

Marfa 1969 AND 1970

by

George Moffat

In Marfa the name of the game is ships so ships are what I am going to talk about this morning. Of course by now anyone who knows enough to come in out of the sink knows that ships is the name of the game everywhere. The days when a top pilot could win in an also-ran ship are long gone. Anyone who thinks that a Dick Johnson could hop into a 1-23 and do well in a modern contest has not been paying much attention to the ships that have been winning for the last three years or so. Occasional good performances by older ships, especially in contests flown in weak and variable conditions, should not blind any but the most dreamy eyed romantics to the fact that the vast majority of recent contests have been won by a very few types.

Why this growing dominance of ship over pilot? Paradoxically, it has been the very growth of pilot skill which has made ships so important. A look at the scores in last year's Nationals shows an average separation of only 50 points for the first 30 contestants, with many a final placing being decided by less than 10 points. On the final task, 48 pilots beat the world's record for a 300 km triangle of a dozen years ago. With this sort of competition, extra points are getting very hard to find. Contests are increasingly won, not by brilliance, but by making the fewest mistakes. One of the biggest mistakes -- made by my two fellow speakers last summer -- is bringing the wrong sailplane.

In Marfa last summer there were two and a half sailplanes with any real chance of winning. The two placed first and second. The half, the Kestrel, gave up most of its chance by not having water ballast until half way through the contest. Now I realize that the many members of the Libelle Lobby are massing for the attack even as I speak but, unfortunately, they cannot change the fact that a great big ship is better than a great little ship. The fact that Rudy Alleman and Bud Mears were really hanging in there with a fourth and fifth should not obscure the equally important fact that they trailed by around 400 points. Keep in mind also that both these pilots had 900+ point scores on the free distance day, gaining 300 and more points on Scott, Moffat, Greene, and Johnson, who with their vast experience in West Texas flying and their touching faith in the weatherman's charts, all went East -- the wrong way. As is so frequently the case, it pays to drop the free distance day from consideration if you want to compare ship performance uninfluenced by luck.

Do these comments mean that the open class is finished as many have suggested? I think not. Of the 82 ships entered, 10 were Cirruses and an ASW-12. One of the Kestrel pilots -- Ben Greene -- had a perfectly good ASW-12 sitting at home. In short, one just cannot say that only a rich or favored few had any real chance to win the contest. The price of these two sailplanes is not significantly above that of other 17-18 meter ships.

One of the recurrent cries that one hears in sailplane flying, or at least one that I have heard -- and sometimes joined in making in the last 10 years -- is that ship X has completely outdated every ship now flying, and the open class is now dead save for the very rich. The RJ-5 was probably the first ship X, the HP-8 was another, the Sisu a third. The ASW-12 is only the last of a long line. What is interesting to see is that no one of these ships ever dominated the open class for any great period. The HP-8 was beaten by Dick Johnson's lowly Weihe in 1959. Eleven Sibus managed to win three contests between 1960 and 1969, the top placers being beaten by K-6's, Austrias, HP's, and Skylarks in the other contests.

How do the super ships fare in actual contests? How do they get beaten? Very frequently they get beaten because they can only do one thing really well or because, as in the ASW-12, they cannot do one thing - - land well. Take a look at the situation last summer in Marfa.

To a Cirrus driver like me, it seemed obvious that there were two ships to beat -- the BJ-4 and the ASW-12. The BJ-4 looked especially dangerous. I had read the long articles on it published in Soaring and Sailplane and Gliding and knew of its many records established in South Africa with its Marfa-like weather. Based on polars, the BJ looked to have a 10 mph average speed advantage over the Cirrus in any weather from 700 fpm up. Unlike the ASW-12, it was a very well thought-out ship with excellent dive brakes, able to land anywhere. What were the weaknesses that made the ship finish 13th despite the first class flying of Bomber Jackson? The first clue came during the practice week when the South Africans were heard to wonder when the good weather could be expected to arrive. Now, in point of fact, the weather during the practice week was by far the best I have ever seen in Marfa, with cloud base at 17,000 feet and more as opposed to the usual 12-13,000 feet, and thermals to match. A little flying with the BJ revealed that the climb was not bad, though no match for the Cirrus, but that the ship seemed to lose a lot both entering and leaving thermals. A look in the cockpit showed why. To change from cruise to climb configuration requires flicking two ratchets and operating three handles, one through several cycles. Changing back to cruise requires the reverse of all this. In the sharp, narrow and frequently ephemeral Marfa thermals, this just proved too much to do. Moreover, if the thermal evaporated after one turn, as was so frequently the case, the BJ lost heavily by being in the wrong configuration. On the contrary, the Cirrus pilot just pushed over and concentrated on cruising -- and the next thermal. Another point soon noticed about the BJ was the weird howling it made crossing the finish. Noise means drag. A close look showed all sorts of flap tracks, balances, Fowler ailerons and rudder, etc., hanging out in the breeze. The BJ, weighing in at well over nine pounds wing loading in cruise configuration, normally flew at 120-130 mph, but it dropped pretty fast, too. We Cirrus types, toddling along at 105 mph, usually were ahead when we came together at the next thermal. On the final day -- the strongest of the meet -- I passed the BJ about 250 miles out and beat him to the finish by better than 20 minutes. The paper super ship had proven to be mostly paper.

