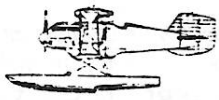
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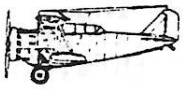
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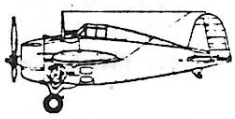
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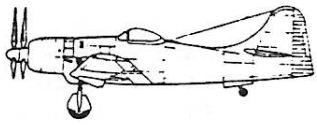
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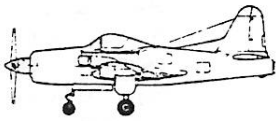

Ryan XF2R-1

MAX-FAX

THE NEWSLETTER OF THE D.C. MAXECUTERS

JULY/AUG 86

MEMBERSHIP

Dues for membershp in the D.C. Maxecuters is $10.00 per year for residents of the U.S.A., Canada, and Mexico, and $11.00 for all other countries. Your mailing label indicates the year and month of the last issue of MAX–FAX for your current membership. A red mark in the box below is a reminder that your current membership is nearing its end. Send a check, payable to D.C. Maxecuters, to the Treasurer.

DUES REMINDER ☐

MEETINGS

The D.C. Maxecuters hold meetings on the first Wednesday of every month at the College Park Airport, the oldest continuously operating airport in the world.

PRESIDENT

TOM SCHMITT
11014 Marcliff Road
Rockville, MD 20852

SECRETARY

BILL POOLE
9301 Lynmont Dr.
Adelphia MD. 20783

TREASURER AND NEWSLETTER EDITOR

ALLAN SCHANZLE
20008 Spur Hill Dr.
Gaithersburg, MD 20879

UPCOMING EVENTS

Sundays	:	Fun-fly at Comsat whenever the weather is good. 5:00 PM 'til dark.
July	18-20:	FAC NATS
July	27:	H.L. Glider/P-30 contest at Comsat.
Aug	24:	CO-2 Scale contest at Comsat.
Sept	6:	MAXECUTERS SUMMER FUN FLY at Comsat.
Sept	20:	FAC contest at Fayetteville North Carolina. See Club News.
Sept	28:	Old Timer Rubber Powered Contest at Comsat.

CLUB NEWS

ALLAN SCHANZLE

We'll begin this issue with the announcement that a new FAC club has been formed and that they will be sponsoring a contest this fall. This news arrives compliments of Dave Rees, a founder of the KUDZU FLYING CORP. The date will be Saturday, September 20, 1986, and will be held in Fayetteville North Carolina. The events will include FAC Scale and the following mass launch specialties: Golden Age, WW-I, WW-II, Peanut Scale, (13 inch wingspan) and Racers (any). We hear from Dave that the site is a

100 acre sod farm (that's the proverbial "green stuff", for our western subscribers). For more details, contact Dave at 301 Yearling Dr., Goldsboro North Carolina, 27530.

This issue features a Grumman Guardian design by Kevin Sharbonda. With the proportions and moments of this little hummer, it should be a fantastic flier. Our aeronautical history lesson is taken from the April 1945 issue of AIR TRAILS, and discusses the life of Louis Bleriot. Our aerodynamics lesson is Part 6 of "IS A HORIZONTAL TAIL NECESSARY", lightfingered from the September 1984 issue of SPORT AVIATION. You'll also find two pages of "HUNGORILLA" cartoons that appeared in very early issues of FAC NEWS, a notice about model Autogyros (and Autogiros!) by Bill Hannan, contest results for the "Vertical Flight" group of MAXECUTERS, a hint on making balsa dowels, and a notice of a complete plans index to MODEL BUILDER, compiled by Mark Fineman. Of course, Tom Schmitt offers his usual two pages of excellent photos. Where he found time for this, I'll never know, as endless hours were required for planning the marriage of his daughter this past month. Finally, check the cover and you'll find another artist has appeared on the scene, this one calls himself "Magnus". Good grief: That makes Max, Massimo, and Magnus. Next will be Mother Magurty!

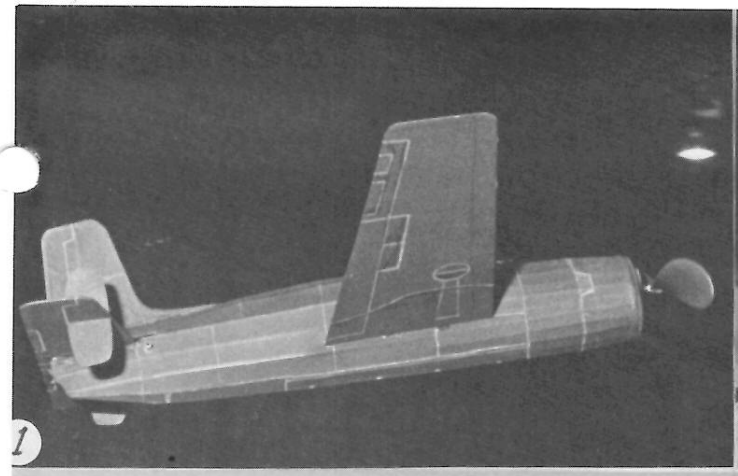
PHOTO PAGES
Tom Schmitt

1. This month's feature, a nifty Grumman Guardian by Kevin Sharbonda, one of our "Bal-t-mer" members.
2. Kevin launching another one of his high flying creations.
3. Don Srull warming up for the Old-Timer event at Taft. The model is a Cleveland Thermalier.
4. Another couple of old timers...Tex Baird and his Korda.
5. Doug Buchanan ingests a bit of stab of his Spitfire. Hey Doug, how 'bout asking frau Pearl to cook a high carbohydrate dinner so the Spi will last 'til the contest?
6. Rolf Gregory launching his Vertol CH47D.
7. Photo by Frank Scott via Bill Hannan...Bill's Chauviere Gyroptere in the foreground.
8. Bill Warner's photo of his diesel powered Sikorsky.
9. The latest in high fashion seen at the recent Pax River contest; Jackie Koptonak "models".
10. Another model by the maestro, Hurst Bowers. A natural for Golden Age is the Bernard "Oiseau Canari".-
11. Pat Daily's latest great flyer, the F3B-1.
12. Bert Phillips "3-M" bonanza, a good flying foam P-51.
13. The "Vertical Flight" bunch at Comsat for our first contest this season. Rotary wings are here to stay!!
14. Where did it go? Bill Ceresa launching.
15. Bill Bell shows us his latest from a "Golden Age" kit. The Albatross.
16. The Maxecuters are a hungry bunch. Allan Schanzle eats a little butyrate in place of carbohydrates from Ray Rakow's Sweetpea.
17. Don Srull and his version of Walt Mooney's full size Piper.

BALSA DOWELS
ALLAN SCHANZLE

Balsa dowels may not be on your list of high priorities, but I find them very useful for light weight representations of landing gear struts Simply groove them the length of the dowel and slip them over music wire.

To make these dowels from balsa strip, find yourself a wire or drill gauge. Pull the balsa strip through a hole slightly smaller than the stick. Continue pulling through smaller and smaller holes until you get the size you need. Is there no end to simplicity?



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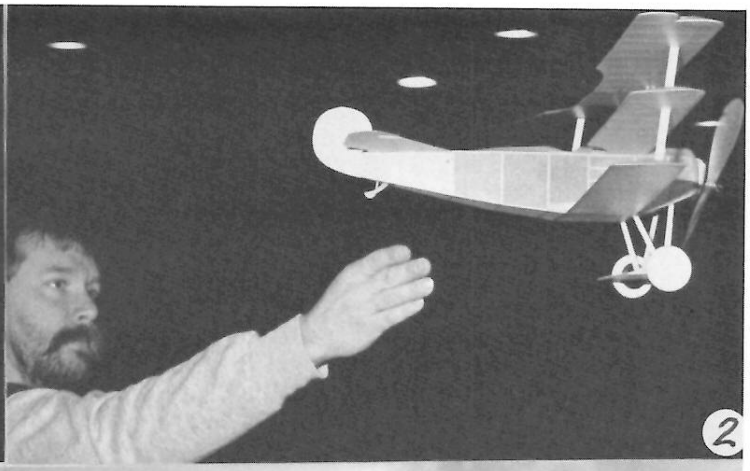

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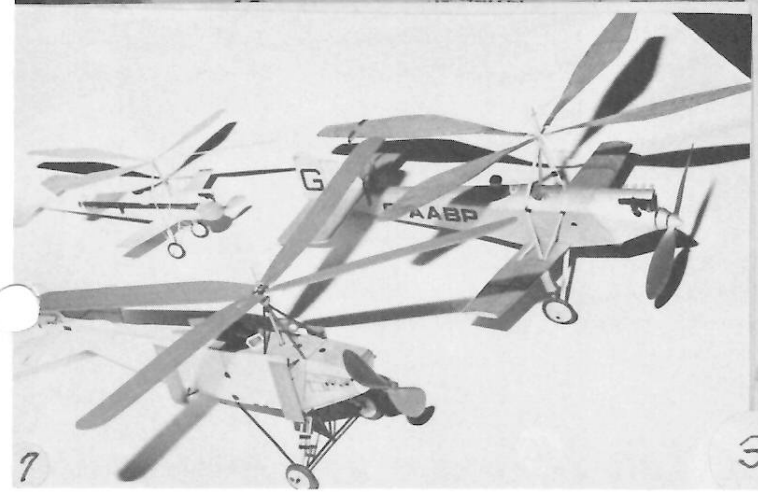

