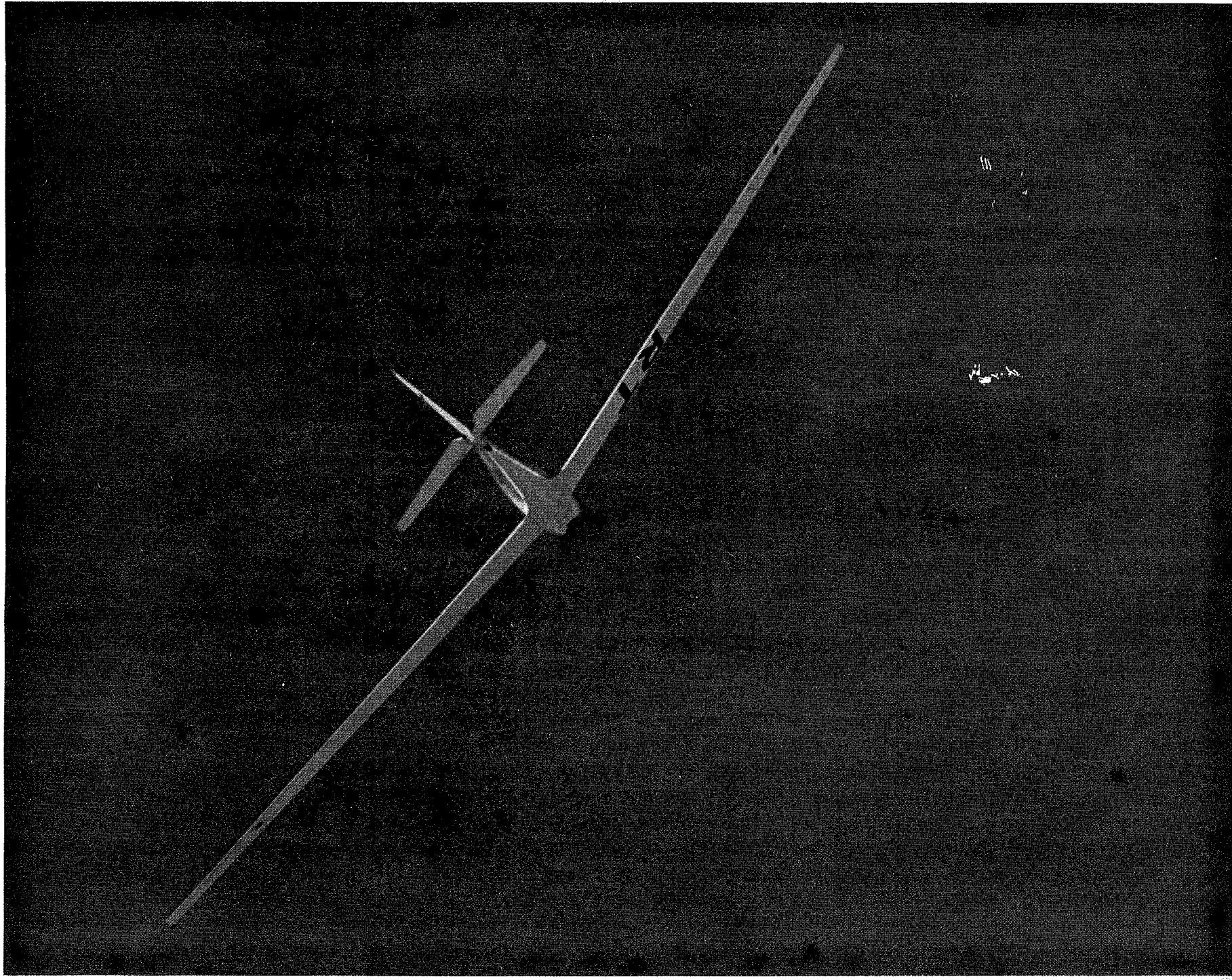


MOTORGLIDING

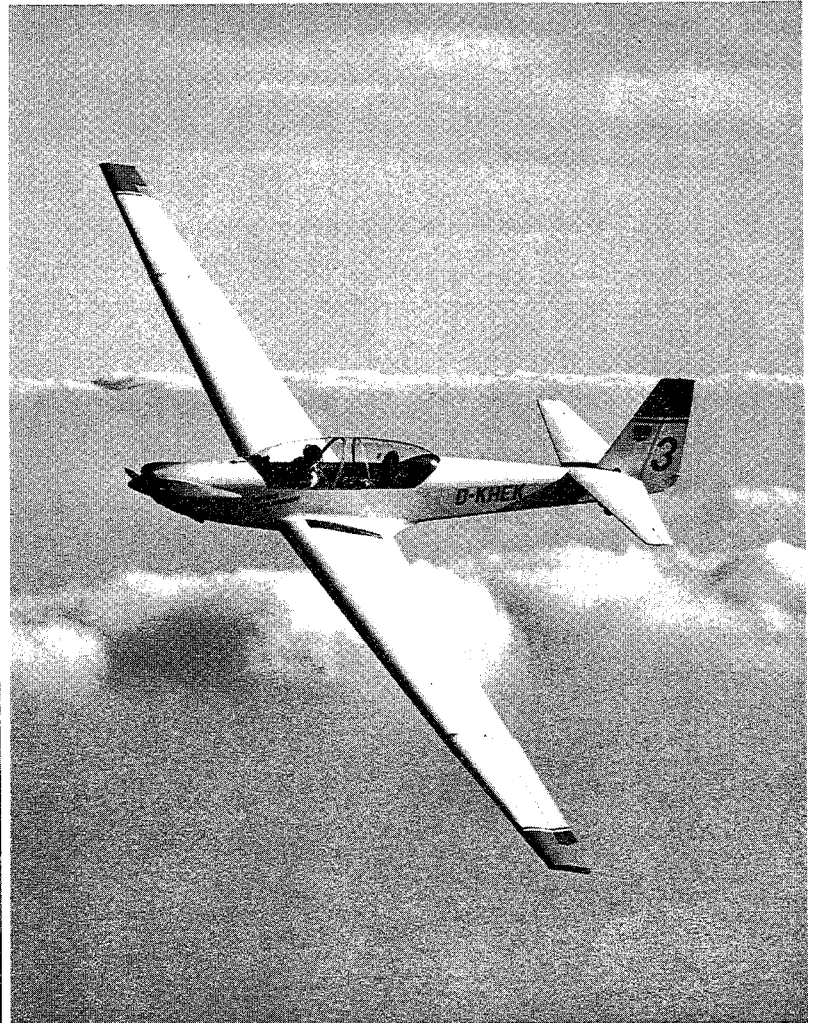
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SFS 31

RF 5 B

Type	Span	L/D	Cost*	Delivery	Seats	HP	Engine	Rt. Sink
RF-4D	37 ft	20	DM 33,600	6 month	Single	36	VW	4.0 ft/sec
SFS-31	49 ft	29	DM 37,800	6 month	Single	36	VW	2.8 ft/sec
RF-5	46 ft	22	DM 50,400	6 month	Dual	68	VW	4.6 ft/sec
RF-5B	57 ft	26	DM 52,390	6 month	Dual	68	VW/Frank	2.8 ft/sec

Standard equipment includes: Airspeed indicator(s), Altimeter(s), Variometer(s), Magnetic compass, Gear warning light and horn, Safety harness(s), Seat cushion(s), Tail antenna, Cabin vent(s), Recording tachometer, Oil pressure gauge, Battery, Oil temp. gauge, Ammeter, Starter (elec.), Exhaust silencer(s).

