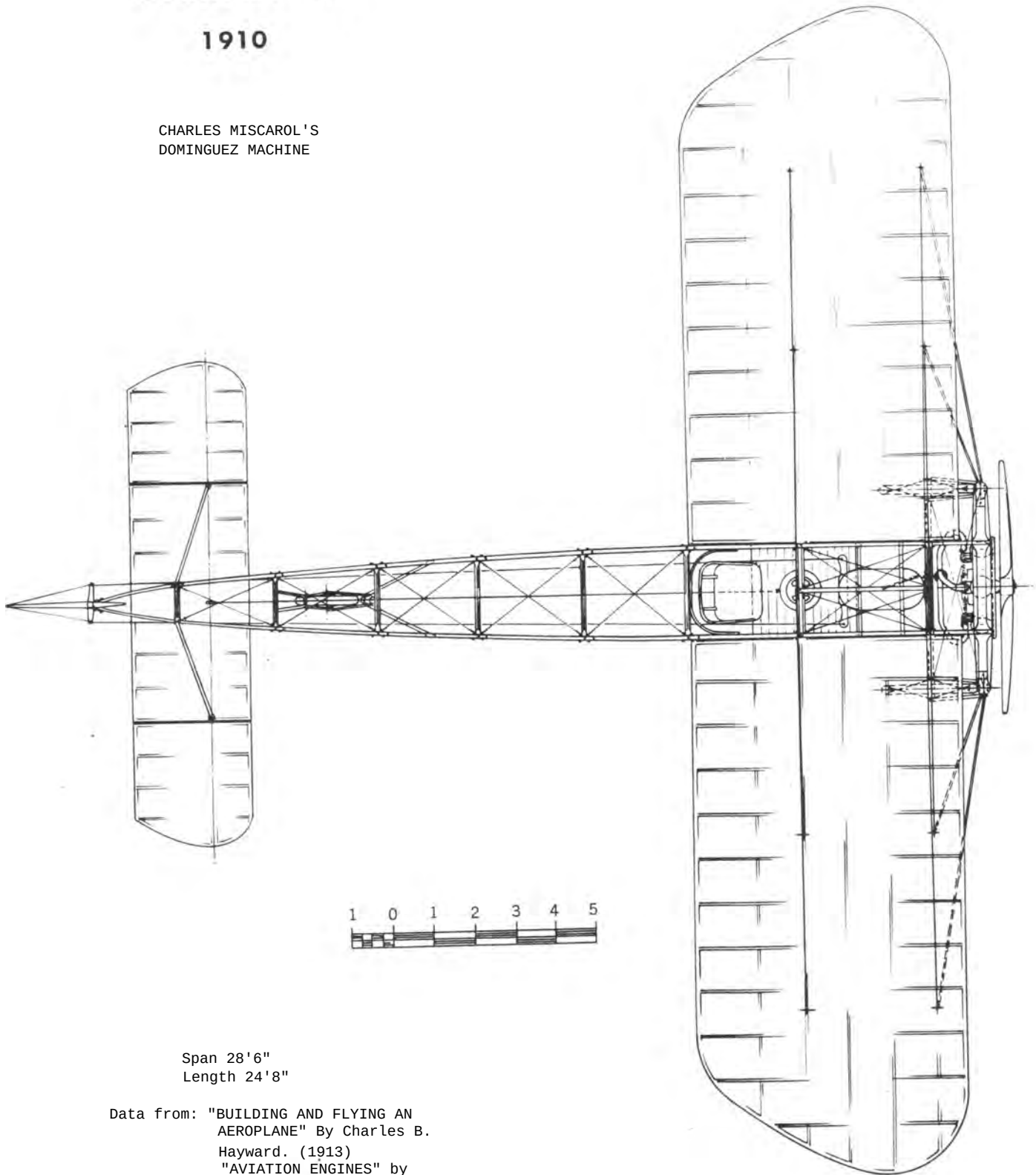
Be very careful in rising that you do not stall the machine. Remember that it is the rapid speed forward which supports your aeroplane and enables your control to operate properly. Just as soon as you try to climb at too steep an angle the resistance becomes so great that your speed drops off quickly, and soon a point is reached when your controls go out of commission almost entirely. If you are near the ground you make a pancake landing, in which case, your machine must go into the hangar for a long job of repairs. I always had an inclinometer, which is simply a spirit lever, to tell at what angle I was climbing. I found by experience the angle which I could employ in order to climb the fastest, and however excited I was, or however important it was for me to climb rapidly, I never exceeded this angle. Several times I have been sorely tempted to do so, but in each case have resisted the temptation.