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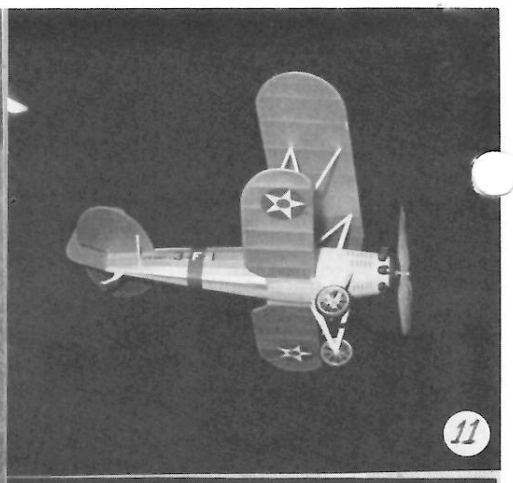
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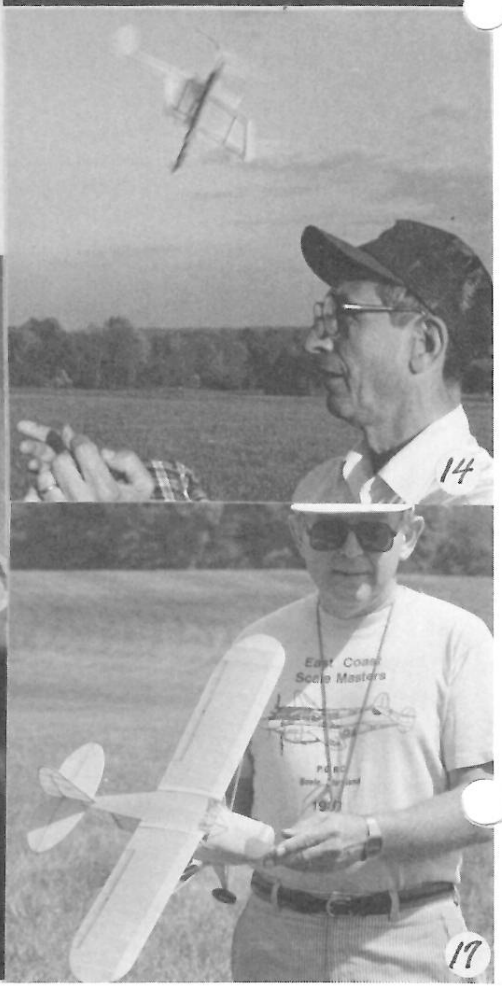

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BLERIOT-MY FATHER

By Simone Rubel-Blériot *As told to Madeleine Raoul-Duval*

THE STORY OF AN AMAZING MAN WHO FOUGHT HIS WAY THROUGH DEFEAT AND FAILURE TO ONE OF THE GREATEST TRIUMPHS IN AVIATION

PART ONE

HIGH on the roster of those men whose names will be forever engraved on the honor roll of aviation is the name of Louis Blériot, whose skill and courage reached their triumphant climax in one of the most sensational feats in history: the crossing by air of the English Channel from Calais to Dover, on July 25th, 1909.

They used to call him "The man with a charmed life," and sometimes, even today, when I look back over those exciting days of the birth of aviation, I find myself wondering anew how my father survived all his perilous adventures and crashes to reach the age of sixty-four. His life was one long succession of deliberately taken chances—and no risk was counted too great if it could advance the shining cause to which he had dedicated his whole existence.

Not only did this modest Frenchman believe that the skies could be conquered, not only did this inventor of the monoplane persevere in his beliefs, despite the sneers and contempt such a notion evoked in the early nineteen hundreds—but Louis Blériot actually carried out his daring thesis himself, by building the first plane that stayed in the air for more than a hop. And after many heartbreaking failures and dangerous accidents, he added the final triumphant proof to his daring theory, by accomplishing the first flight across the Channel.

Dreamer, engineer, and pilot, Louis Blériot combined in one rather frail man, the immense qualities of vision, skill, and courage that made such a great achievement possible. He was born in 1873, at Cambrai, in the extreme north of France, the eldest of five children of a well-to-do family of that region. His father, an engineer, was to have a great influence on the boy, and help mould his character into the serious, hard-working man he became.

His father was very strict, and believed in early discipline; so at the age of ten, young Louis was already a boarder at Notre-Dame-de-Grace school, whence he emerged only for Sunday outings and even that only if he had had an excellent weekly report. He was a tall, slender boy, rather shy and extremely studious. His greatest joy was mechanics; and at an early age he started taking the family clock to pieces, to see what made it tick.

After graduating, with highest honors, from Notre-Dame-de-Grace, Louis entered Centrale, the great Paris engineering college, where his studies became more and more strenuous and his marks more and more brilliant. At that time he was living on his own, in the student quarter in Paris, his father deliberately allowing him the mininum of living expenses, in order to strengthen his character and develop self-reliance. Young Louis often went hungry in those days—books were so much more interesting than food.

At twenty-two he graduated with high marks from Centrale—and promptly celebrated this achievement by inventing a headlight for motor cars. This brought him 22,000 francs, an immense sum for a young man to make in those days.

It was some time after this, that Louis Blériot experienced the adventure that was to change his whole life. It happened at the Paris Exposition, or World's Fair of 1900, to which men and women were flocking from all parts of France. One day, while my father was lunching at his favorite little restaurant, he noticed a vivid, dark, attractive girl in a red dress sitting at the next table with her parents. Alice Védère, only sixteen and full of fun, was having the time of her young life. Her family came from the opposite end of the country, the pretty little town of Tarbes, in the Pyrennees mountains, quite near the Spanish frontier. The Exposition had attracted her father, a retired army officer, and he had brought his family to Paris.

It was love at first sight, on both sides; and, after some delay due to Alice's extreme youth, her parents consented to the marriage, which took place the following year. "Now, thought young Louis, I have someone to work for—someone for whom to do and dare." The young couple settled in their new home in the avenue Kléber in Paris, where, to their great joy, the first of their babies arrived the following year. During these years of happy married life, my father was actively and intensely pursuing the dream of his boyhood: to build a machine that could fly. Although he also ran what was termed a "proper engineering business," his heart was already in the skies.

Reserved and silent by nature, he found no difficulty in keeping his secret; and in secret he worked at his machines, those first frail mediums of so great an idea! His first creation was an ornithopter, or machine with beating wings, worked by a carbonic acid engine. The wings flapped feebly a few times, then collapsed in a broken mass—the first in a long series of disappointments!

During the following ten years, from 1899 to 1909, Louis Blériot built no less than eleven different models of planes, which he was to name successively Blériot No. 1 to Blériot 11. His second try was a biplane, of the type Langley-Wright. In spite of infinite effort, it was never possible to give it any stability.

It was then that my father decided to go into partnership with Gabriel Voisin, a brilliant young architect, who shared the same dreams and was far more interested in aviation than in his architectural studies. After much research and experimentation, they built a hydroplane, which was tried out on the lake of Enghien. It was mounted on floaters, and had two 24-hp. engines. The plane persistently refused to leave the placid surface of the lake.

This and other failures convinced my father once more of the superiority of his first love, the monoplane—in spite of the fact that most people, including Voisin, were convinced that the biplane, owing to its double surfaces, offered better chances of security. Blériot decided, therefore, to separate from Voisin, and pursue his own researches. Whether biplane or monoplane, these first machines of the air were unbelievably fragile and ghostlike affairs, made of bits of wood, glue, and wire.

The pilot's seat was usually a simple motorcycle saddle, fixed on small wheels, which slid back and forth on rails at the pilot's will, so as to balance the plane.

Consider, then, the first monoplane to appear on this earth. It was the Blériot No. 5, which my father affectionately called his "Little Duck," or *"Canard,"* because it was built like a duck with wings outspread. Its body was covered with yellow silk, and enclosed a 24-hp engine. The wings were 7 meters in spread and had a surface of 13 square meters. The pilot could move them at will, and they were slightly curved up at the extremities, so as to facilitate the passage of air. There was no metal at all in the body of the plane, and the wings consisted of a very thin wooden frame, covered by a varnished parchment paper. The propeller in the rear, of copper and aluminum, was 1 meter .60 in diameter, and self-starting. A prismatic framework in front, supported at its extremity the spark plugs and two rudders, horizontal and vertical, which were controlled, together or separately, by a single handle. The tank was on a lower level than the cylinders, and, at this end, a rubber tube with a rubber bulb gave the necessary pressure to the gas. The plane, with Blériot aboard, weighed 236 kilos. The entire frame rested on a chariot with shock-absorbing springs, attached, as usual, to two bicycle wheels.

My father used the parchment paper because he had found it very resistant. The sheets were easily glued together, and the varnish was a guarantee against humidity. The paper was extremely

light, simple to mend, and easily moulded to fit the complicated shape of the framework.

The rear had no stabilizing tail, and there was one great drawback. The rudders were a permanent danger—for they had to be placed in such a way as not to face the wind!