* Ex-factory

MOTORGLIDING

Donald P. Monroe, Editor

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Cover: Bob Tawse's AS-K 14, by George Uveges

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Circulation of the August 1973 issue was 700.

FERRY FLIGHT OF AN RF-5B

by Bill Richards and Bill Nutting

Some months ago, in learning that Bill Nutting and I had purchased a new Sportavia RF-5B *Sperber* and would be ferrying it out to its home base at Palo Alto, California from Wooster, Ohio, Elena Klein asked us to write this piece about our adventures. Much belated, and and after additional nudging by Bernald Smith, we have finally pulled our notes and thoughts together.

A year ago, Bill Nutting of Palo Alto and I found ourselves using adjacent hangars at the Palo Alto Airport to house our respective antique aircraft—mine a 1941 Ryan PT-21 and Bill's a 1940 Waco SRE. Both of us had formerly owned conventional or "pure" sailplanes but had not been active in sailplanes for a couple of years. During the many hours of "hangar flying" that obviously took place, we began to discuss the idea of a powered glider that could be based at Palo Alto. From this base, the soaring potential of the west coast could be explored from Canada to Mexico and down through Baja.

We began an investigation of all the powered gliders then available, and simultaneously loosely drew up a specification sheet detailing those performance numbers and physical dimensions we would like in our "perfect" machine. Primary among our specifications was that the machine should be completely self-launching including the ability to be taxied like a conventional power plane. Secondly, we wanted sufficient power-on endurance to permit motoring to known soaring areas (some being 200 miles away) spending a day soaring and then returning to Palo Alto that evening. Thirdly, we wanted our motorglider to have reasonably good soaring performance of at least 26/1 or hopefully 30/1 max L/D.

As we were able to gather and examine published performance and pilot evaluation reports on all presently available motorgliders, we began to also refine our specs. We felt the machine would need good propeller ground clearance, a level attitude during taxi to avoid runway lights and other normal airport obstructions by the wings, and a steerable tailwheel.

The purpose of cross-country motoring capability meant including modern navcom radio capability, position lights, and an anti-collision beacon. It also meant the need for good cross-country cruise speed, the ability to easily shut down and restart the engine.

Our longest discussions were on the pros and cons of single-seat vs two-place and the effect on price, performance and utility. During the summer of 1972, Bill Nutting had an opportunity to get a ride in an RF-5 in Switzerland. His impressions of this machine's capabilities and performance helped define our "ideal" specifications.

Through discussion, we finally arrived at the conclusion that the new Sportavia RF-5B with its 17-meter folding wings, variable-position propeller (climb, cruise and full feather), four-hour power-on endurance, roomy two-passenger configuration and easy one-man ground handling was the closest we could come to our "ideal".

Discussion with Sportavia importer Bert Buytendyk of Sport-Aviation, Inc. in Wooster, Ohio disclosed we have a choice of either the new Franklin opposed twin engine or the 1700cc VW Limbach of 68 horsepower. Successful use of the VW engine in numerous amateur-built aircraft, the ready availability of VW engine parts, plus the inherent smoothness of a four-cylinder engine over a two-cylinder powerplant and the VW's outstanding record of reliability caused us to choose the VW-Limbach. Subsequent performance and the closure of the Franklin factory made this a happy decision.

We placed our order with Sport-Aviation, Inc. with a planned delivery in the early spring of 1973. We had hoped to enjoy the wonderful late winter and early spring soaring of the Bay Area plus the Easter Wave Camp at Minden. As a result of unforeseen delays at the factory and in shipment, the ship did not arrive at Wooster until mid-May. Following the annual Watsonville Fly-In in which both Bill Nutting and I were involved as members of the sponsoring organization, we made arrangements to go to Wooster to accept the plane, have a Narco Escort 110 installed and fly back to Palo Alto.

Separately I had just purchased a modified DeHavilland *Chipmunk* from the

estate of Skip Volk. This plane was then at the Experimental Aircraft Association Museum at Hales Corners, Wisconsin. Plans were for me to go ahead to Wooster, accept the RF-5B, have the radio installed, receive a check-out in the ship and then meet Nutting at Hales Corners several days later. The following is the chronology of those days and events that followed.

Tuesday, May 22. Leave San Francisco for Wooster. Plane 30 minutes late into Chicago on a 50-minute between-planes transfer. Raining. Plane for Akron/Canton leaves gate 20 minutes late. Is nose to tail on taxiways for one hour before rolling on runway for Akron. Arriving Akron, rent Hertz car, raining and dark, leave airport and make wrong turn—spend twenty minutes trying to solve maze—finally get onto right highway. Take turn-off marked US 30 for Wooster. Drive next hour at 25 mph through residential area 25 miles long and three blocks wide arriving Wooster at 10 p.m. Contact Bert Buytendyk who comes to inn. Greet Bert Buytendyk, chat, find price has gone up \$4000 due to devaluation (our contract was in DM), shipping charges, "extras", etc. Hit ceiling and then hit sack at midnight.

Wednesday, May 23. Low clouds, fog, rain. Get directions to Wooster airport from desk clerk. Follow directions exactly and miss airport by four miles on a six-mile run. Ask more directions—"turn at potato barn, cross — Road, and — Road, go two miles, turn left and there is the airport." Grope through fog/rain to airport and meet FBO who assembles ships for Bert Buytendyk plus Bob Graham, owner of RF-5B N55BG. See our new ship N55RN and she's beautiful. Bert Buytendyk arrives at noon, weather clears to 1/4 mile and 300 feet so go up with Graham for check-out. Solo 55RN, weather closes down again, spend delightful evening with Bert Buytendyk, Bob Graham and wives.

