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WESTERN ASSOCIATION OF MOONEY MITES

N E W S L E T T E R

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The WAMM Newsletter is established as a non-profit voice for the purpose of circulating information of interest or value as well as shared experiences to Western United States Mooney Mite owners and enthusiasts. In addition, it is formed in recognition that a newsletter is essential to maintain communication between Mite owners in attempting flying condition preservation of the remaining single place Mooneys. The newsletter is published every two or three months or as enough news and in-

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FLYING SAFETY UPDATE No. 44

Density Altitude: You Can't Stretch The Runway.

There are many things that consistently are being "stretched" in aviation. There are, for instance, "stretched" aircraft. There are "stretched" downwind legs (as well as "widened" base legs). But one thing is sure: there is no way to "stretch" a runway.

Yet we know of some 109 pilots who wish this were not the case. They're the pilots who, according to the latest National Transportation Safety Board statistics on general aviation accidents, became involved with "high density altitude" and "high temperatures." Of these 109 accidents, during which the pilots ran out of runway, 25 were fatal.

So—at a time when temperatures have been running more than 100°F around the country—let's take a close look at the relationship between runway length and soaring thermometers. Meaning—it's that time of year for density altitude, the bugaboo of the unwary pilot, particularly at high-altitude airports. Too many take-off accidents have occurred because the pilot did not realize the effect of density altitude on airplane performance.

Air density and effective altitude are related. Density altitude depends on pressure altitude and temperature. Standard conditions at sea level are a temperature of 59°F (15°C) and atmospheric pressure of 29.92 inches of mercury. At these conditions the density altitude is zero. Manufacturers' performance figures for a specific aircraft are generally keyed to these standard conditions.

The problem is that too often there are other than standard conditions prevailing. When the air is hot, for instance, it is less dense and aircraft performance will deteriorate. And, generally, the higher the pressure altitude, the longer the takeoff distance required.

The engine, too, is affected by high ambient temperature; at the "higher" altitudes it may be putting out much less than full power. At a high density altitude airport where less than 75% power is available, the engine should be leaned before takeoff to develop maximum power. In all cases, you should follow the procedures outlined in the Pilot's Operating Handbook.

Let's get back to that sizzling 100°F temperature. It would give a sea-level airport a density altitude of 3,000 feet. A rough estimate is that for every 15°F (10°C) above standard, the density altitude is increased by 1,000 feet providing the pressure altitude remains constant. (To find your pressure altitude, set the altimeter to 29.92 inches and note the indication of the hands.)

High-altitude airports with hot temperatures are something else again. One pilot we know, who had been flying for nine years at the time, learned something new (to him) when he took off from a Colorado airport, elevation 7,535 feet, when the temperature had risen to 80°F and there was little or no wind.

Once on the 7,800-foot long runway, he dropped 15° of flaps, ran the engine to full rpm before releasing the brakes, and lifted off after about a 4,000-foot ground roll. At that point the aircraft began to settle, he mushed along close to stall speed, and for some two miles just "hung in there," not more than 10 feet off the ground, not knowing whether he was going to be able to climb, or whether he'd stall.

Eventually he picked up speed and resumed normal flight. But later, when he calculated the density altitude at that airport during the time of his takeoff, he came up with 12,000 feet. Some small, low-powered aircraft would be impossible to fly at this altitude.

Calculating your density altitude on a hot day could be the most important part of your preflight. Most good pocket computers will include such a computation window. There are also the Denalt density altitude computers designed for use with fixed-pitch or variable-pitch propeller aircraft.

If you don't know the density altitude, you can arrive at some answers by taking two steps recommended by William K. Kershner in his "The Private Pilot's Flight Manual" (Iowa State Univ. Press, Ames, Iowa):