On March 21, 1907, Louis Blériot first tried out his "Little Duck." The trial ended in dismal failure, for the bicycle wheels collapsed. They were reinforced, and a few days later came a second attempt. After a few yards of rolling, the wheels again bent in, and the wind caught the machine and turned it over. At the third trial, the following day, the unfortunate Duck's propeller broke! The next attempt, two weeks later, was to be the lucky one! The Duck leapt into the air, five or six feet from the ground.

On April 8 and 15, of the same year, came new successful trials. The Duck made several hops or leaps upwards, at the speed of 50 kilom. per hour; but on April 19, a rough landing smashed the fuselage, and the plane capsized. Once more my father was lucky, and escaped with cuts and bruises. Even more remarkable, he was not even discouraged. "For after each fall," as he wrote to a friend about that time, "I rise . . . higher and higher; and each rise teaches me something—"

After the Duck came the Dragonfly, or Blériot No. 6, which was to accomplish the first officially controlled monoplane flight! It was of the type Langley, with two pairs of fixed wings mounted on a tandem. The plane was six meters long, with a surface of eighteen square meters. The propeller in front was driven by a 50-hp engine, and the body of the plane consisted of a light and rigid framework covered with varnished parchment. Each of the forward "plans" ended with an accessory support surrounding an horizontal axis, and were mobile, so as to permit the lifting or lowering of the plane.

But whereas Langley had two propellers between two pairs of wings, Blériot preferred his one propeller, placed at the front of the machine.

The first trials showed the usual lack of stability. After working on it, Blériot managed to make sufficient improvement to produce a flight of 25 meters, on July 2, 1907, and of 150 meters on August 6, at a height of 12 meters. Not knowing how to lift the plane with such a complicated engine, my father had eliminated his stabilizer, so as to concentrate solely on the engine. To balance the plane, he simply leaned backward on lifting the machine, and forward on grounding it! Somewhat unscientific, you will say today? This simple procedure, nevertheless, saved Blériot's life on Sept. 17, 1907!

On that day, after many successive failures, and some rough landings, my father was to accomplish the first official monoplane flight.

This is my father's own description of this dramatic event: "At that time, I had acquired none of the reflexes necessary to a pilot. I turned on the engine. The plane leapt into the air like an arrow. Very soon, I was at 25 meters altitude. I was feeling quite impressed by this amazing fact, and a little nervous; when suddenly the engine gave a snort—and stopped dead. The machine started down in a steep tail-spin, and I thought my last hour had come. The idea came to me, however, to rush to the rear of the plane; it worked. The thing straightened out, gradually lost speed, and, relatively slowly, crashed to the ground. I was unhurt. Thus ended the first official monoplane flight. The medal I acquired that day is the most precious of them all; it reminds me of the moment of my life in which I felt the closest to my death."

In spite of this triumph, my father was becoming a little depressed. Those damnable machines, *would* keep on smashing up, one after another. But Blériot was never downhearted for long. He set to work again, and his next model produced an innovation. The stabilizing element was a tail, horizontally spread out and divided, with mobile segments around an horizontal axis. The pilot could, by means of a special gadget, control the motions of these two stabilizing planes, either together or separately, and, in the latter case, contribute to restore the balance, or engineer a turn.

In this new plane, the vertical rudder for steering, worked by the pilot's foot through a special gadget, with a wheel behind, pivoted evenly between the two segments of the tail, and was attached to the rear extremity of the body.

The engine was a 50-hp "Antoinette," which controlled, in first gear, a metallic propeller of four blades placed in front. The total weight was 425 kilos. Blériot was very hopeful of this new venture, but a series of accidents ended in the destruction of the plane. In the interim, he had, however, made his first turn in the air.

But success was at last beginning to smile upon my father. The Blériot No. 8, his next venture, was the first to have the steering gear in the rear. "With that," said the constructor, "I can really fly, for now I can fight against the wind. On July 6, 1908, I stayed eight minutes in the air."

Notwithstanding all his efforts, his numbers 7, 8, and 10 were total failures. On December 31, Blériot made his year's inventory: results—problematical. Total Expenditures—780,000 frs. This was the end; ruin and disaster stared him in the face. ". . . I must go on," wrote my father at that time, "because I can no longer do otherwise. I must go on, because, like a gambler, I must catch up. I must go on because I am sure that my calculations are accurate and the solutions exact, and that, therefore, I *will* fly. I must go on." 1909 was to be Blériot's lucky year. First of all, he won, with Voisin, the Prix Osiris of 100,000 frs., with which money he was able to finish and perfect the Blériot 11. And this plane, constructed with so much loving care was at last to bring the great triumph of his life!

It was equipped with a 3-cylinder engine built by Anzani, the brilliant, hot-tempered little Italian. Here is my father's own description of the plane:

"The under-cambered wings, with rounded tips, were covered with a rubberized fabric. Above them, a drift-surface served to increase stability in horizontal plane (*probably "yaw stability"*—Ed.) and improve rudder action. In the rear, a horizontal surface acted as a stabilizer; it was flanked on both sides by two panels which rotated around an axis fixed to the stabilizer and acted as elevators. Lateral control was obtained by side-to-side movement of the maneuvering lever of the 'control bell.' Fore-and-aft movement of this lever actuated the elevators.

"This 'control bell' was a great innovation; it constituted a veritable revolution. It was mounted on a universal and the control cable was atached at its base. To the maneuvering arm I adjoined two levers which simultaneously controlled the engine and the elevators. The rudder was foot operated. I sat in the fuselage between the wings."

The first triumph was to be the air-meeting at Douai, where Blériot carried off the majority of prizes. During that meeting, on July 3, he was flying at fifty meters above the town, to the applause of the whole population, ending by flying 25 times around the airdrome, thus totalling 47 kilometers, 277 meters, in 47 minutes, 17 seconds. The following day, he broke the record, flying for fifty minutes, between twenty and forty meters altitude, and winning the Archdeacon prize.

Then came his most important feat up to that time. On July 12, he flew from Etampes to Orléans, 41 kilometers, 200 meters, in 44 minutes, at an altitude between 15 to 50 meters. This was a veritable triumph, and won him the Prix du Voyage of 2,000 francs.

All these results determined my father to make a try for the biggest venture of all—the crossing of the English Channel.

On July 18, during a trial flight, fire caught again in the gear-case. This time, my father's feet and legs were severely burnt.

That same day, on crutches, Louis Blériot left for Calais to try his chances. His rival, Latham, was at nearby Sangatte, also making trials for the attempt.

The Blériot 11 was put in a barn, and watched night and day by Blériot's faithful collaborators, Alfred Leblanc, Grandseigne, Louis Peyret, and last but not least, the Italian, Anzani, sleepless with excitement. My mother also was there.

The weather was bad, and the wind too strong for the flight, but at last, during the night of July 24 to 25, the weather improved.

At three-thirty a.m., Leblanc, encouraged by the improvement, woke everyone up, with the exception of my father who was still suffering from his many burns.

Madame Blériot, frantic with anxiety, tried in vain to defend her sick husband's sleep. But Anzani, determined to see his beloved engine cross the Channel, would stand no further delay! Feverish, and suffering acutely from his burns, my father refused to fly that day, but, under pressure, he gave in at last, too tired and harassed to pursue the discussion.

(The second and final installment of "Blériot: My Father" will appear in next month's Air Trails Pictorial—Ed.)

IS A HORIZONTAL TAIL NECESSARY?

PITCH AND ROLL RETROSPECT

Part 6

By George B. Collinge (EAA 67, Lifetime)
5037 Marlin Way
Oxnard, CA 93030

Illustrations by the Author

IN THE PAST, if an airplane had two wings placed one behind the other and they were of nearly equal area, the term "Tandem" would apply. If the front surface was of considerably smaller area, the airplane was a "Canard". It is fair to assume that both these types are basically different configurations of the same formula. Therefore, in the interests of conformity and with deference to what is already accepted nomenclature, this review regards the entire general class as tandems. The forward wing is the canard regardless of its size.

The aircraft designs of Penaud, Caley, Lilienthal and Chanute all embraced rear tails that incorporated longitudinal dihedral. While Montgomery and Langley favored the tandem arrangement, they nevertheless added Penaud tails for pitch stability (see Figure 6-1).

The Wrights, of course, did not use a rear tail in the beginning. They were successful with a front elevator. A lot of would-be aeronauts around the world decided to copy. And no one appeared upset, least of all the Wrights, about these obvious imitations of the Wright-style front elevator. What did bother the Wrights no end was what they considered imitations of their lateral control! Over this they had legal exclusivism.