Thursday, May 24. Raining and lousy weather. Rain stops long enough to take 55RN around patch for takeoff-and-landing practice. Visibility 1/2 mile and 300 feet ceiling. Rains return. Have found I must go to Akron to get radio installed.

Friday, May 25. Weather same as yesterday. Get FBO to lead me and 55RN

in his plane to Akron to have Laurence Electronics install radio. Electronic shop says two days to install radio and it's now Friday noon of Memorial Day weekend. FBO waits and flies me back to Wooster. Say good-bye to Bert Buytendyk and FBO, drive back to Akron and sit on electronic shop's shoulders remainder of day. Radio bench checks sour—no 122.0 to 122.9 transmit, no 126.0 to 126.9 receive, sticky VOA needle. (FBO at Palo Alto sold us a sour radio.) Tell electronics to install radio anyway. Find entire panel must be pulled to cut hole for radio. Electronics work to 7:00 p.m. Fund motel, cuss, swear, tear my hair. Nutting's in Milwaukee trying to get *Chipmunk* going. It has a case of severe falling fuel pressure.

Saturday, May 26. FBO finishes at 5:00 p.m. and gives me bill for installing radio of \$278.00. Weather has partially cleared to haze and 2000 broken. Take off for Milwaukee at 5:30 p.m. Skirt rain squalls and finally land at Goshen, Indiana at 7:30 p.m. Plane cruising at 97 indicated, 70% power (2950 rpm) and 2.5 gph. Propeller works great. Sky looks bad so put plane in hanger and find a motel.

Sunday, May 27. Try to push on to Milwaukee between downpours. Get 30 miles downwind in about 10 seconds. Ceiling 200 feet and lowering in rain so make 180° turn. Takes 45 minutes to grope way back to Goshen with some anxious moments finding airport in storm. Put plane in hangar, return to motel, call Nutting in Milwaukee. Thirty-plus tornadoes go through Indiana that evening.

Monday, May 28. Weather partially clear, got through to Hales Corners. *Chipmunk* still having fuel problems. Meet EAA people who have been helping Nutting all week. Demonstrate 55RN to Nutting and local airport bums. Make beautiful power-off wheel-up landing in wet grass on field. Stupid me! Give Nutting near heart failure as he thinks of our \$1300 prop. No damage to plane except for broken paint on cowl. Pick it up, lower gear, wash off mud and we leave Hales Corners for Burlington, Wisconsin for fuel. Meet Gene Soucy and Tom Poberezny at Burlington, talked on phone to Paul Poberezny at Hales Corners. We push on to Sioux City, I fly 55RN, Nutting flying *Chipmunk* which still has

failing fuel flow. Shut down for night at Waterloo.

Tuesday, May 29. Nutting checks out in 55RN and I check out in the *Chipmunk*. Departing Waterloo the *Chipmunk* fuel flow gets worse and we force land at Columbus, Nebraska. Nutting goes chasing cu's while I tear into *Chipmunk's* wobble pump and carb. Can't find problem, try test flight, no better and engine quits on landing roll-out. Nutting having ball with 55RN. Shut down for night.

Wednesday, May 30. Overhaul *Chipmunk's* wobble pump again. Plane test-flies beautifully and a beautiful day. We load up and head west with Nutting flying 55RN. Five minutes out, fuel pressure starts falling but seems controllable so we push on. Nutting sailing along at 6500 and comments on beauty of the day. Damn him, I can't take my eyeballs off the fuel pressure gauge to look around. Fuel pressure drops again, engine starts failing despite constant wobble pumping. Tell Nutting I have to land—make it over the fence at Kearney, Nebraska with dead engine and 30 feet of altitude. Nutting and 55RN land and send help out to pull me off runway. I ground *Chipmunk* and Nutting goes soaring. Beautiful cu's but weak lift.

Thursday, May 31. We decide Nutting with 55RN should push on to Palo Alto so they load up and go. (Here Bill Nutting takes over to describe the rest of the trip to Palo Alto with the RF-5B.)

Thursday, May 31. By Bill Nutting. Permit me to go back in time slightly and give some of my ramblings coincidental with Bill's schedule. Figuring a couple of days for Bill to check out 55RN, I arrived in Milwaukee Thursday evening, May 24. I had looked forward to spending one evening with my brother David and his family—little did we know that I would stay and stay and stay, quite overdoing my welcome. However, the Lord works in mysterious ways—troubled waters in family relationships were smoothed—not possible for a short superficial stay.

Learning to operate the *Chipmunk* was a challenge—the unusual ground-handling techniques required by the English "Johnson Bar" type brake system was aided by a one-mile, police-escorted scenic tour through outer Hales Corners, from the museum to the airport. Indication of

impending danger became evident when the engine quite twice, en route.

Friday, June 1. Thanks to Bill Hodges and Philippe Van Pelt of EAA, an able ground crew, we cranked up in seconds and were off down the road again.

Skipping now to Nebraska and the lonely flight home. Up at 6:00 a.m., first fuel stop was Scottsbluff, approximately 250 miles. Uneventful, calm air, slowly building cumulus—20 miles out turned fan off and glided to airport. Fueled up body and aircraft, answered the many questions of the ever-present flying buffs. (This ship is like my Waco "SRE" in people-attraction.) It is a beautiful bird and everyone wants to know "what it's all about". Leaving Scottsbluff, I planned an overnight in Salt Lake City. Encountering headwinds and some magnificent lift, I dilly-dallyed a bit—shutting down the fan, catching super thermals with three- to five-thousand-foot gains again and again. I found myself short of fuel and landed at Rawlins. Well, the fuel shortage is everywhere—I was able to drain two gallons from the unattended hose plus two gallons in my emergency can and two gallons from the local gas station, a couple of miles from the field. A local elk-census taker provided transportation. Off to Rock Springs for fuel. After turning to the leeward side of the mountains I had some difficulty in getting altitude and getting on course—a no-no for a soaring type. Approaching Rock Springs, the weather looked rather unhealthy toward Salt Lake City. It was obvious very quickly as I rolled up to the gas pump that this bird needed shelter, fast. Less than three minutes passed and she had her wings folded and tucked in the hangar safe and sound—just in time as the line squall hit with 20-30 kt. The Outlaw Motel was a welcome rest from a long but fun day.