Remember that in banking a monoplane on a turn, it always tends to bank too much unless an extremely short turn is made. In other words in turning to the left, for instance, a slight pressure on the left foot serves to throw you around in that direction. Immediately the speed of your left wing decreases, while the speed of your right wing increases, and the machine banks. In order to correct this and not to bank too much, you must move your vertical control to the right, or as the French term it--cloche, meaning bell in French, owing to the bell-shaped portion of the bottom of the lever. Banking is absolutely necessary to take a turn properly, but be careful that you do not bank too much for the inward component of the lift of your plane will be greater than

BLERIOT XI

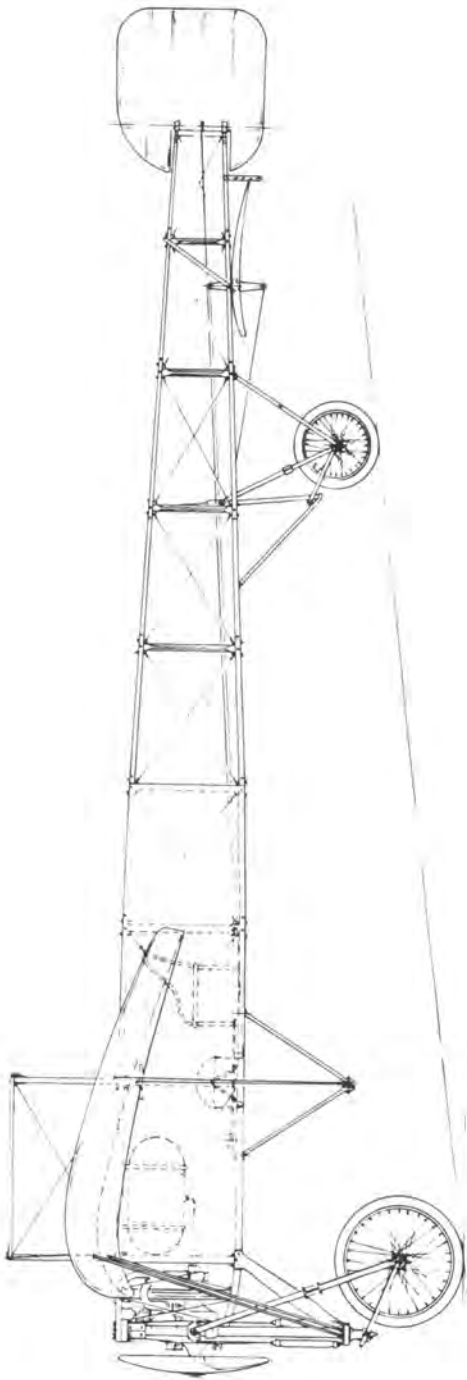
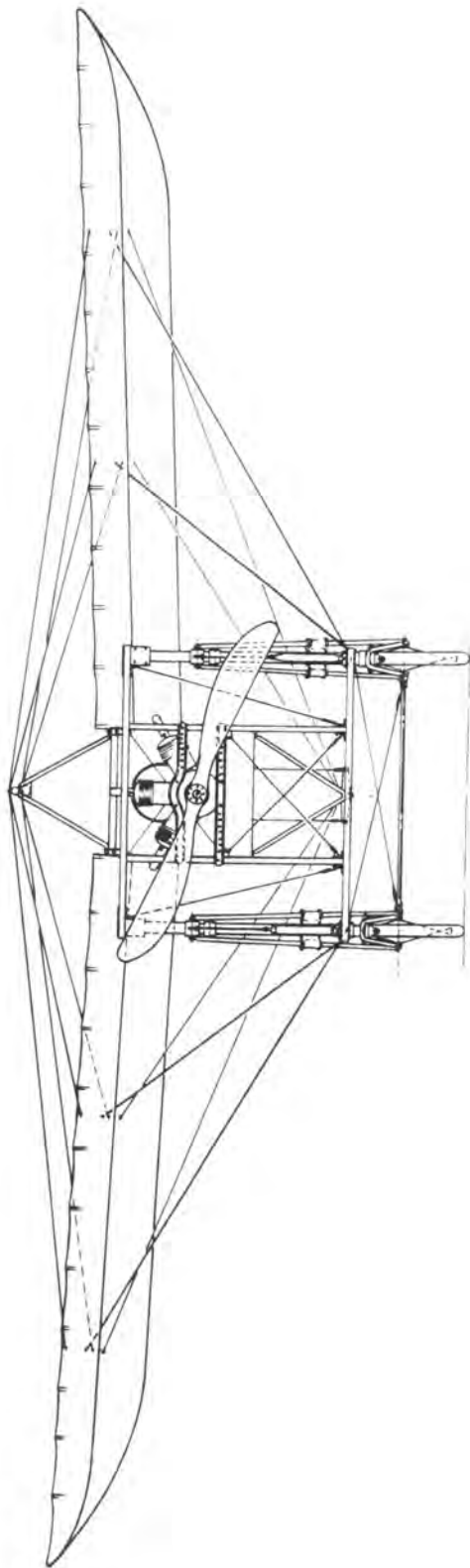
1910