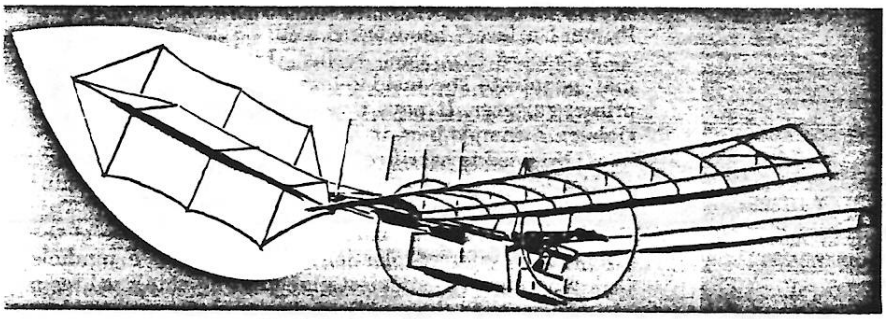

Fig. 6-1 Penaud-tailed Langley 1903

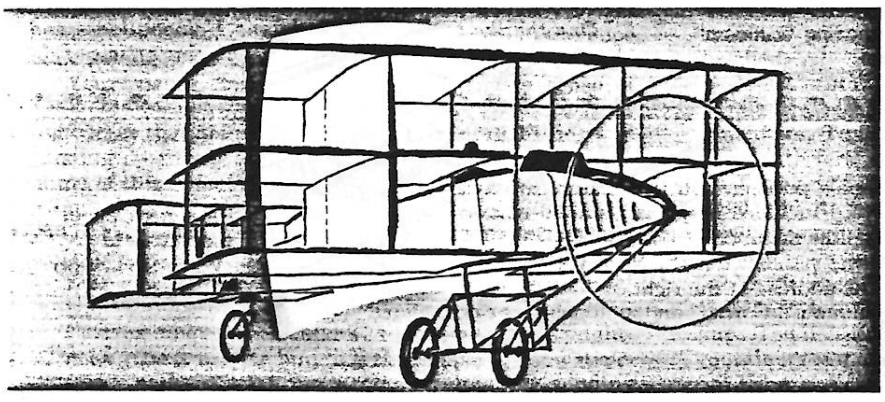

Fig. 6-2 Voisin Goupy No. 1 1908

A giant brouhaha was to develop and it got going about the same time that changes were taking place which would help to standardize the method of pitch control also. So as the two axes of control were intertwined after a fashion, a touch of history on the aileron is included here.

The Wrights quite simply regarded direct lateral-control as their property, which others could use. But not for making money. When profit became a factor, which it almost always did, the Wrights wanted in.

There were some legitimate technical conflicts naturally, a few of more substance than others, between the Wright's coupled rudder/warp system and that used, for example, by Dunne. He had just two differential-elevators, no rudder surface at all!

The original Wright patent application of March 23, 1903 (Ref. 1), though denied, resulted in a second request which was ultimately issued as No. 821,393 on May 22, 1906. It carried 16 claims for "improvements in flying machines" but included that most significant award, the one that was to cause all sorts of consternation in the aeronautical world, the one covering manipulation of wing tips in any way or manner in order to achieve lateral control (Ref. 2). Many would try but, in most countries involved, there seemed no way around this legality.

Apparently discounted or ignored by the U. S. Patent Office was early activity regarding lateral handling because at least two existing U. S. patents clearly described such work. One was held by Montgomery, another by Mouillard. Montgomery's manned glider flight in 1885 was made with a glider equipped with aileron control (Ref. 3). The Mouillard glider, which had been built under the aegis of Chanute, incorporated "annularies", sections of each trailing edge that could be independently lowered by the pilot. While Chanute was

financing his patent (No. 582,757, May 18, 1897), Mouillard wrote to him ". . . this device is indispensable . . . it is this which permits going to left and right" (Ref. 4). Additionally, it is on record that Edson Gallaudet had developed a differential wing-lift technique a year before the Wrights (Ref. 5) and that Mathew Boulton of England had patented a small movable wing-tip as far back as 1868 (Ref. 6).

When Chanute first learned of the proposed Wright coverage, he naturally thought that prior patents would certainly invalidate their claims (Ref. 7). But as the world knows, the Wright patent was granted (Ref. 8). Almost no one could fly for money unless a licensing fee of over one thousand dollars a day was paid to the Wrights (Ref. 9).

That was a lot of cash in those days, so it is not too surprising that after the initial euphoria over the Wright demonstration flights in the USA and abroad, there gradually developed resentment and noncompliance of the patent. Even the granting of another patent, covering midwing "lateral balancing rudders" to Dr. Alexander Graham Bell of the Aerial Experiment Association only served to muddy the legal waters. This patent was issued on Dec. 5, 1911 after a three-year wait. (Ref. 10).

Well, as it turned out, the Wrights sued a lot of people and litigations made news up to the full 17 year patent life (Ref. 11). Many designers sought to thwart the document that they thought was improperly broad and inclusive. For instance, Burgess and a number of constructors, U. S. and European, used ailerons that only moved downward. A few others, wranked over the controversy, dispensed with lateral control altogether and using side curtains, performed skidding turns with rudder alone (Fig. 6-2). In fact, journalists of the day called attention between flat turns and banked turns, the latter rating a higher accolade.

By 1915, Curtiss was making airplanes in Buffalo and shipping them to England without ailerons. Ailerons were manufactured in Toronto and sent abroad separately (Ref. 12).

Because it was causing so much havoc, in 1917 with the U. S. almost at war and needing airplanes, Congress appropriated one million dollars to acquire the Wright basic patent by condemnation. Thereafter, a cross-licensing or pool of patents within the new Manufacturers Aircraft Association solved most problems. Down from an original two hundred thousand dollar price, beleaguered England was granted rights to the airplane for a low seventy-five thousand. France contested buying but their courts upheld the Wrights. Germany ignored any fee. They said Chanute, in an early lecture, had talked about wing warping and in Germany that was sufficient to invalidate the entire patent (Ref. 13). Canada obviously had also not recognized the legitimacy of the Wright patents (Ref. 14).

Between 1909 and 1913, the Wrights had sold licenses in seven countries, including a syndicate in France and companies in England, Germany and Italy (Ref. 15). The Wright patent drawings had been available to all since disclosure in 1906, and in addition were printed in detail in the 1906 French publication of L'Aerophile (Ref. 16).

Because of this, a great many early airplanes around the world, if not actually Wrights, certainly looked like Wrights. The front elevator arrangement was very popular on pushers although as 1910 arrived, different airplane configurations had been tried by many individual designers. Among the best known of the tractors were Bleriot, Esnault-Peltrie, Breguet, Antoinette, Nieuport, Voisin (Goupy) and A. V. Roe.

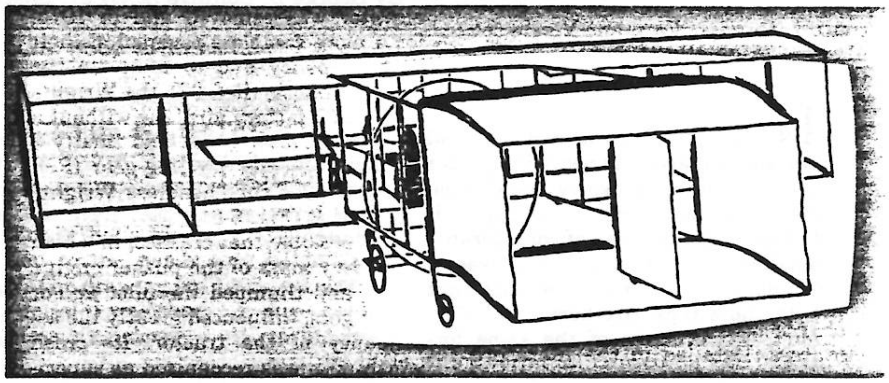

Fig. 6-3 Voisin 1909

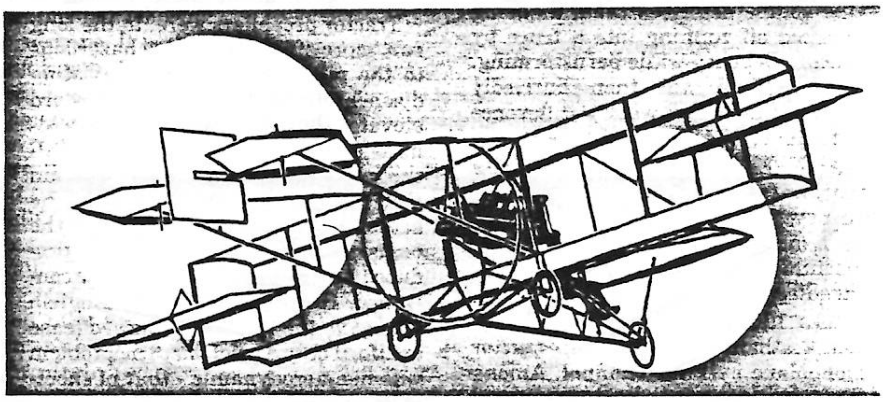

Fig. 6-4 Curtiss D111 1910

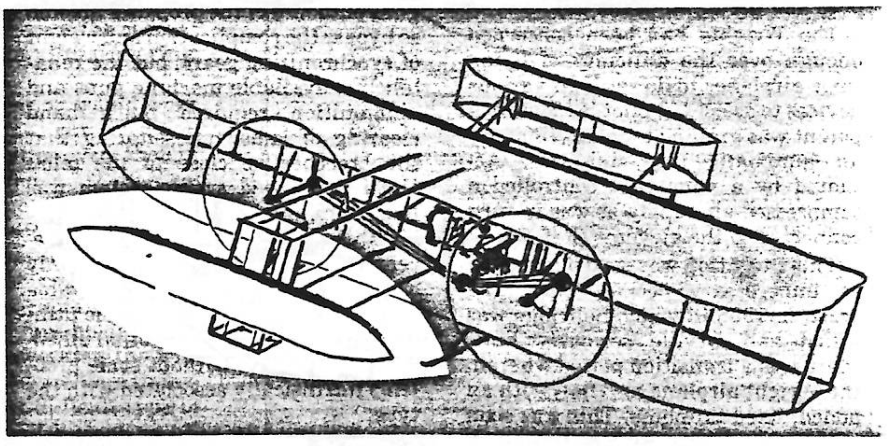

Fig. 6-5 Wright with auxiliary elevator 1910

It is well known that the early Wright airplanes were unstable. Wilbur said, "We would arrange the machine so that it would not tend to right itself" (Ref. 7). This statement was made well after the fact. And the fact was that their airplanes could not have been much else except unstable, what with highly-cambered main-wings and free-floating, non-loaded front elevators! The skill necessary to aviate satisfactorily must have been of high order.