Friday, June 1. Up with the roosters. At this altitude the little VW was not feeling well, the mixture was too rich and the plugs were getting full of carbon. Thus, the takeoff performance was minimal, but she kept going. Incidentally, the route chosen was a familiar one, travelled many times, so navigation was of little concern. Approaching Salt Lake City from the east is always a thrill, the beautiful green mountains, then all of a sudden dropping down many

thousands of feet below to the salt flats. I chose to stop at little Sky Park Airport just north of the VOR and received the usual friendly service. The plugs were indeed carboned up. The weather, west, did not look too promising but I pushed on ready for a 180. Across the salt flats, sticking close to the black ribbon highway, the storm cells ahead were going from bad to worse, but moving generally away from my appointed path. It's raining now, but I can see the highway easily and it's still OK behind me. A few miles ahead I see one break in a pass in an otherwise obscured mountain condition. I wish my camera was at the ready. This was one of the most spectacular points of the flight—one side of the pass dark and forbidding—popping through the hole—and beautiful sunshine and puffy cumulus on the other. What a thrilling sight. With this kind of weather I was using fuel up and Elko appeared to be stretching it a bit, so "Wells International" was the next fuel stop. The welcoming committee was less than cordial—one abandoned Volkswagen and two rabbits. Undaunted, I resorted to the emergency fuel bucket (smart boy, that Richards). Just enough to get me to Elko. This entire leg of the trip from here on was a soaring buff's delight—booming thermals, catching the edges of thundershowers—motoring from cloud to cloud—shutting down—starting up. All the way to Reno—straight as an arrow—I wanted to try for Truckee, anticipating lift on the windward side west of Reno—but my judgment not to stretch it proved accurate as I landed at Reno with 0.8 of a gallon. It's now 5 p.m. A phone call home and the family welcoming committee was only two hours away. Through the beautiful mountains over Truckee and westward over Highway 80—clouds dissipating over Blue Canyon—then smooth as glass—slightly descending attitude at 110 indicated (in rough air flight I cruised at 80 indicated).

I buzzed the old homestead in silent flight 15 minutes ahead of schedule. The local weather was gusty and there was a crosswind from about 030°. It had been a long day (12 hours) and I was tired. On final approach at 200 feet the wind stopped. Airspeed dropped to? The left wing dropped out. Down with the nose—the grey-green marsh coming up fast—re-

covery, in less than 100 feet. Thanks, Lord. Our new bird was home at last. Safe and sound.

General comments: I am very enthusiastic about this aircraft. It is more than I had hoped for. The Sportavia people can be proud of their creation. It will, I'm sure, stimulate many to enter the joys of soaring. As Bill Richards has commented, I echo the practicality of this powered sailplane. We don't need a crew assist on the ground. We can motor to untried horizons and come home without unscheduled off-field landings. We can deal with nature and take advantage of all that she has to offer and yet feel confident that we'll always come home on plan. Soaring should be an exhilarating, fun experience—55RN helps to keep it that way.

EPILOGUE

Since its arrival at Palo Alto we have found our RF-5B to exceed even our expectations. We find ground handling exceptionally easy. The wings can be unfolded and the hinge line fairings secured in a lazy 45 seconds each. With its wings folded, the plane is kept in an ordinary T-hangar. Sea level engine performance gives us a takeoff run at full gross of 800-1000 ft. climb-out at 400-500 fpm. With the prop in cruise we motor at an easy 100 mph at 75% power. As a soaring machine, with prop feathered we feel we are in the neighborhood of 29/1 or 30/1 L/D. We have begun to explore the soaring potential of the coast mountains and have already discovered some new (to us) shear lift areas.

Landings can be either with or without power but invariably we are stopped and have to taxi to Palo Alto's first runway turn-off. Ground handling and taxi on this FAA-towered field is exactly as with any power plane with no assistance required to walk wings, etc. Oil consumption is nil and gas consumption is still about 2-1/2 gph under continuous 75% power motoring.

Incidentally, some three weeks after May 31st we found the *Chipmunk's* problem to be a hidden fuel filter in the main fuel line. It was completely clogged. This redundant filter was removed and thereafter the plane successfully ferried to Palo Alto where it resides in a hangar next to N55RN.

SUGARBUSH MOTORGLIDER MEET

by Bob Tawse

An eastern motorglider meet was held at Sugarbush, Vermont July 26-29, with weather that allowed flying each day but otherwise left much to be desired. There was a very slowly moving cold front inching its way across the Great Lakes with the usual southerly flow of hot humid air in front of it. This prevented several of the pilots from getting to the meet entirely and resulted in almost nightly thunderstorms. After the frontal passage it was good enough to have a contest day and the wind did shift to allow some ridge soaring. It is of interest that only one of the group arose early enough to sample the wave soaring. This was George Sells who not only got up early but walked from the Inn to the airport—no mean feat, considering the elevations involved.

The predominant aircraft was the AS-K 14 with four and then one Scheibe SF-27M and one RF-4. For most of the pilots the mountain soaring was a new experience as well as the contest itself so the session was kept comfortably informal. The chatter was constant and lasted well into the night on occasion. The afternoons usually finished over suitable beverages at the local pub, one of the niceties of motorgliding with everyone back at the airport at a decent hour and no worry about trailering home or waiting for hours in the boondocks for the crew. Most of the wives were present but usually spent the day elsewhere in their own pursuits since they were not necessary.

One fact became apparent; in the course of our flying we have all had the same problems, made the same mistakes and finally ended up solving them in slightly different manners. Everyone felt that a circular newsletter would be quite worthwhile and should prevent a lot of stewing and fretting. Perhaps this could be done through *Motorgliding*.

After two days of informal flying the weather became good enough for a short task, and an out-and-return to Stowe, Vermont was selected, being in the same valley as Sugarbush and allowing ridge soaring down and back. The

German rules from Burg Feuerstein were used since they are the only ones in existence, even though they seem unnecessarily complicated.

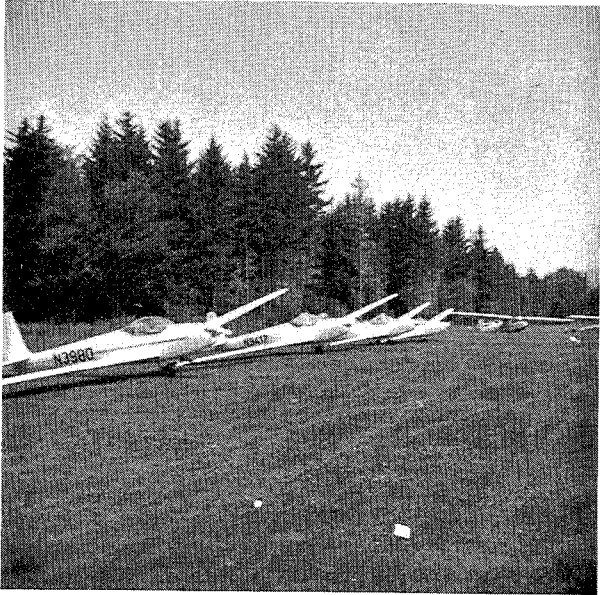
Day's points = $[1000 - (\text{pilot's time} - \text{best pilot's time}) - \text{motor time} \times 15] f$.