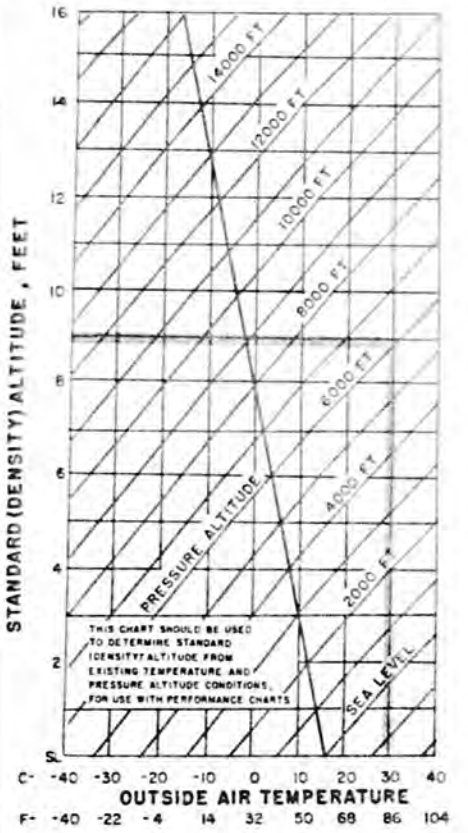
First, add 10% per thousand feet of pressure altitude to the takeoff run. Second, add another 10% for each 15°F (or 10°C) above the standard temperature for that pressure altitude (remembering that the normal lapse rate is 3.5°F or 2°C per 1,000 feet or altitude.)

There's also another factor that should be taken into consideration: the takeoff surface. Takeoff rolls could increase as much as 7% on turf, 25% on long grass, and even higher on a soft field, as compared to concrete or asphalt (upon which published takeoff rolls are predicated).

We'll also add to this that when the airport altitude is high, and the temperature is likewise, the density altitude could be marginal for your aircraft. If so, wait until the following morning when temperatures usually are cooler.

The runway can't be stretched, and neither should the takeoff roll.

Altitude Conversion Chart



Given: [redacted]
Pressure altitude 6000'
Outside air temperature 30°C
Density altitude 8800' (approx.)

At last—you can fly for less than you can drive your car

by ROBERT McLARREN

MOONEY M-18

THE long time controversy over whether or not a single-seat lightplane has volume commercial appeal is receiving its most recent test in the Mooney M-18, now in production. But more than this is the test of low price bringing volume production, the essential theory behind Mooney Aircraft Inc. and plans for its tiny craft.

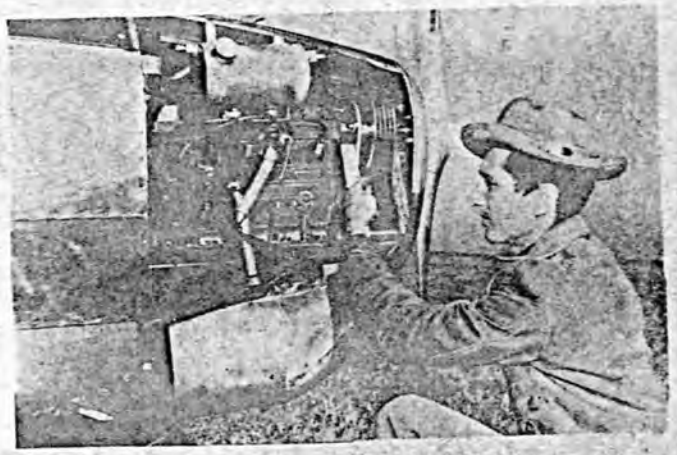
It has now become painfully evident that volume production in the personal aircraft business does not produce lower sales prices, with the originally $6000 *Navion* now crowding the $10,000 mark, the Cessna 195 now at $13,750 and the Temco Swift up $500 to $4495. Each price increase has moved the airplane out of the financial hands of an additional large segment of the public with most of us seeing it slipping farther out of our reach.

To answer this trend, veteran designer Albert W. Mooney has placed the lowest price tag on his airplane of any now in production: $1600! That this is not another rosy dream is evident from the fact that W. S. Grant, Santa Monica, Calif. distributor has already taken delivery on the first airplane and others are now ready at the Wichita, Kansas plant.

The Mooney M-18 is a single-seat low wing monoplane along the general lines of the wartime Culver target planes, which Mooney also designed. The fuselage is welded steel tubing fabric covered; the wings are of wooden construction, plywood and fabric covered; the engine has a formed metal cowl; and the tricycle landing gear is fully retractable! The cockpit contains a sliding canopy and a full set of standard instruments including airspeed indicator, compass, altimeter, tachometer, oil pressure gage, oil temperature gage, ammeter, water temperature gage and fuel gage: all for $1600! Assuredly, here is an aeronautical bargain!

What is the secret of this low price for a full size airplane that gives its pilot so much? The answer lies in a number of engineering and production factors, chief of which is the use of a Crosley Cobra engine, the same engine used in the Crosley automobile. This tiny engine develops only 25 hp, but Mooney believes and has proved that is enough to haul one man around in the sky. The engine is geared down to the prop by a set of "V" belts which run over a small disc on the engine drive shaft and a large disc on the prop shaft located directly above it. A Sensenich fixed pitch prop of laminated wood is used.