Accordingly, to stabilize airplanes with forward elevators, various constructors employed a long-levered, fixed rear-tail, but still retained the ubiquitous front elevator for pitch control. Curtiss, Farman, Voisin, et al, were originally of this configuration (Feb. 6-3). Later, about when the flying fraternity had grudgingly resolved to go ahead and use warp or ailerons and to pay the toll, elevator action was incorporated into the rear tail (perhaps due to tractor influence) but initially only in conjunction with the existing elevator in front (Fig. 6-4). After this, it was only a relatively short interim before even the diehards gave up their forward elevators. Detailed in the literature are a number of interesting stories of how, for example, the Curtiss front elevators were eventually discarded. One source describes them as being knocked off running into a fence by Lincoln Beachey while barnstorming. The airplane was then hurriedly flown without and what a difference it made! (Ref. 18)

Al J. Engel suggested to Curtiss that the front elevator not be installed on new machines at the factory and be removed from all their existing machines in the field. They became "headless" (Ref. 19).

In a 1909 London Sphere illustration, Latham is shown in his tractor monoplane over the channel. Among the notations, its fixed horizontal tailplane is labelled "stability fin" (Ref. 20) indicative of its required purpose and the trend of the day.

The Wrights had been concerned enough over the difficulty of flying their airplanes to do work on various devices to assist the pilot. At least one patent was granted to them (1909) for an automatic pitch-stabilizer. Actuated by a vane that controlled a compressed-air supply, it was in turn connected to the elevator (Ref. 21).

This invention was soon abandoned as unnecessary because after the crash in 1908 in which Selfridge was killed and Orville seriously hurt, there was a transition period wherein the Wright airplane also flew with an added, fixed tailplane. This was soon modified to act as an elevator, to work together with the front one, much like everyone else had been doing (Fig. 6-5). Eventually, the entire front elevator was removed and in 1910, for a more complete reversal of their original policy and to complete the metamorphosis (Ref. 22), the Wrights produced a factory airplane without a forward elevator at all and finally a standard wheeled landing-gear (Ref. 23). This was the "headless Wright" or Model B (Fig. 6-6).

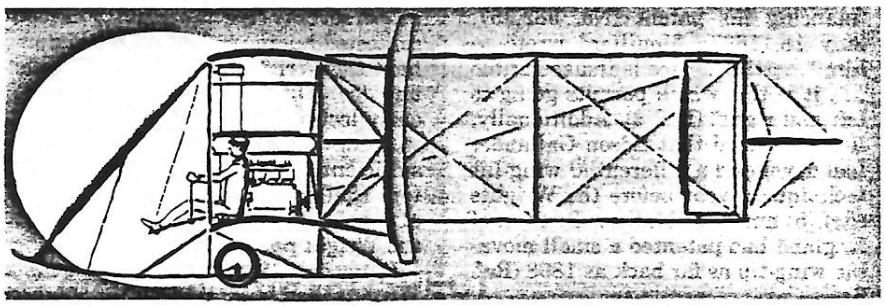

Fig. 6-6 Wright model B 1911

It is possible that crashes, in which the heavy mass of the pusher engine let go and thumped the pilot and/or passengers, influenced greatly the ascendancy of the tractor. Its crash worthiness was recognized as superior. Tractor airplanes could also be made smaller, cleaner, faster and with greater regard for pilot comfort.

Tractor propellers were, in the long run, more efficient and less hazardous to the pilot in the air. The existing disenchantment with the forward elevator also served to hasten the almost exclusive use of the tractor although there were a few German pushers pressed into service at the beginning of World War 1, with the occasional experimental model produced by the factories as the war continued. However, it was the English who gave the pusher a renewed lease on life, if only a brief one. The problem was non-aerodynamic - that of shooting bullets through a rotating propeller. It may have occurred to contemporary tractor designers to place the guns outboard of the propeller arc and so bypass the complication and weight of synchronizing gears, but the reliability of available machine guns and ammunition required much hand clearing of jams, necessitating that the breeches be close to the pilot. Until the Allied syncro-system was firmed up, the pusher helped fill in.

As years passed, at least up to recently, tandems have been built only occasionally, made pitch-stable largely by a forward CG and the utilization of a form of longitudinal dihedral, although not without some problems intrinsically associated with the type.

Next and concluding part . . . Tandems.

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HELO ENDURANCE CONTEST - COMSAT
MAY 11, 1986

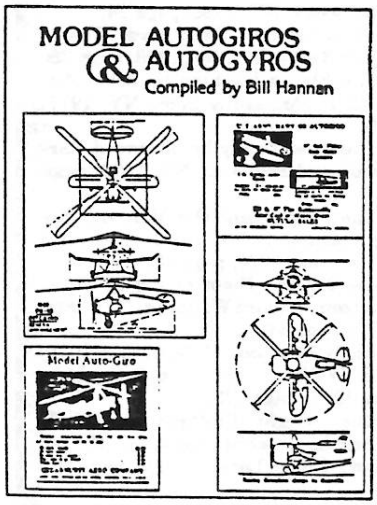
NAME	AIRCRAFT	FLIGHT TIMES - SEC.					BEST -3-	PLACE
		1	2	3	4	5		
BILL CERESA	S64 (HANNAN)	30	28	28	43	35	108	5
BILL CERESA	HS3 (HANNAN)	29	29	35	–	–	91	
CHARLES MAGERS	HANNANS AGUSTA	21	16	19	30	21	72	6
ALLAN SCHANZLE	HANNANS AGUSTA	39	43	29	37	6	119	4
CONNIE McSHULSKIS	HANNANS AGUSTA	33	42	37	45	37	124	2
TOM SCHMITT	HANNANS AGUSTA 2	58	41	51	–	–	150	1
TOM SCAMITT	HANNANS AGUSTA 1	31	26	30	–	–	87	
RAY RAKOW	HANNANS AGUSTA	45	37	33	35	42	124	3

HELO SPOT LANDING CONTEST - COMSAT
MAY 11, 1986

NAME	AIRCRAFT	PLACE
BILL CERESA	S64 (HANNAN)	3
CHARLES MAGERS	HANNANS AGUSTA	
TOM SCHMITT	AGUSTA 1	2
CONNIE McSHULSKIS	HANNANS AGUSTA	
ROLFE GREGORY	VERTOL CH47	1
ALLAN SCHANZLE	HANNANS AGUSTA	
RAY RAKOW	HANNANS AGUSTA	

HELO MASS LAUNCH CONTEST - COMSAT
MAY 11, 1986

NAME	AIRCRAFT	ROUND ELIMINATED						PLACE
		1	2	3	4	5	6	
BILL CERESA	S64 (HANNAN)		X					
CHARLES MAGERS	HANNANS AGUSTA			X				2
TOM SCHMITT	HANNANS AGUSTA 2			X				3
ALLAN SCHANZLE	HANNANS AGUSTA							1
CONNIE McSHULSKIS	HANNANS AGUSTA	X						
RAY RAKOW	HANNANS AGUSTA	X						