Factor $f = 1$, if motor was not used at all; 0.8, if motor was used less than 10 minutes; 0.75, if less than 20 minutes; 0.7, if more than 20 minutes. The day would be a contest day if more than one pilot had a score of 500 or better. All landings had to be made back at the airport and start and finish gates were used; the start had to be made under 1000 meters and the finish made *above* 200 meters. This latter rule seems like a good safety measure that probably should be incorporated in all contests. Each ship's barograph was previously run for one hour and the distance then put on a line graph; this allowed picking off the motor runs from the barographs with dividers with quite accurate results and also allowed verification of the start and finish altitudes. Cameras were used for the turnpoints; the start line had to be crossed within 30 minutes after take-off and restarts could be made only after landing and restarting the barograph.

After the pilots' meeting the pilots were allowed to park their ships alongside the runway and take off at their pleasure—no starting times were deemed necessary since they could take off *en masse*. Prior to takeoff the starter turned on the barograph (noting the exact time), then generally walked the wing

PHOTOS

1. Flight line of AS-K 14's.
2. The pilots: Walter Buhl, Ernest Hunkeler, Bob Tawse, Nelson Riley, Fred Jacobs.
3. Bob Tawse timing barographs.
4. Walter Buhl showing clips to hold shoulder straps until seated.
5. SF-27M motor retraction being shown to Nelson Riley.
6. "Show-off" Jacobs taxiing out for takeoff.



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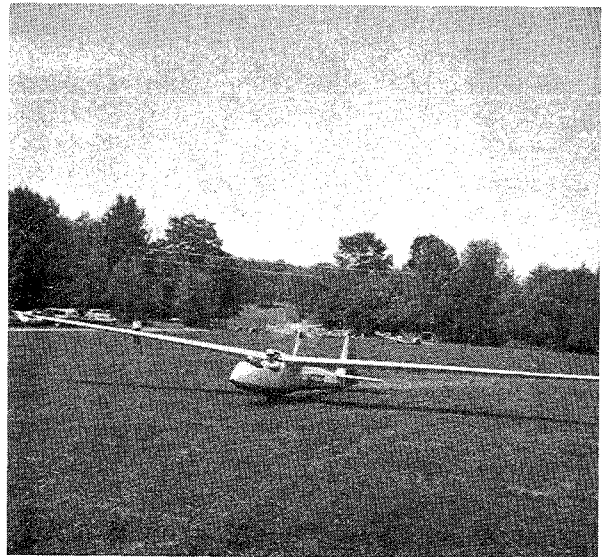
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6

out to the runway. Another crew member was on the radio at the start line to note the start and finish times. Everything worked quite well even on the first try and no confusion was present. Two people were enough to handle everything. The calculations and fixing the barographs did take a bit of time but the scores were ready by supertime. On the first day they were: 543.75, 408.625, 366.275, 325.125, and 196.00. A two-hour barograph run was used and this results in an overlapping of the trace and if frequent motor starts are used it becomes difficult to separate them. A four-hour run should be used in the future. Measuring the motor times would be sufficiently accurate as well as the start line verification.

Several good ideas were seen and are worth repeating. Nelson Riley had the usual fiberglass tail dolly as well as wingtip ones with long legs which allowed him to tow the plane out on the field without help. Ernest Hunkeler used overhead trolleys to run his wingtips into the trailer and a unique four-legged stand with a small block and tackle to

raise the fuselage to lower the gear after trailering and also to steady the fuselage when putting on the wings. Fred Jacobs strapped two-wheel dollies to his wing tips to run them in the trailer. No one used the same motor oil and all swore by his choice. Cylinder head temperature gauges on the Hirth motors were of interest in that they showed there was no significant cooling of the motor on idling. It might as well be shut off immediately at the top of the climb which is especially useful in a contest. Fred Jacobs with his SF-27M persisted in "showing off" by taxiing out to the runway under his own power.

Everyone enjoyed the meet and the associations it afforded. It does not appear that the motorgliders as a group are interested in formal contests as yet but get-togethers at various soaring sites might be the answer, where the problems can be aired, help given for badge flights and maybe even a task thrown in for fun. One of the nicest compliments was that we were invited back to Sugarbush and as one can imagine, they were not overwhelmed by our gasoline purchases.

Here's Henderson



by Dick Henderson

Low-Powered Aircraft

Physicist Niels Bohr once said to a scientist: "We agree your theory is mad. The problem which divides us is this—is it sufficiently crazy to be right?" This might appear to be the case in the use of limited power for sustained flight.

And so we proceed with some observations on small untrilateral aircraft—perhaps a link between hang gliders and power craft; a logical step toward motorgliders.

In a recent letter to *Motorgliding*, Dick Schreder, designer of the HP-14 and other sailplanes expressed hopes for his new design, the HP-17 using F. X. Wort-

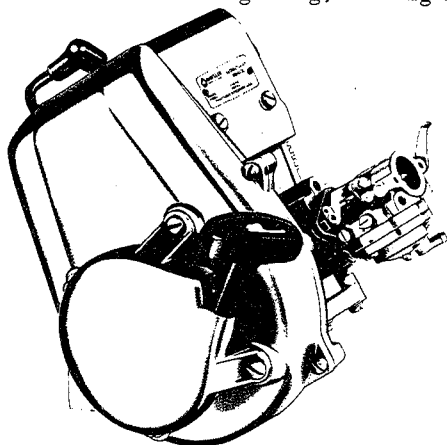
mann's FX-72-MS-150A high-lift/low-drag airfoil. He claims the use of one 10-hp West Bend (now Chrysler) industrial engine will give him adequate power to climb at 332 fpm. A very interesting possibility. Seventy mph was achieved with a 10-hp West Bend in his HP-14 in level flight. It would seem logical the HP-17 would do better (or at least as well).

In the mid-sixties several builders of the *Cherokee II* and some others used this same little engine to fly their craft. Sanders Hudson of North Carolina in a *Cherokee* used three five-hp Power Bee engines, forerunner of the West Bend (Chrysler) 820. In 1964 Ken Flaglor used two West Bend 820 10-hp and about the same time Dave Smith of Bel Aire, Md. used two. Both were *Cherokee's* designed by Stan Hall. Ken Flaglor's ship grossed at 560 pounds. If the engines had produced their full 10 hp, the power loading would have been 28 pounds per hp. From Ken's figures this was not possible due to engine/propeller ineffectiveness

HERE'S HENDERSON

Man has endeavored to fly with as little HP as possible - A recent letter in MG by Dick Schreder where he proposes the use of the engine shown on this page to power his new HP-17 - It is likely there will be questions on the subject. This engine has powered many other aircraft, but normally in pairs - Engine is available RH or LH Rotation for about \$150. - 3 power take off shaft size options (.78" straight shaft for flight use is probably least complicated) - propeller hub from Banks-Maxwell for \$18.00 - propellers from Banks-Maxwell, Troyer Boats, Hegy and others for around \$28.00 - Engines available from many Gokart Dealers or from Chrysler. This information is presented for the convenience and speculation of readers of Motorgliding, making them aware of engine availability, from whom, and approximate price.