Some idea of what use this tiny engine means to the air traveler is the fact that W. S. Grant flew his Mooney from Wichita to his home field at Santa Monica—a distance of 1200 miles—at a cost of a little over six dollars! And that, without



benefit of complex calculations, works out to just half of one cent per mile! The Mooney has repeatedly been flown 100 miles for only 50 to 60 cents, a distance it would cost you from $1.50 to $2.00 to cover in an automobile. And when flying is *cheaper* than driving, then brother we've got a new day adawnin'!

But the M-18 is more than just a cheap airplane. First, it is one of the most stable and safe airplanes ever offered. Because it has only one passenger and its fuel supply is located directly on the c.g., no trim changes are ever required in flight. This means the M-18 is in perfect trim both power-on and power-off and that no trim tabs are required, removing this otherwise important control from the list of things the pilot must think about. All the trim of the airplane is handled by the controllable horizontal stabilizer, the setting of which is interconnected with the landing flaps and cockpit controls. This provides exceptionally good stall characteristics. The stall is preceded by ample warning, and after it has developed there is no tendency for the airplane to roll in either direction; it merely drops its nose and recovers with only slight loss of altitude. Due to this gentle behavior in the stall, Mooney says the plane does not need or use any kind of stall indicator, now one of

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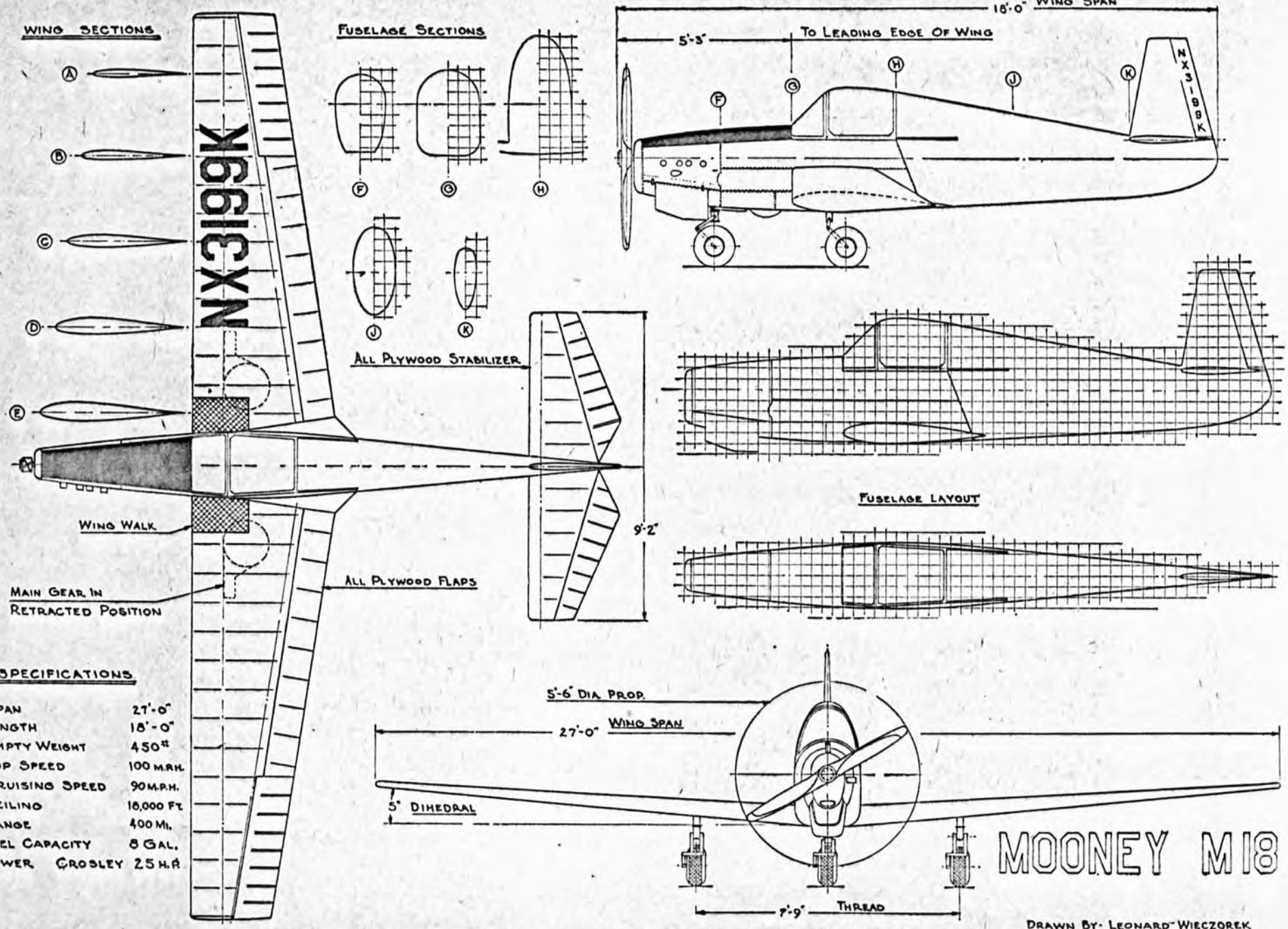