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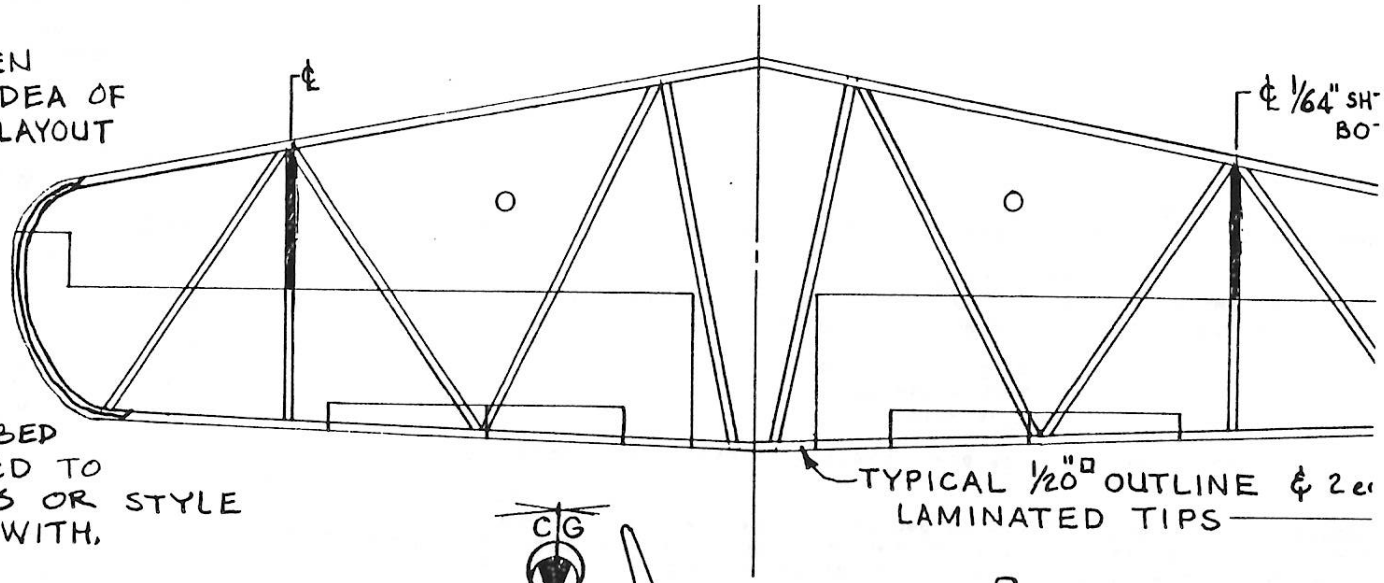
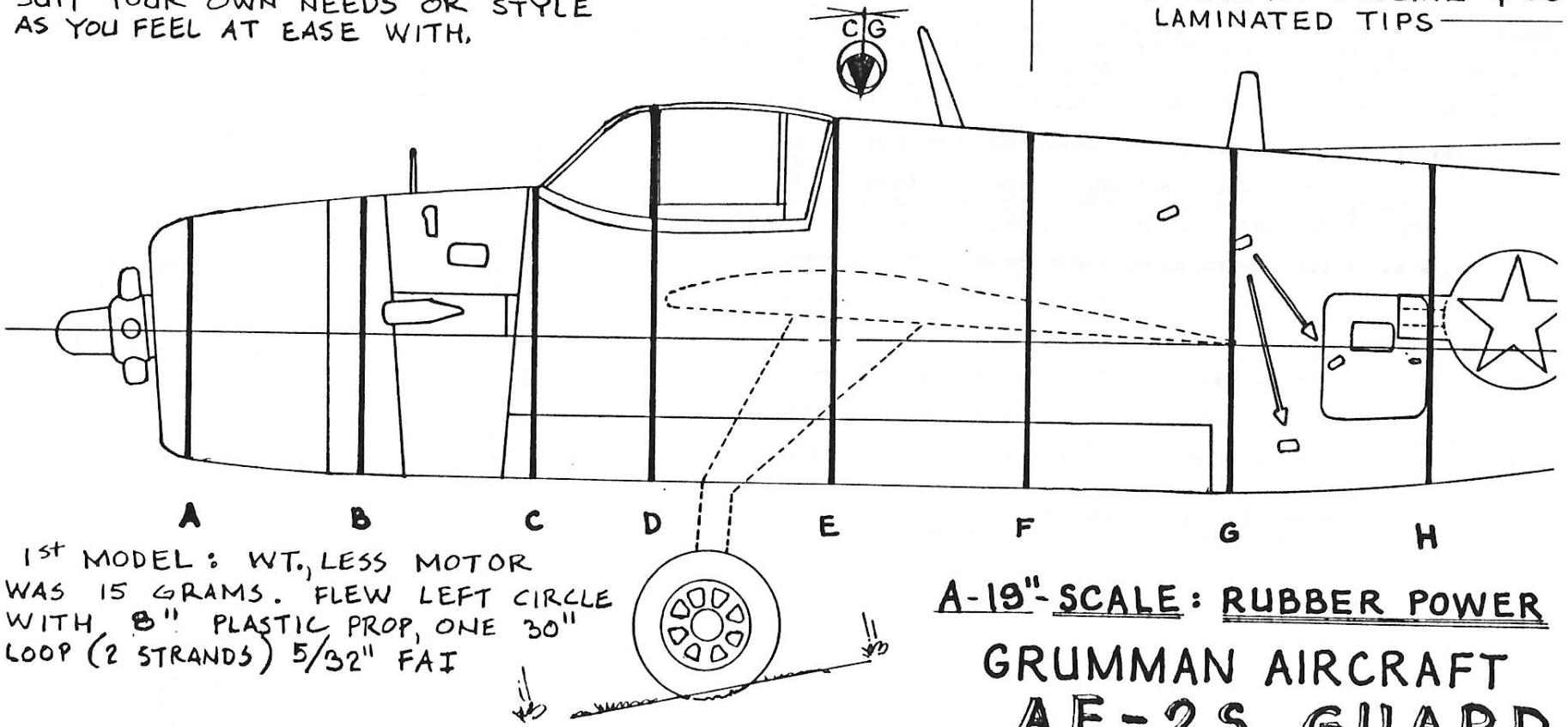
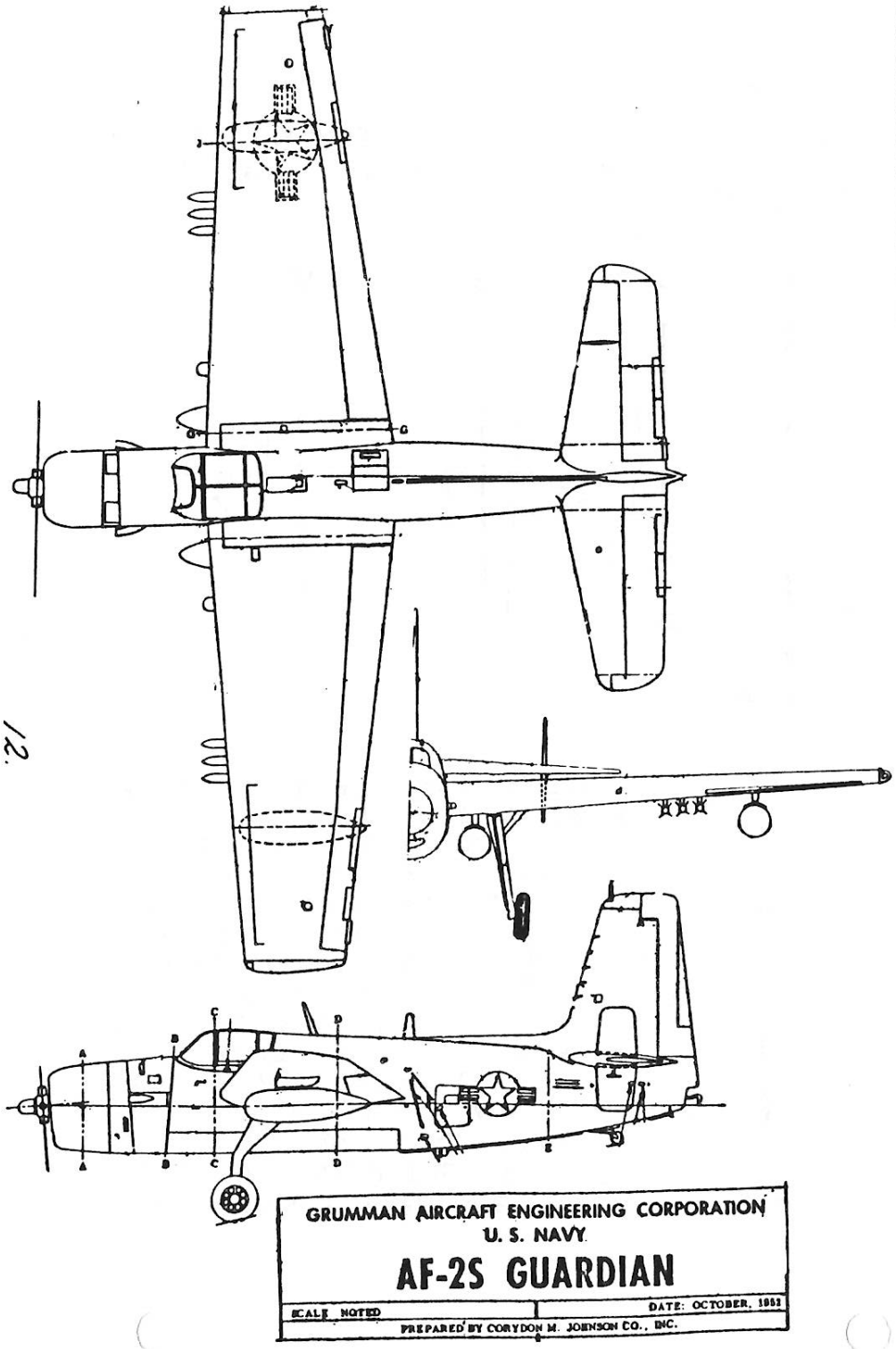




1st MODEL: WT., LESS MOTOR WAS 15 GRAMS. FLEW LEFT CIRCLE WITH 8" PLASTIC PROP, ONE 30" LOOP (2 STRANDS) 5/32" FAI

A-19" SCALE: RUBBER POWER

GRUMMAN AIRCRAFT
AF-2S GUARD



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r. SUB-RUDDER
TH SIDES

2. 1/32"×1/20"

1/20" SHT.