Dick Henderson

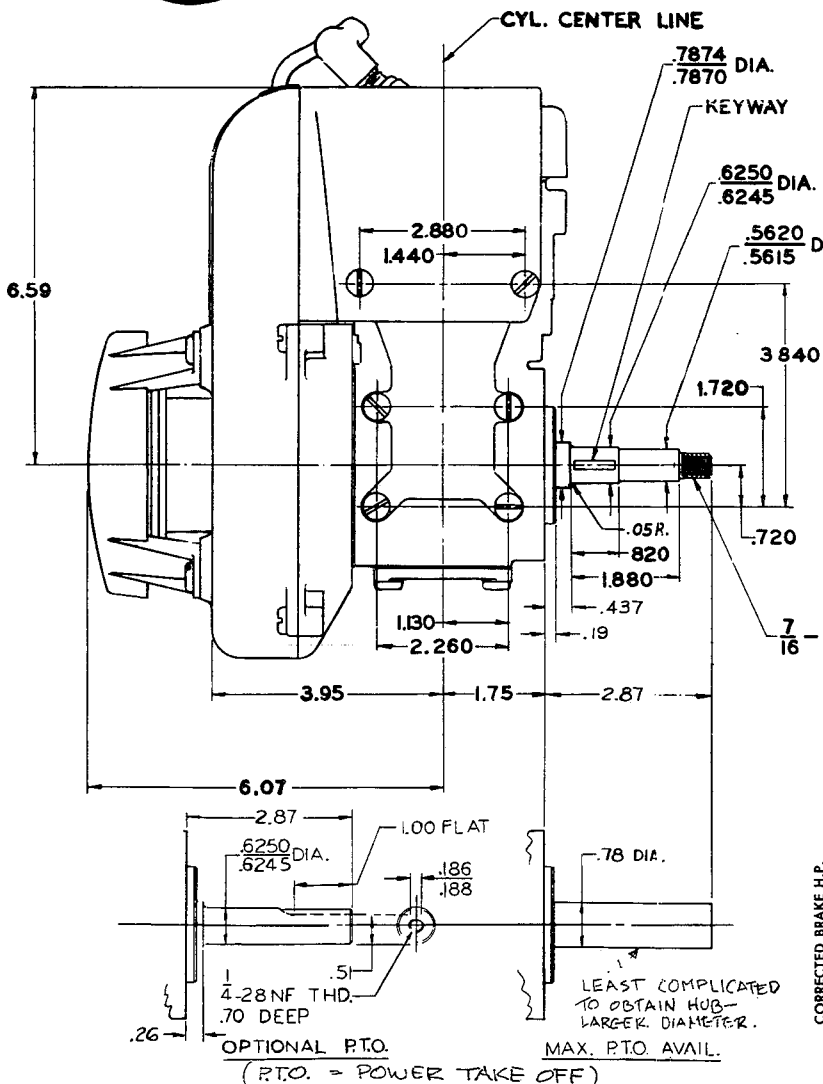


INDUSTRIAL ENGINES BY CHRYSLER

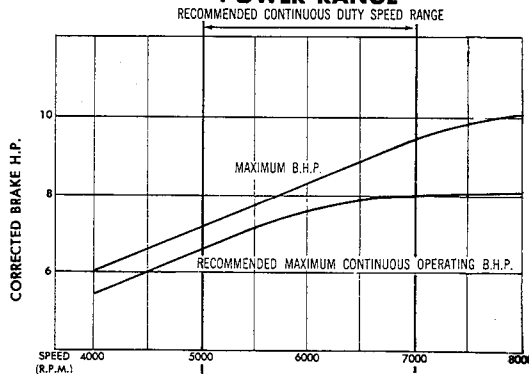
MARINE/INDUSTRIAL PRODUCTS  **CHRYSLER CORPORATION**
DETROIT, MICHIGAN

SPECIFICATIONS: 820 Series

- HORSEPOWER RANGE: 6¼ to 8.0
- BORE: 2.531"
- STROKE: 1.62"
- DISPLACEMENT: 8.2 cu. in.
- MOUNTING: In any position
- COOLING: Air-cooled
- STARTER: Automatic rewind
- ROTATION: Optional
- IGNITION: Hi-tension flywheel-type magneto
- SPARK PLUG: 14 mm.
- CYLINDER: Aluminum diecast crankcase-cylinder with removable cylinder head
- CYLINDER BORE: Hard chrome plated
- CRANKSHAFT DIAMETER: 5/8" to 9/16" (stepped) standard
- CRANKSHAFT THREAD SIZE: 7/16"-20 NF standard (Right or left hand)
- CRANKSHAFT KEYWAY SIZE: No. 8 (Amer. Std. No. 506)
- BEARINGS, MAGNETO AND POWER TAKE-OFF ENDS: Ball bearings
- BEARINGS, CONNECTING ROD (Upper): Needle bearings
- BEARINGS, CONNECTING ROD (Lower): Roller bearings
- CONNECTING ROD: Forged steel
- PISTON: Aluminum alloy
- RINGS: Two, compression
- CARBURETOR LOCATION: Variable—3 positions possible—
- CARBURETOR TYPE: Diaphragm, with integral fuel pump; permits engine to operate in all positions
- FUEL: Gasoline, regular grade
- FUEL/OIL MIX: One-half pint oil to one gallon gasoline
- LUBRICATION: Self-lubrication with oil in fuel
- WEIGHT: 13½ lbs.



POWER RANGE



of two-cycle engines above normal high speed and only 4.5 hp could be realized at best, per engine, giving a power loading of 62 pounds per hp.

In England a two-place monoplane flew with a modified motorcycle engine of only three hp (perhaps English hp have more muscle).

Wilbur Staib built a little plane powered with two 10-hp West Bend engines—the *Airy Plane*—which weighed 175 pounds empty. Merle Replogle's first *Gold Bug* was powered with three West Bend engines—one of 8 hp and two of 6 hp—this ship weighed 220 pounds.

In Washington State the Sorrell family, father and two sons built a number of small aircraft powered by four-cycle two-cylinder opposed golf cart engines which they found very reliable. A shoulder wing monoplane and three or more negative stagger biplanes were built using these 18-hp engines—the biplane designs were the forerunner of a later designed GPU powered two-place negative staggered wing biplane.