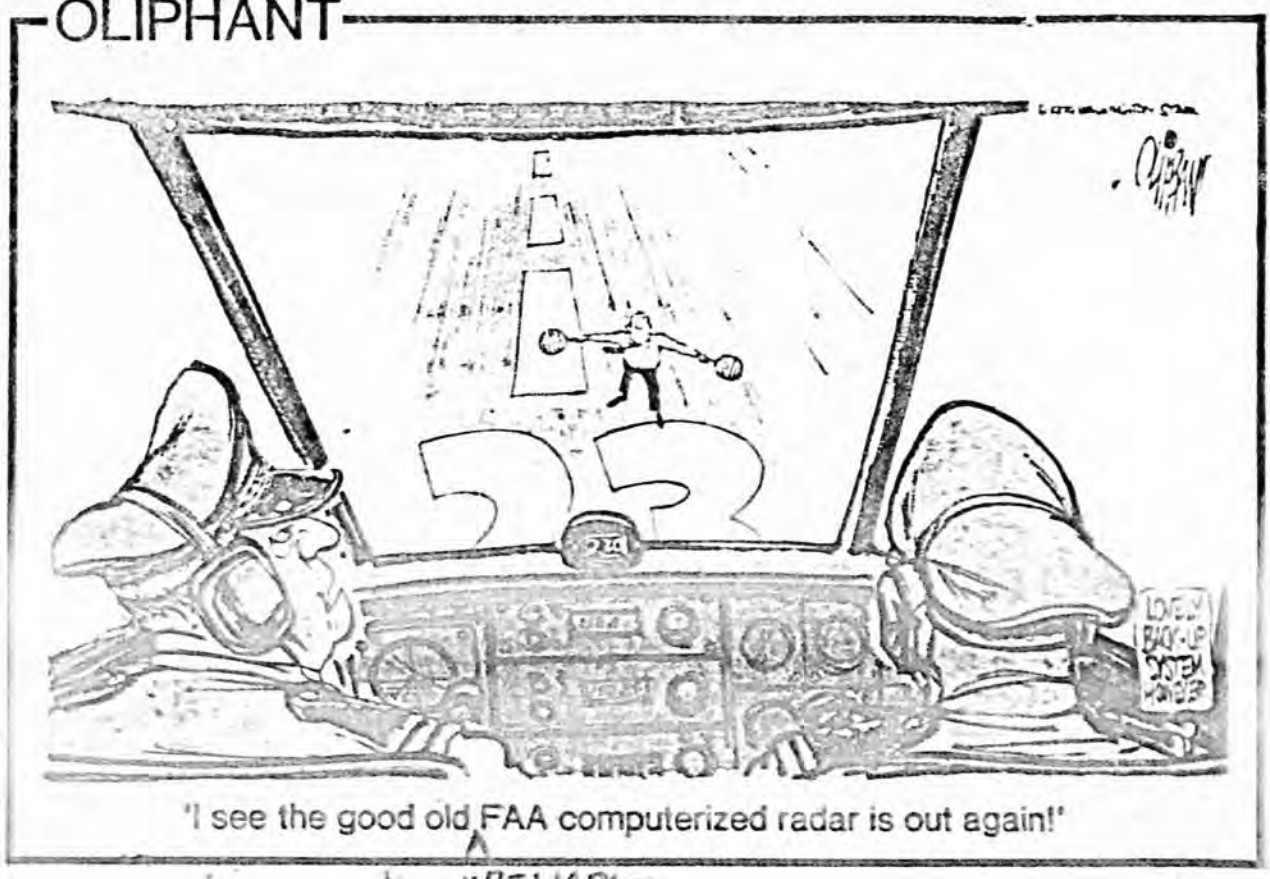
MOONEY M18

SPECIFICATIONS

SPAN	27'-0"
LENGTH	18'-0"
EMPTY WEIGHT	450#
TOP SPEED	100 M.P.H.
CRUISING SPEED	90 M.P.H.
CEILING	16,000 FT.
RANGE	400 MI.
FUEL CAPACITY	8 GAL.
POWER	CROSLEY 25 H.P.

DRAWN BY- LEONARD WIECZOREK

OLIPHANT



"I see the good old FAA computerized radar is out again!"

"RELIABLE"

PHILOSOPHY OF FLIGHT

A PILOT'S PRAYER

By JOHN McCOLLISTER

Almighty God:

At birth we were cleared for takeoff and began to practice all sorts of strange maneuvers.

Each day, as we mature and take solo flights into the dimensions of life, we encounter some unexpected turbulence.

Often, we are blown off course by the winds of hatred, prejudice, or brutal force.

Under the pressures of business, and home, and society, we experience a vertigo as to a proper sense of values.

At times, we become desperate, and are caused to shout: "Mayday," only to discover that there is no location or situation outside of your control zone.

O God, let our flight plan be your will and our true course in line with your commandments.

Then, when we make our final approach in life, may we, with all the angels in heaven, be prepared to say: "I'd rather be flying with you — today, tomorrow, and forever."

Amen.

About the author:

Dr. John C. McCollister has been a private pilot since 1966. He is an associate professor of humanities at Embry-Riddle Aeronautical University, Daytona Beach, Florida.

Mooney M-18

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the most highly publicized and debated instruments in the lightplane business.

The Mooney M-18 is the 18th Mooney design in a 20 year career in the aviation business. It all began back in May 1929 when Don A. Luscombe formed Mono-Aircraft Corp. in Moline, Ill. His chief engineer was Clayton Folkerts—who later designed a series of racing planes—and the company produced the Monocoupe (later to become a separate company and now located in Florida), Monocoach, Monoprep and Monosport airplanes. After a promising start, the