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: FLYING AIRCRAFT

U.S. NAVY

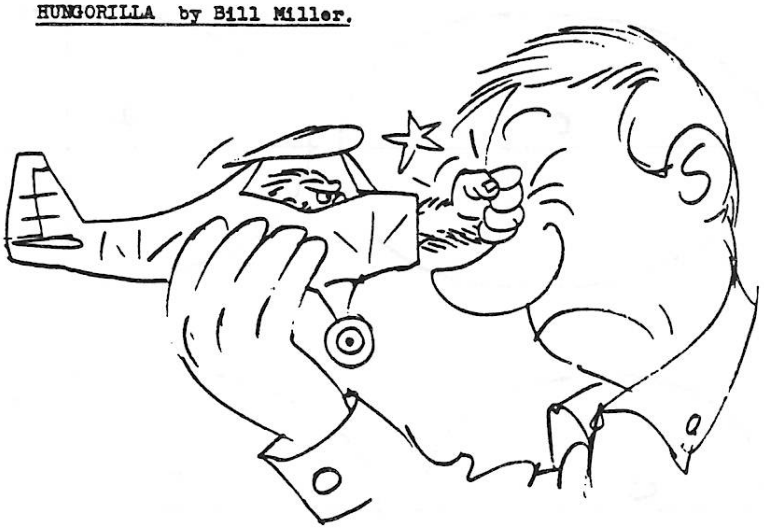
IAN

drawn & designed 11-85
by Kevin Sharbonda

HUNGORILLA by Bill Miller.

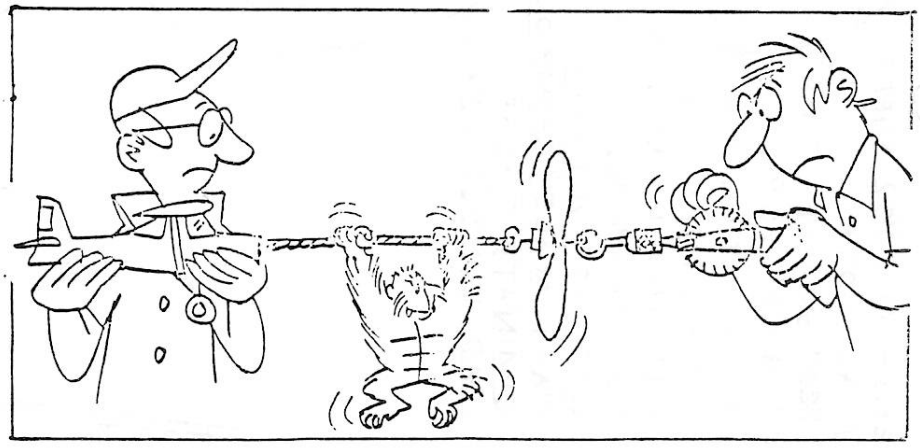
Starting in this issue! A series of cartoons showing the lovable antics of the species, Scatteralloverus Octibusticum! Yep, the God of Busted Motors! Not to mention the broken fuselages and broken hearts caused by this dreadfull deity! Rubber lube is the "holy water" here, fellas! A fine job of cartoonerizing by Lt. Bill Miller! We will be looking forward to seeing more of Hungorilla!

HUNGORILLA by Bill Miller.



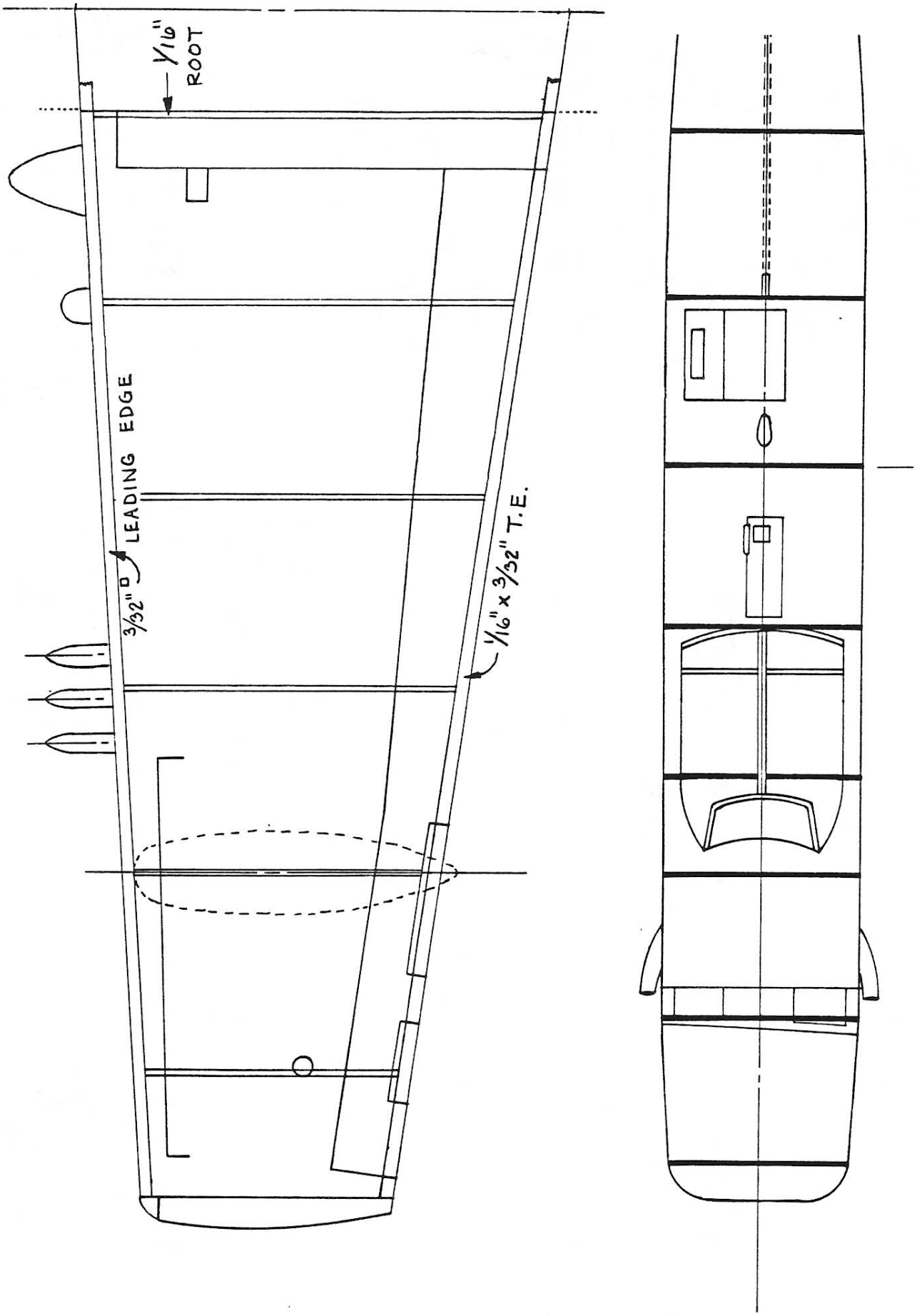
HUNGorilla! by Bill Miller.

HUNGORILLA by Bill Miller



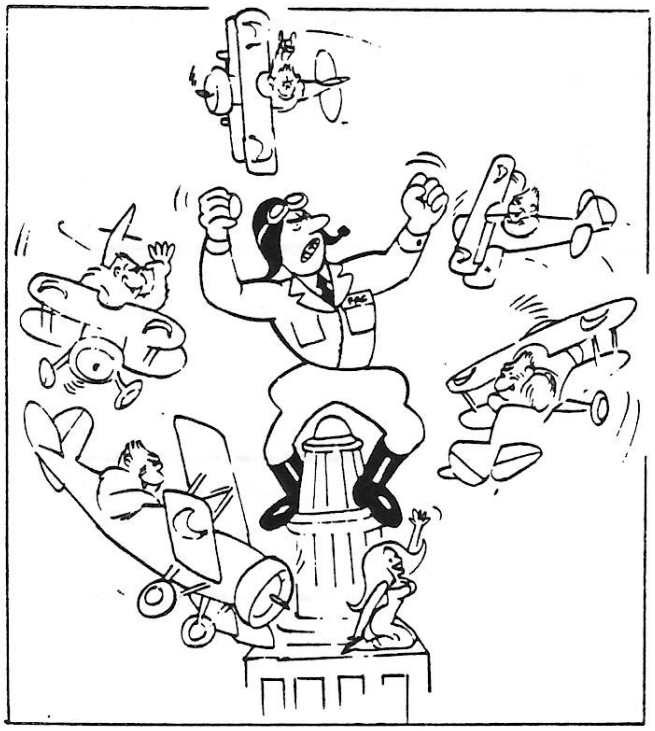
Bill Miller's Hungorilla

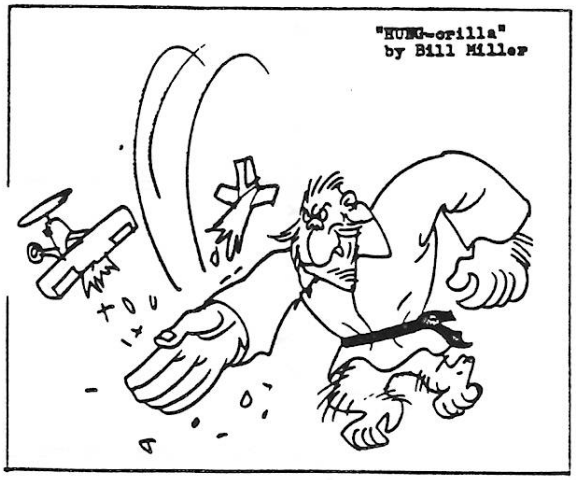
HUNGORILLA, by Bill Miller.