The ASW-12 was another brand of bird entirely. I had already both flown ,it and flown against it and had every respect for its ability. In straight performance I would give it a 2 to 3 percent edge over even the long wing Cirrus. Its flight characteristics are good, but it is certainly more work to fly and not nearly so comfortable as the Cirrus; factors, considering the many long flying days anticipated at Marfa. By the way, those interested in this ship should see Wally Scott's flight report in the September 1969 Soaring, one of the finest pilot reports I have read. Actually, despite all these good things that I know about the ASW-12, I was happy with the Cirrus. With my 190 pounds of ballast I thought I could pretty well keep up in the strong weather, and with my lighter wing loading and lower circling speed I expected to do better at the beginning and end of the distance days. All this proved true. I beat Wally by an average of just under 60 miles on the three distance days. Of course the big problem with the ASW-12 was the lack of dive brakes. tail parachutes don't inspire maximum confidence, exactly, and even after you have practiced extensively with them, as I have, you need a bigger field and are more critical as to wind direction. In my Cirrus I was able to pass up an airport at 300 feet on the free distance day and pick up three miles because I was confident of being able to get down anywhere, Incidentally, my tail chute failed to deploy on that short field landing. ASW-12 fans will be glad to know that they are now being equipped with dive brakes.

The two ships that looked like such world beaters both turned out to be cut down to beatable size by some elements that didn't show up on paper.

All of these comments do not change my initial point that performance is everything. I only want to stress that it must be a real performance, not a calculated L/D type performance, Real performance includes such factors as ease of flying, rate of climb, losses in rough air, dive brakes, control forces, etc., as well as the pretty curves the designer draws on the L/D chart.

What of the also-rans, ships like the Kestrel, the FK-3, and the Diamant? The Kestrel looked very potent on the drawing board and would have been unbeatable if the finished product had weighed in at the projected 463 pounds. Unfortunately the ship actually weighs 578, stripped, according to Ben Greene's

weight and balance. This, combined with late delivery and no water ballast tanks until the fifth day, pretty well washed up the Kestrel's chances. The Kestrels at Marfa were easy to outclimb if neither of us had water, which may have had something to do with the fact that only once did a Kestrel ever do much on a distance day. The poor climb was probably aggravated by the fact that Ben's ship, at least, had severe static source problems and thus virtually no total energy. Several of these problems were a result of last minute arrival of the ships and may well be overcome. Certainly the high speed performance of these ships is very good.

The FK-3, which I flew after the contest, is very good and may well prove hard to beat, but in Marfa it had only 100 pounds of water and was far too light for the strong conditions. Plans have been made to go to 250 pounds of water. The ship climbs very well light and is a pleasure to fly, quite reminiscent of the Weihe. The Diamant is a very potent ship -- but small at 16.5 meters and heavy as a result of modifications and thus not at its best in weak going.

So much for the past. What of the future? What do we have to look out for in the Internationals?

My guess is that the open Class should be won by Klaus Holighaus' Nimbus, a Ship Of 72 foot span, 850 pounds weight, and an aspect ratio of 31. The measured best L/D comes in at a hair under 50. The average speed in lift strengths between 500-1000 fpm is about 8 to 10 mph better than the Cirrus. It has HP style flaps and a tail chute, so landing should be no problem. In the two contests it has entered to date it was an easy first and a second -the second in the chancy, rain plagued German Nationals last year. At the moment, I don't know who will be flying the ship, I am supposed to but since the SSA does not plan to give any aid to team pilots this year on the understandable grounds that they must spend every cent on running the contest itself, and since the military doesn't seem interested in flying the Nimbus over and back, and since the price of having it flown commercially will be \$2500 to \$3000, which combined with insurance and normal contest expenses will bring the total to about \$5000, I rather doubt that I will be able to fly it unless we can get help from some airline or other source. Any suggestions will be most acceptable.