Not to be left out is Bob Hovey, writer for *Motorgliding* with his propeller and ducted fan articles was the designer and builder of *Whing Ding II*, powered with a 15-hp McCulloch gocart

engine. *WD II* weighed 135 pounds empty.

Other ventures in the use of minimal-hp engines, in which the lack of hp is probably even more spectacular, are too numerous to mention.

The development of the small compact and reliable snowmobile engine seems to be the answer to the future of a family of SLS's and motorgliders. The BD-5, BD-6 and EOS-001 are all powered with the German Hirth engines, originally designed as snowmobile engines, now evolved to aero engines.

In conclusion, to observe further, what happens when someone decides to power Volmer Jensen's *Swingwing* with the new Chrysler 820 10-hp engine? With propeller, propeller hub and a gallon or so of gasoline, the installation weighs about 25 pounds. With this engine and new light modern materials plus improved techniques, who knows what is bound to develop? About techniques, Ken Rand, building of the plastic airplane, (foam and Dynel) has flown his 36-hp VW engine-powered KR-1 170 mph. The plane weighs 310 pounds empty and has been flown by a 220 pound pilot with no problems—so, perhaps all we need is time, to get our SLS, motorglider or ultralight fun plane.

LETTERS

Editor:

Recently I had the opportunity to fly a RF-5B *Sperber* in Australia. It is being used by a club for training, principally. It integrates very well with multiple aero tow operations at a tower-controlled airport. The steerable tailwheel is a definite advantage but could be even more powerful for shorter radius turns. The ship looks great with nicely finished interior. The canopy was not up to standard. This coupled with the long nose makes you blind straight ahead in ground taxiing and take-off. Takeoff is with a tail-down position with a moderate run. The climb is good and performance can be simulated of various glide angles by throttling back. Electric starts are very quick. My instructor allowed me to operate below the recommended 60-knot soaring speed.

Straight-ahead stalls caused left or right wing drop. The nose cannot be held up once the stall starts and a fair amount of altitude is required for recovery, especially for a trainer. The stall has little warning and the nose drops slowly.

Moderate turns were tried down to 45 knots with a "mushy" feeling and the 60 knots are confirmed as a safe speed. Spins are prohibited and only slight sideslips are possible.

The landing is in a three point position. The RF-5B is nice handling above 60 knots and could be best used as a trainer for higher performance ships. I do not believe beginners should be allowed to solo in it. The above has the serious limitations of a 20-minute flight experience.

Name withheld by request

Editor:

We read with much interest the letters in the July issue of *Motorgliding* on proposed FAA licensing restrictions on Self-Launching Sailplanes, particularly with respect to allowed fuel capacity or range. We want to stand up and be counted as being wholeheartedly in agreement with the views expressed by Steve du Pont! It would seem a great shame if the range of these aircraft were restricted by decree. If sufficient fuel is permitted only for takeoff, much of the value of the SLS to the soaring pilot would be negated.

As I see it, an SLS (with restart capability and reasonable range) has three important advantages over a conventional sailplane: Number One - it frees the soaring pilot of dependence on availability of a towplane and tow pilot. Number Two - it frees him of dependence on a retrieve crew. The Self-Launching Sailplane should also be a Self-Retrieving Sailplane! Number Three - it allows him to investigate in reasonable safety soaring opportunities which it might not be prudent or convenient to explore with a conventional glider.

The most memorable experiences of my 40 years of gliding and soaring have been cross country flights (Phillip Wills' "vulgar downwind dashes"). We do very little of that type of soaring nowadays because of the imposition on friends and family. With the SLS (with a sleeping bag and toilet kit tucked away in the luggage compartment) one could set out confidently, knowing that one could eventually get back under one's own power. Gypsy vacations, where one would soar (if possible) and motor (if one couldn't soar) from airport to airport are an exciting possibility. A poor man's Smirnoff Derby could also be run with motorgliders without need for elaborate and expensive ground support.

Number Three is one of the most exciting possibilities of the SLS, investigating atmospheric phenomena and the soaring possibilities of hitherto unexplored areas. Here in the American West, and in Alaska, excessively long tows would often be required to reach interesting mountains and suspected waves, and the pilot of a conventional sailplane would be in serious trouble if the ex-

pected lift was not found. The SLS may conceivably also lead to the exploration of possible sources of lift over water, some distance from land.

If the design of the SLS must be restricted in some way to satisfy the lightplane manufacturers' lobby, specification of a minimum L/D (say around 20:1) would seem more sensible and less damaging than a fuel limitation. An SLS designed to have sailplane performance will be sufficiently expensive and have such a low power-on cruising speed that it would have little appeal for anyone who simply wants a cheap lightplane. We sincerely hope that the leaders of the motorgliding movement and the officers of the Soaring Society of America will push for an adequate SLS fuel capacity to meet the above uses!

Robert Lee Moore
Richland, Washington

Editor:

Enclosed is a check to renew my subscription to *Motorgliding*. I have enjoyed reading it for the past year and it is comforting to know that I am not alone in believing this is the way to fly.

And now a request. Do you know of anyone within a reasonable distance of St. Louis who would be interested in joining me in the construction of a motorglider? I have some ideas (mainly in the propulsion system) that I am anxious to put to a test and perhaps there is someone who also has some theories that would be compatible with mine waiting for a chance to try them. I realize that the chance of meeting someone who meets these requirements is extremely remote; after all, aircraft home-builders must be the worlds' most independent thinkers and motorglider enthusiasts probably rate as the most independent of all. But it is possible that we could compromise our independence enough to get something off the ground that would otherwise forever remain a dream.

Thank you for any information you can supply.

T. C. Rockcastle
191 Bascom Drive
St. Louis, Mo. 63135

How about it, readers?—Ed.

Editor:

...We have seen much we did not like in the experimental aircraft contacts, and without singling out personalities, or business concerns, that are involved in experimental aircraft kits, we are fearful that in an endeavor of this type, safety control is not sufficiently emphasized and that, of course, is the purpose of FAA inspection and regulation.

The engine and power plant manufacturer cannot be responsible for the other aspects of design necessary to make them suitable for man-carrying aircraft and we are faced with the following situations:

1. The quality and airworthiness of the kit aircraft design.
2. The qualifications of the experimental aircraft kit builder and our uncertainty as to their quality control.
3. The qualifications of the aircraft kit assembler and our uncertainty as to his quality control.
4. The qualifications of those who design and make the engine installation and the divided responsibility between the engine manufacturer and the airframe manufacturer and assembler, as related to engine cooling, mounts, drives, propeller design and selection, fuel system installation, etc.
5. The divided responsibility related to electrical circuitry, wiring, switches, circuit breakers, connectors, etc.
6. Last but not least, the qualifications of the test pilot and the end user.