1/16" ROOT
LEADING EDGE
3/32"
1/16" x 3/32" T.E.

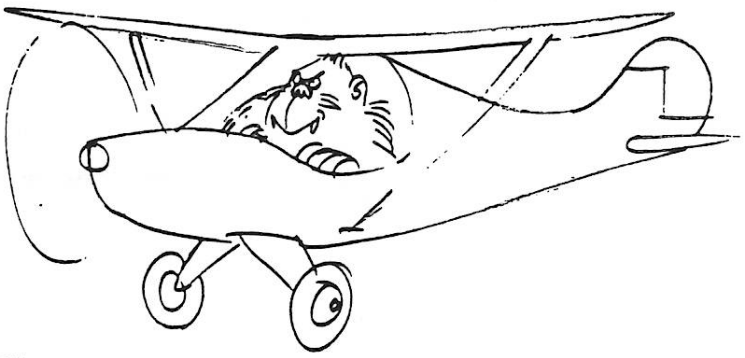
Bill Miller·s HUNG-orilla

HUNGorilla, by Lt. Bill Miller.





BILL MILLER'S HUNGORILLA



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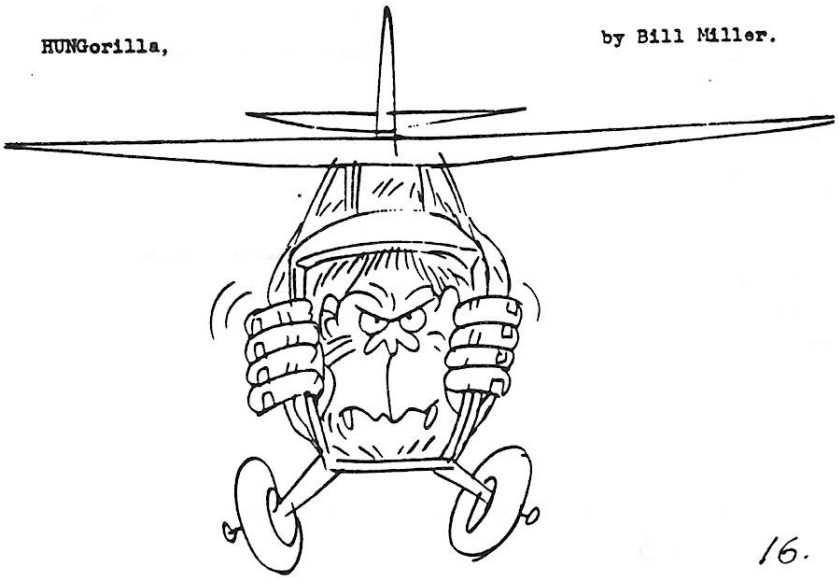
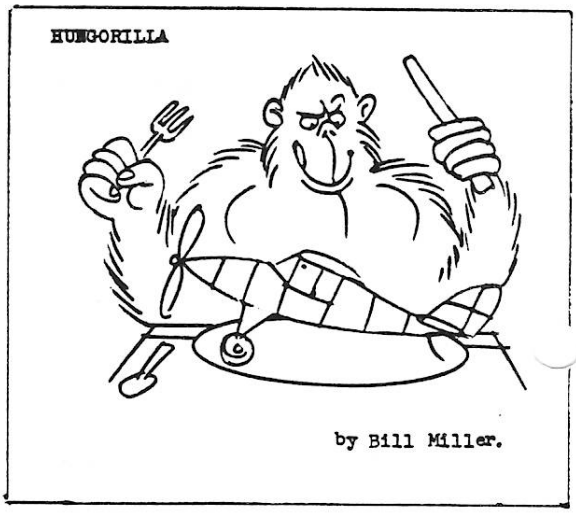
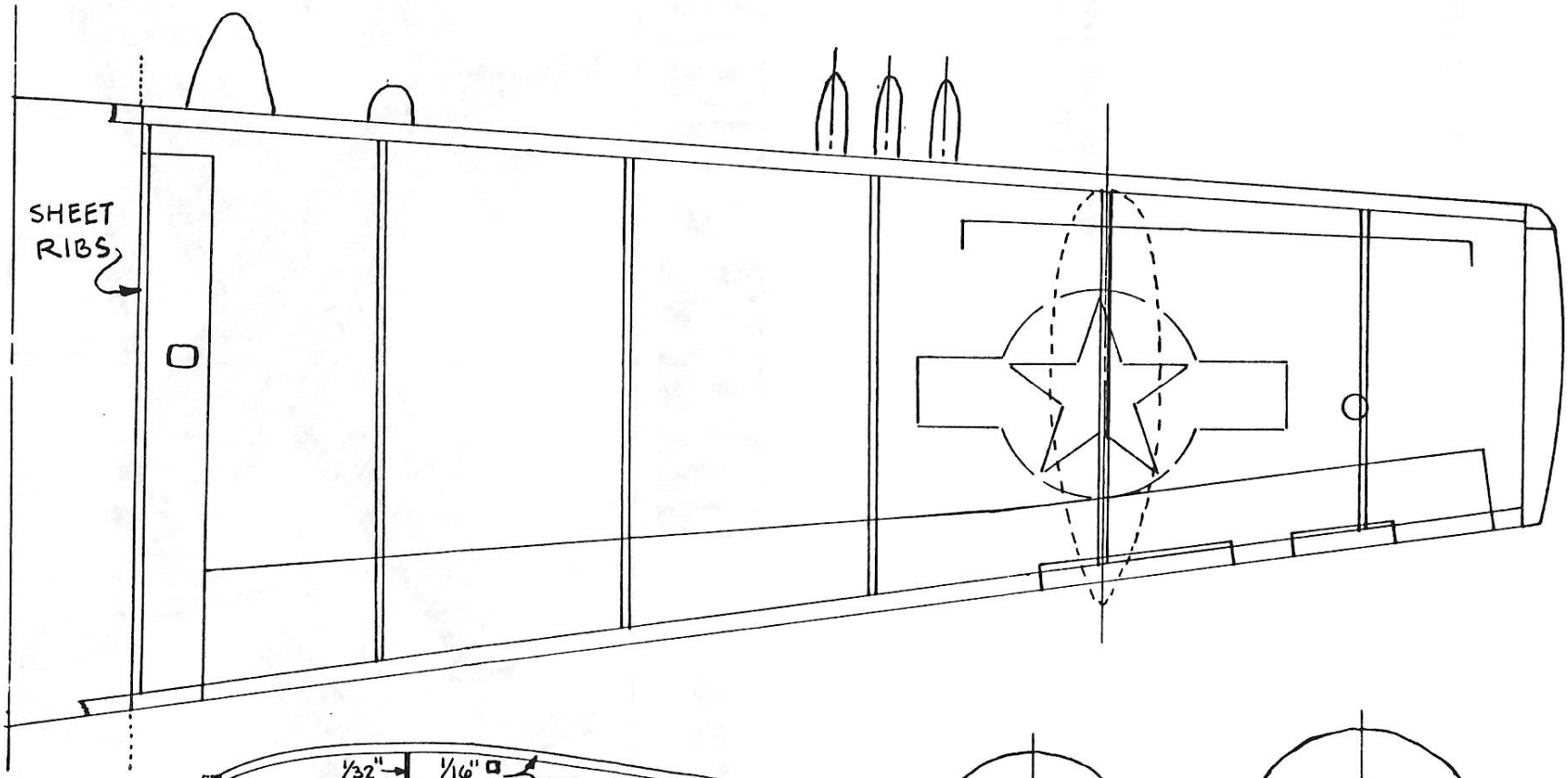
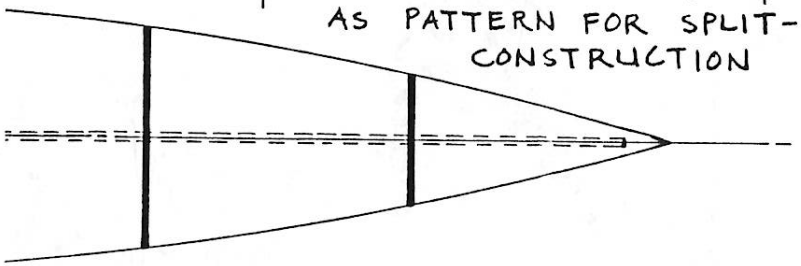
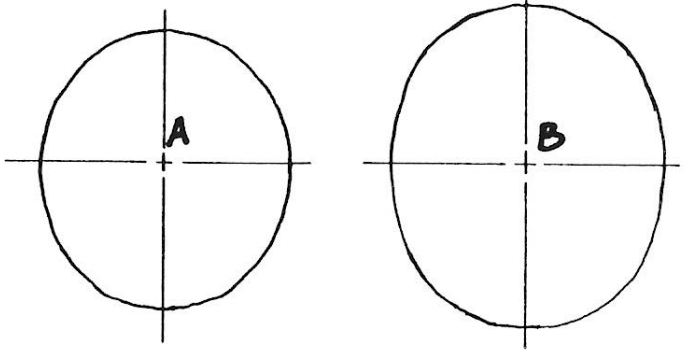






TYPICAL WING SECTION, USE AS PATTERN FOR SPLIT-RIB CONSTRUCTION





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