depression forced Luscombe to sell the company to Knight K. Culver, who changed the name to Dart Mfg. Co. (after the name of a promising new design then on the drafting boards) and moved the firm to Columbus, O. Meanwhile, Don Luscombe started the new Luscombe Airplane Corp. in Trenton, N.J. and produced the famed Luscombe Phantom in 1934 and the first of the Silvaire series in 1937. (This company was later purchased by L. H. P. Klotz and moved to Dallas, Tex., where it is now producing the famed Luscombe two and four-place all metal aircraft.)

The Dart company struggled along until 1939 when it was dissolved and a new company, Culver Aircraft Corp., formed. By this time Albert W. Mooney had risen to the position of chief engineer and had designed the first Culver Dart lightplane. This basic design grew into the well known series of Air Force and Navy target airplanes, the PQ-8, PQ-14, TDC and TD2C models. Shortly after the first of these target aircraft got into production,

August, 1980 WAMM Mooney Mite Fly-in

During the weekend of August 29, 30 and 31 the WAMM Mooney Mite organization ..... the Mini Mooney Mob ..... held, for the second time, our fly-in and gab-fest at Columbia, California. Columbia is a quaint, restored gold mining town from the 1800's era located in the foothills of the Sierra's with a fine airport within walking distance.

Mite owners arrived from Seattle Washington to the north and San Diego to the south ---- and many points in between.

The attendees this year were Gideon (Gil) Gilbert from Kent, Washington; Tom Clinton from Bellview, Washington (Gil and Tom flew down together from the Seattle area); Bill Vandersande from Camarillo Calif.; Dave Jappay from Orinda, Calif.; "Sandy" Sanderson from Placerville, Calif.; Steve Frenzel and his wife -- who graciously fed us lunch Saturday -- from Los Altos, Calif,; Our intrepid editor Tony Terrigno from Buena Park, Calif.; Gary Gramman and his wife from San Diego, Calif.; and yours truly, Dick McComas from Manhattan Beach, Calif.