CHARLES MISCAROL'S
DOMINGUEZ MACHINE



Span 28'6"
Length 24'8"

Data from: "BUILDING AND FLYING AN
AEROPLANE" By Charles B.
Hayward. (1913)
"AVIATION ENGINES" by
Victor W. Page (1917)



DUSTIN W. CARTER
5/26/63



An example of the very small diameter twin-row Gnome Rotary Engine installation in a Bleriot XI.

the centrifugal force and a side-slip to the inside of the circle will result.

Speaking of side-slips, you've got to look out for them in a monoplane. A biplane does not have a tendency to side-slip anywhere near as badly as a monoplane. Let a high-speed monoplane get side-slipping badly and you're going to have your hands full in bringing it up to an even keel. The trick is--do not let it get too far over, but apply your corrective the instant the machine tilts to an undesirable angle.

There are exceptions when an experienced aviator can disobey this rule. For instance, Figure 2 shows me taking one of the turns at Chicago. Here these turns were very short indeed, and we had to throw the machines up to 60 or 70 degrees bank in order to get around them in good shape. Ordinarily this would be a dangerous process, but if the aviator remembers to let his machine fall--that is point the elevator downward while taking the turn--it is comparatively safe.

That reminds me how poor Clarke was killed at Nassau Boulevard in one of my machines. Clarke started out and thought he would rise and bank at the same time. The next day we were looking at the marks of his teeth in the gasoline tank. He hadn't hardly a bone in his body whole when we picked him up. Figure 3 shows what was left of the machine. In other words, never bank on a rise and never bank deeply unless you let the machine glide down. The latter rule is not absolutely necessary, but always safe.

A monoplane is far more sensitive than a biplane, and hence extreme care is necessary in its control, but after it is thoroughly mastered I believe that a monoplane is no more dangerous than a biplane, and is much more fun to operate. Incidentally if you're going into it from an exhibition standpoint, it is faster than a biplane and hence your chances of winning first place are greater. If I had had a biplane only to depend upon, during the past season, I probably should have lost money, rather than made it. As it was, I have no complaint to make, for in five months I made enough to keep me going for a while without serious worry as to where my next slice of bread is coming from.

I have often been asked during the past season to what I owe my success. In the first place, I had what I consider the best machine made for my purpose of

exhibition flying. In the second place, I hired two of the best mechanics that money could buy, and I gave them all the tools that they could work with, never hurrying them on an important job, however impatient my manager might be or the waiting public. I never went out on a flight until I had carefully inspected the machine, and I did not let curious people bother me with questions so as to distract my attention when I performed this important operation.