The Nimbus will not be the only 72 foot ship in Marfa. The long wing Kestrel to be flown by Neubert of Germany has had the normal 17 meter Kestrel wing extended by 5.4 meters by adding a center section -- 73 feet in all. Hans Werner Grosse will be flying an extended wing ASW-12 of 65 foot span but as Klaus Holighaus put it in a recent letter, "The ship has no dive brakes, no ballast, and already a very nervous pilot."

As far as I have been able to find out, there are no other superships which are likely to appear at Marfa. The Swiss 72 foot ship now being built by Albert Neukom will almost certainly not be ready in time, despite a move to a simpler flap system.

What of the future? In a few minutes you will be hearing about the Sigma, certainly the most ambitious project ever in sailplane design and one which will take a lot of beating if it does not fall into the same flight problems that seem to afflict the BJ-4. And, speaking of the BJ, Pat Beatty departed from Texas muttering about a BJ-5 that would clear up all the problems of the 4. Just in case anyone is inclined to rest on his 72 foot laurels, I learned last week that the Akaflieg Braunschweig, the aeronautical graduate school that first produced the BS-1, among other ships, and many of Germany's top designers, is currently working on a 30 meter ship for the future. That's 99.3 feet for those of you whose slide rules aren't used to astronomy. Does all of this mean that the open class will die as the competitive group we know today? I think so, but not for several years, at least in this country. Certainly the big exotics will be very expensive. The Nimbus is on the block for \$27,000, the Sigma will undoubtedly cost a good deal more, and no one could guess the likely price of a 100 footer. The very price of these ships, to say nothing of their size and weight, makes it improbable that they will ever -be produced in any quantity. It seems likely that the countries that own them will use them pretty much for World Championship flying. In the meantime the open class, perhaps especially in the US, where none of the top pilots have

expressed any interest in owning the Nimbus, Will probably go on much as we know it today, although I would anticipate a gradual falling off of interest in favor of the smaller, lighter, and more competitive standard class, as has already happened in Europe. Perhaps in 10 years the competitive soaring scene will much resemble the power plane Unlimited racing scene of today where a Darryl Greenmayer completely dominates the competition. Can we envision A.J. Smith, Al Parker, and five or six other devotees of the ultimate -- damn the expense -- fighting it out in their 200 footers while the real competition takes place in the standard class? Probably.

In Europe the top pilots on many of the teams choose to fly in the standard class since there is better competition. This state has been slow to come to the U.S., but I think by 1972 the center of interest will have shifted so that the "real" champion is the chap that wins in the standard class. This might seem like an odd statement after the dismal showing of the standard ships at Marfa last summer. Of the ten entries, the best finished 30th and the average must have been over 50th. However, only one of these ships was flown by a pilot who had done well in recent years, and this pilot, Henri Stouffs of Belgium, was obviously finding conditions a bit different from his homeland. Perhaps the best indication on what could be done by a pilot who pushed a bit was Tommy Beltz' outstanding showing in the Austria SH, a ship that is standard according to the 1970 rules. I feel little doubt that the top five pilots in the contest would have lost only a few places had they been flying in the best of the new standard ships.

What are the best of the new standard ships? I feel fairly confident that the Internationals will be won this year by a Cirrus Standard, an LS-1 or an ASW-15. The Libelle Standard has a chance but it seems to give away too much performance on the high speed end. Ships like the Cirrus Standard and ASW-15 can stick amazingly close to the big open ships and in some cases pass them. I flew away and left a very startled Diamant 16.5 pilot last summer at 125 mph indicated on the Cirrus Standard. In climb the small ship's maneuverability frequently makes up for the larger one's lower sink.

While meaningful tests have yet to be made, I would guess that the Cirrus Standard and ASW-15 are very similar in performance. I somewhat prefer the former for its really remarkable handling characteristics, especially in yaw stability, but there is no question that both are outstanding ships. By comparison, the Libelle suffers from the too small fin and rudder of the Open Libelle. The unknown is the LS-1. Reports from Germany have been very good but so far have given no evidence of a clear-cut superiority over the other ships. At any rate, LS-1's are going to be hard to get for a while as the fuselage factory just burned down with all the molds. Incidentally, the LS-1, ASW-15, and Cirrus Standard were each produced by one of that remarkable trio of German designers who planned and built the famous D-36 while still students. The three are the best of friends, confer often, and it is no accident that their work is very similar.