We are also concerned in that the first reaction is to blame the engine for any failure. We are also dissatisfied as to the type and quality of insurance available and the divided responsibility and contingent liability existing between various divided parties in the overall product.

Some kit manufacturers have disregarded the various responsibilities and problems arising from divided responsibility. Having been in the manufacture of recreational products that are exposed to the elements in its varied conditions, we do not feel that we wish to take part in this type of product endeavor until such time as there is some control agency to safeguard the welfare of the purchaser

or end user.

Presently there are too many types and varieties of installations to warrant development and tooling production of a line of power plants to cover all installations. The very nature of "experimental aircraft" dictates many types and varieties of power plants because of many different airframe designs. This obviously precludes a "one-of-a-kind" engine category or size. Economical sales and production requires a minimum number of 5,000 annually, to break even, and we do not see such numbers at this time. Lower numbers mean prohibitive prices because of high manufacturing costs.

Therefore, attractive as this field may sound to the uninitiated, we, for one, have decided not to develop or produce engines for these applications until warranted. With the present attitudes facing the consumer and "consumerism", we feel we cannot afford to take all the above risks at this time, much as we would like to.

E. C. Kiekhaefer, President
Kiekhaefer Aeromarine Motors, Inc.
Fond du Lac, Wisconsin

Editor:

Not your problem, I know, but I don't quite know where I stand on my subscription: so I am sending \$5.00 to SSA to insure continuity. This is based on the revival of *Motorgliding* after the hiatus in issues and on the improving content. My thanks to you and encouragement to contributors for the increasing amount of real information in the magazine. Hope you can stay with it.

Stan Hall is referred to on page 2 of the May issue. There were a couple of photos and tantalizingly little data on Stan Hall's *Oryx* in the August issue of *Sport Aviation*. Is there any chance you can persuade him to tell you more about his project? Things like general dimensions, wing area, weights, and the performance he is shooting for?

Also, I and probably others do not have the April *Soaring*. Would it be possible for you to reprint Stan Hall's article on homebuilding in an early issue of *Motorgliding*? I believe there may be a considerable pent-up desire and need

for plans of a good motorglider that can be homebuilt and that could compete in part with the RF-5B, which many of us cannot afford.

Although I look forward to information on Stan Hall's motorglider—and ultimately, plans—his appears to be a fairly conventional configuration. What I hope to see before too many more years pass is a *pusher* design that will put the pilot far forward of the wing, where he properly should be in most fixed-wing aircraft. The wing would be at a height that would intrude least on the pilot's field of vision. Possibly twin-boom tail; or T.

I favor the ability to tow or to trailer, so folding wings would be desirable; and thus, tri-wheel or taildragger gear. But I also hope someone will try a tandem-wheel design, with outriggers for ground stability.

Oh yes, I would prefer tandem seating also, so that the pilot would have equal vision right and left. Come to think of it, a good source of ideas is the Slingsby T-53 sailplane.

Why am I telling you all this? Perhaps in the hope that someone else has similar ideas, and better yet has the ability to design.

Dean B. Bogart
Clemson, South Carolina

Editor:

I enjoyed the July issue very much, especially the article on the German Motorglider meet by Mr. Cullum. I was very interested in the AK-1, which appears to be a motorized version of the FK-3. If it is, it would really be the first of the second generation of self-launching sailplanes of very high performance. I believe the engine is definitely a Hirth F-10 type, it looks larger simply because it is mounted correctly (horizontally), and is complete with 1.865/1 reduction gear and 51½-inch prop. It may have seemed to throttle and taxi better because of proper shock mounting. In the SF-27M it is mounted vertically without shock mounts.

My engine is running fine now as I am using a 36/1 mixture instead of the recommended 20/1; however, the engine should be well broken in and a particular

type of synthetic two-cycle oil must be used.

On July 24th I made an "official" 4200-ft height gain for my Silver Badge leg in Abita Springs, Louisiana for the first badge leg in this state and maybe one of the first by a motorglider in the U.S. (Can you help me out on this, Ed?)

If anyone has any further info on the AK-1, I sure wish they would send it into MG. Also, I would like an up-to-date list of all SLS owners so as to start polling early for next summer for a meeting place with fantastic weather, i.e., Marfa, San Marcos, Arizona, etc.

Bill Mouton
Metairie, Louisiana

Bill, I'm sure that there have been other badge legs earned in motorgliders but I don't have the details at my fingertips.—Ed.

More response to the FAA concerning the upcoming NPRM concerning motorgliding:

Dear Mr. Baker:

I am writing in regard to the proposed limitation in fuel capacity on auxiliary powered sailplanes. I believe and recommend that the present FAA regulation

(continued on back cover)

CLASSIFIED ADS



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LETTERS (continued from page 13)

would be sufficiently and properly restrictive if amended to read (additional words underlined):

"The requirements of this chapter are applicable to gliders with power for self-launching, based upon the premise that power is intended to be used for take-off, climb and incidental, intermittent use thereafter in connection with soaring flight."

Also the current 5 gallon fuel tank maximum capacity should remain the same or be supplanted by a requirement that, "The fuel tank capacity shall not exceed a one hour supply at cruising speed engine power."

These limitations will appropriately restrict auxiliary powered sailplanes to usage as powered sport gliders rather than transportation-oriented lightplanes.

Charles F. Sill, Jr.
Los Angeles, Calif.

Dear Mr. Baker:

In the latest issue of *Motorgliding* dated May 1973, we have observed that the FAA is gathering data for a Notice for Proposed Rule Making which would damage

the capabilities of self-launching sailplanes by limiting the fuel tank capacity.

We *urge* you not to issue that Rule. If it is necessary to have a fuel tank capacity requirement, 2-hours supply at cruising speed should be the fuel tank capacity. If you are familiar with self-launching sailplanes, I am sure you will understand that the over-revving of engine while trying to cruise will certainly prevent the aircraft from being used for personal transportation.

Motorgliding is in its infancy and we need every break we can get in order to make this class of soaring advance. Limiting the fuel tank capacity to 4,000 feet would deem this class of aircraft to a limited future.

We again urge you to allow this class of aircraft to develop and grow in order to make soaring safer.

Our Club intends to purchase a self-launching sailplane to wave soar in western Carolina, but a 4,000-foot fuel limit would make this operation very dangerous. We must have restart capability in this mountain region!

C. A. Spencer, President
Carolina Soaring Association
Wilmington, North Carolina