I will not say that I did not take fool chances, for every aviator that does exhibit flying has got to fly when the time comes. I believe in "playing the game" and when you don't want to play it give it up. I have never yet disappointed an audience. A man that goes into exhibition flying must go in with his eyes open and realize what he is up against. However, I always had my machine perfect before it left the ground, and I could, therefore, rely on it ninety-nine cases out of a hundred. And my reasoning must have been correct, for I made more than one hundred flights and have never broken one stick in the machine.

To sum up, therefore, my advice to young aviators is to--first, get the best machine you can; second, give it the very best care and attention. If you are not in a position to do so yourself hire someone who can. Third, carefully inspect the machine before every flight. Fourth, don't let the machine get very far from its normal position, but correct any tendency to tilt or side-slip instantly. Fifth, never come anywhere near stalling the machine in mid-air. Sixth, if the motor stops come down to your natural gliding speed instantly, and then think about where you're going to land. Don't look around for a landing place first and then try to operate your aeroplane, for by that time it may be beyond your control.

WW I PHOTOS

Photo No. 1: An early attempt to solve the small flying field problem. A 50-Gnome Bleriot being launched from an overhead wire.

Photo No. 2: The beginning of refinement. A 50-Gnome racing Bleriot "streamlined" to the extent of adding cockpit coaming. Earlier models had only the covered sides to the first bay behind the cockpit.

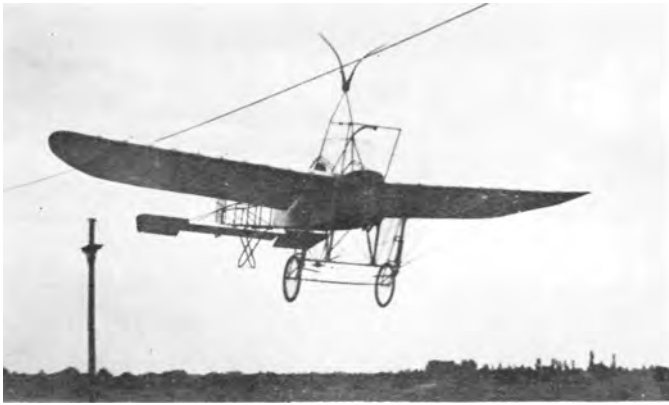
Photo No. 3: A British military two-seater. Even though both cockpits are not visible in this photo, the extended nose is the identifying feature. It balanced the weight of the added passenger.

Photo No. 4: Further refinement of the two-seater, with fabric covering over the entire fuselage. Elevator this time is in one piece and a straight across installation.

Photo No. 5: A Swiss two-seater similar to those above but with an early type rudder. The Swiss insignia, still used today, is a white cross on an all-red rudder and a red band on the wing to serve as a background for the white cross, thus duplicating the Swiss flag.

Photo No. 6: A British military parasol version of the Model XI Bleriot Monoplane showing early use of camouflage. The British adopted three-color circles, or roundels, for wing marking in December 1914. The Union Jack was used as fuselage or rudder marking to May 1915 after which it was replaced by rudder stripes.

Photo No. 7: An extreme modification, a Bleriot "Blinde" with monocoque wooden fuselage, completely enclosed rotary engine, and new design of tail surfaces. The cabane struts are different, leaving only the wing and landing gear to serve as Bleriot recognition features. Photo No. 8: Another interesting experiment--the Bleriot Model 45 of March 1914. A six-cylinder Anzani radial engine was located inside the fuselage, behind the pilot, and drove the tractor propeller through an extension shaft.



No. 1 (Photo - Peter M. Bowers Collection)



No. 2 (Bowers Collection)



No. 3 (British Official Photograph)



No. 4 (Photo - S.A.F.A.R.A.)



No. 5 (Bowers Collection)



No. 6 (Bowers Collection)



No. 7 (Photo - S.A.F.A.R.A.)



No. 8 (Bowers Collection)