There have been no reports of any standard class superships headed for Marfa this summer. This does not mean that none will be produced. The first such ship was built at Akaflieg Stuttgart in 1968. This ship, the Cuervo, has an aspect ratio of 26 and an empty weight of only 315 pounds as compared to 400 to 450 for all the other standard ships. The ship has never been flown in a big contest by a first class pilot and remains an unknown as to performance. The light weight has been achieved by going to very light structure -- the fuselage feels scarcely substantial enough to hold the pilot. A ship of this sort could never sell in competition with the general purpose standard ships now being produced, but these specialized racing jobs will doubtless come to dominate the standard class during the 1970's.

So far, we have talked entirely of ships and trends. The pilot factor at Marfa cannot be completely ignored. Marfa flying is a rather specialized sort of affair and requires a good deal of adjustment for even the best pilots used to the East and Europe. It was very notable that such famous national and international champions as Wroblewski of Poland, Wodl of Austria, and Stouffs of Belgium were well out of their usual top placing. Makula of Poland told me that he didn't expect any foreign pilot to do well in 1970 if he had not come to Marfa in 1969. Europeans (and many Easterners) hear of the powerful thermals and high cloud bases and often forget that the thermals can be very wide spaced and that

10,000 foot altitudes are no very impressive over 6000 foot terrain, especially when there is no place much to land for the next 20 miles. With thermals spaced as much as 20 miles apart, there is a tendency to take every one to the top, which of course is disastrous in terms of speed,

Finally, one last word on ships. Today, with most of the new ships arriving beautifully polished and apparently aerodynamically immaculate, I notice few pilots are taking the trouble to clean up the minor details that no factory can afford to attend to. Just to give an idea of what can be done, on my Cirrus I made fairings for the aileron control rods (four) which protrude 3/4 inch, sealed the gear doors so there would be a minimum of air leakage when they are closed, worked out some canopy seats to reduce leakage, made a black instrument panel cover to cut glare, made a fairing to cover the hollow bolt ends of the tail wheel, and replaced the large tail wheel with a flush skid for contest flying. A more major project consisted of increasing the span by 32 inches, thus bringing the aspect ratio from 25 to 27. The effects? The only measurable one was in reducing the best speed to thermal by 2 mph with a corresponding increase in rate of climb, but there is little doubt that all these things added together must have given at least a 1/4 percent difference, and 1/4 percent works out at about 17 points over the length of the whole contest. Eleven ships out of the first 25 at Marfa would have gained a place with 17 more points. There is no such thing as a sailplane that cannot be improved, there are only pilots who lack energy and imagination.

Crystal ball gazing is even more chancy than soaring, and it will be just my luck to have the open class won by a K-6 next summer.

Question And Answer Period

Question: How often do you not use the water ballast or use part water or dump your water during a contest?

Moffat: At Marfa I used water every day last year. I dumped three times. The first time I got in trouble on the second day about five miles away from the field and couldn't stay up any other way. I hurt for the water very, very badly all around the course. The second time was on the free distance task at about 5:00 o'clock when I saw my last thermal of over half a meter, and I flew until 8:00 o'clock. That's something you couldn't have done with the AS-12, in my opinion. The third time was on the final throw of cat's cradle day. I dumped as I turned downwind because it was just a question of staying airborne while you flew on down the last 70 miles or so.

Question: (Tom Smith) I noticed in all of your comments, you had none to make on the Phoebus B or C. Do you have an opinion?

Moffat: Yes. The Phoebus B is a very puzzling ship, as was the A. When they're good, they're very, very good. When they're bad, they're terrible.

And nobody I've yet discovered seems to be able to tell why one is one way and the other's another. When they're good, they're just as good as any; and when they're bad, they just don't climb at all. I tried one out quite a few years ago. It couldn't outclimb a rather heavy Sisu even in weak weather. That wasn't just me. We traded pilots around a little bit, However, others climb like a dream -- just as long as the wings are dry. Run into a little rain and the bottom drops out. The Phoebus C seems to be pretty good on climb but it's too specialized a ship. It has no water ballast and, consequently, you're killed by the ships that have water ballast when it gets to the strong weather.

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