Five Mites "bird dogged" their way to the Columbia airport with their owners. Gil Gilbert, Tom Clinton, Sandy Sanderson, Bill Vandersande and Dick McComas. The remainder fearlessly confronted the highways and drove in. All of those who drove are in the process of rebuilding, restoring or overhauling their Mites.

Gil has possibly done the most complete rebuilding of a Mite in our WAMM organization. Extensive woodwork on the wing, wing spar, tail -- including fabricating a new wood monoque fuselage. Steve Frenzel, who is in the rebuilding process, collared Gil asking detailed questions about fabrication techniques. Tony, after selling his prize winning yellow Mite at Oshkosh last month, is feverishly restoring another Lycoming powered Mite. Dave is in the middle of an engine overhaul and Gary hopefully will be in the air soon.

Tom Clinton has the last Mooney Mite built. The M18-C55 model, serial number 357. Tom arrived with a little "wing heavy" and nose-up trim problem. We spent a little time Saturday afternoon re-rigging to correct the difficulty. "Flies great now", says Tom.

Sandy, from Placerville, had the shortest flight to Columbia, less than 30 minutes in his fast, cowled-in Lycoming powered Mite. Asked him if he got lost or had trouble finding the airport since he

arrived late Saturday afternoon. (Not really, But it's fun to joke with Sandy).

We missed some of the "regulars" who were'nt able to attend. Doris (with her ever-present tape recorder) and Ben Loftsgaard, Ben Faverholdt who's beautiful blue Mite was tragically destroyed in a fire at the recent Porterville Moonlight Fly-in, Nancy Crews, the Mayor of California City, whose Mite should be flying by now. The Shea brothers from San Diego, Ed Soncrant and his 100 h.p. Mite --- and others. We missed you, all of you, and you missed a very enjoyable and informative gathering of fun people. See you all at the next fly-in --- O.K.?

Two trophies were presented. One for the farthest distance flown and the other for the best over-all appearing Mite. Tom Clinton from Bellview, Washington took the greatest distance trophy and, after much deliberation, Gil Gilbert from Kent, Washington was awarded the best over-all trophy. Congratulations Tom and Gil --- but watch out at the next fly-in! Bill Vandersande located a flying model (free flight or radio control) of the Mooney Mite, had copies of the plans made and offered them, at cost, to us. Thanks for your efforts Bill.

and then, as it always does, the time slipped away. Another enjoyable gathering of friends with a common interest was slipping into the past to join other pleasant memories. Sunday morning we started our engines, waved goodby and reached for the sky, homeward bound.

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Cont'd from Page 4

Walter Beech, of the company bearing his name, bought the Culver company and moved it to Wichita, near the Beech factory. C. G. Yankey was named President, and Mooney continued as Chief Engineer.

Shortly after V-J Day the Culver V postwar model was announced and placed into production. This design incorporated most of the ideas Mooney had long felt were required for a safe, economical and simple-to-fly personal aircraft. However, partly due to high production costs, a recession in lightplane salesmarkets and a $3750 price tag on the airplane, it did not prove a commercial success and the Culver Aircraft Corp. was dissolved. Last year rumors grew that Mooney was flying around in a special little single-seater he had built for himself. The tiny plane attracted so much attention that Mooney formed a company to produce the design in quantity with the financial assistance of his old boss Yankey, now a Beech vice president. Yankee is President of Mooney Aircraft Inc., Mooney vice president and chief engineer.

The company has a small plant and its own landing field east of Wichita. The Mooney M-18 was recently awarded its Approved Type Certificate by the CAA and plans have already been made for production of 50 airplanes by the end of the year.

The M-18 is a small airplane, standing only shoulder high to the average height man. It has a span of 27 ft., length of 18 ft. and a height to top of rudder of 6 ft. 9 in. It weighs only 700 lb. fully loaded.

Extensive flight testing by chief test pilot Bill Taylor has proved the plane capable of 85 mph cruising speed and a top speed of slightly over 100 mph. It has an initial rate-of-climb of 450 ft. per min. and a service ceiling of 12,000 ft. Although its fuel tank holds only 8 gals. of gasoline, this is enough to give the plane a range of 400 miles, which is 50 miles per gallon! A graphic index to the capabilities of the M-18 is seen in a recent service test given the airplane by Bill Taylor. He flew the craft 1682 miles in less than 20 hours at an average cruising speed of 84.6 mph and a fuel consumption of 1.55 gals. per hour!