MOTORGLIDING

MAY 1973

YEAR AROUND UTILIZATION & INCREASED ECONOMY

IF YOU WANT MORE ENJOYMENT FOR LESS COST

FLY A **POWERED** SAILPLANE

SFS 31

RF 5 B

Type	Span	L/D	Cost	Delivery	Seats	HP	Engine	Rt. Sink
RF-4D	37 ft	20	$11,360	6 month	Single	36	VW	4.0 ft/sec
SFS-31	49 ft	29	12,800	6 month	Single	36	VW	2.8 ft/sec
RF-5	46 ft	22	17,040	6 month	Dual	68	VW	4.6 ft/sec
RF-5B	57 ft	26	17,700	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).

SPORT-AVIATION INC.
401 HOLMES BLVD. WOOSTER, OHIO 44691 (216) 262-8301

MOTORGLIDING

Elena Klein, Editor

Vol. 3, No. 5 Published by The Soaring Society of America, Inc. May 1973

Contents

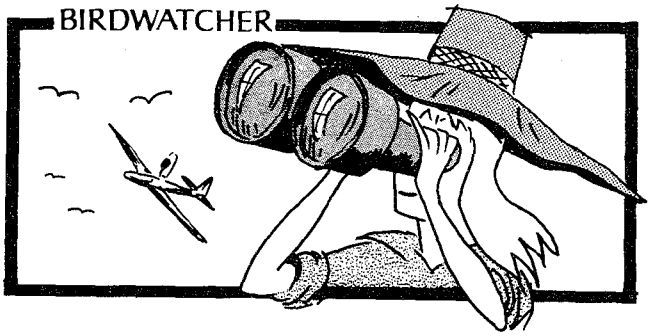
Cover: Bennett Rogers, in his AS-K 14, by George Uveges

Material for *MOTORGLIDING* should be mailed to Elena Klein, 326 Elwood Street, Redwood City, Calif. 94062. Subscription to *MOTORGLIDING* is $5.00 ($6.00 outside of U.S.) for 12 issues, beginning with the current issue. Subscriptions and advertising material should be submitted to the Soaring Society of America, P.O. Box 66071, Los Angeles, California 90066. Make all checks payable to The Soaring Society of America, Inc.
Back issues are available at $0.50 each. All of 1971 are available except for July, September, and December; only March and May of 1972 are available. (No issues were published between May, 1972, and January, 1973.) All of 1973 are available.

ADVERTISING RATES, CONDITIONS, AND SIZES

Display ads: $10 for ¼ page; $15 for ½ page and $25 for full page. Prices are for full-size, photo-ready copy. Extra charges for make-up, $3.00 to $5.00; reductions, $2.00; and photos, $2.50. Sizes: ¼-page, 3-3/8 x 4-5/8; ½-page, 7 x 4-5/8, or 3-3/8 x 9-1/2; full page, 7 x 9-1/2. Classified ads: 50¢ per line (30 characters) or portion thereof.

Circulation of the April 1973 issue was 1070.



Five issues of *MOTORGLIDING* already in 1973! You should be getting this May issue in June and who knows? Maybe the June issue will be in the mail before July! One of the frustrations of being so far behind schedule is that our Letters column is never quite current. I'm including, for instance, a letter dated September 1972 from Dr. Tawse because I think there is information in it that some of you may be looking for.. Dr. Tawse wrote very recently about the symposium at Elmira in May but our Publications Director, B. S. Smith, had already written a long report on the same subject.

We are reprinting an article from the Canadian *FREE FLIGHT* of November-December 1972 because it shows how the Soaring Association of Canada and their MINISTRY OF TRANSPORT solved the problems which were discussed at Elmira.

We thought Tasso Proppe had pretty well exhausted the subject of crows in the March *MOTORGLIDING* but no—he has written this time on *flying* the *Crow* and we think you'll be as interested as we were. George Uveges' pictures cover *all* the angles!

Now how do you like my picture? Dick Henderson did it. It's a good likeness except for the eyes. And it sort of goes with my self-image. Dick's column ought to generate some communication. I'm not going to edit it (or censor it). He'll have to take the responsibility for it himself. I think it will be more interesting that way and more likely to evoke a response from Angry Readers. How about a column heading, Dick?

POWERED *BLANIK (FREE FLIGHT*, June-July 1972) is an example of the German material we would like to provide for our readers. There are also Polish and Yugoslavian publications with what look like very interesting articles and pictures. Is there one of our readers who would like to translate them for us?

HERE'S HENDERSON

How about flying wings as motorgliders, SLS? The configuration lends itself well to the economic use of materials - Can come apart at the most strategic points to make assembly/disassembly, transportation and storage a one man operation. Read Jim Marske's book on flying wing experiments - Interesting and inspirational * When *MOTORGLIDING* was first published an SLS design contest was proposed - Sort of fell by the wayside during *MG's* 7 month forced vacation. How about doing all we can to renew interest, that homebuilder plans will eventually be available - At the moment the *DUSTER* is the only homebuilt sailplane kit available that's stressed for engine installation - What about engine kits, Mr. Thor? - The engine selected, says Mr. Thor, is the JLO 30 HP direct drive - See Aerosport's *RAIL* * It would be interesting to see some design studies/ideas on all phases of proposed Motorgliders/Self Launched Sailplanes/ Ultralight Airplanes to *MOTORGLIDING* for airing, discussion and comments. That ought to open a Pandora's Box * For possible consideration for SLS this interesting information from Banks-Maxwell, builders of airdrives and propellers for airboats - A 15 HP 1 cylinder 2 cycle direct drive JLO with a 30x12 propeller develops 70 pounds thrust - A 23 HP 1 cylinder JLO with a 48x24 prop develops 200 pounds thrust - Banks-Maxwell claims the 45 HP JLO is equivalent to the 40 HP VW * A couple of related articles, "The Case For Homebuilding" by Stan Hall in April *SOARING* and "Let's Take a Fresh Look at Ultra Light Airplanes" by Al Backstrom in April *Sport Aviation*. Both are the kind of support needed to really get us airborne * Good news and bad news, good news first - Kiekhaefer has developed three Aero engines of 40, 50, and 60 HP, with a 2:1 reduction gear box - Price is about $1.00 per c.c. or $430, $520 and $570 in ready to go form - All three weigh 72 pounds without gear box - Box weighs 15 pounds - May be competition for VW engines when available - Now the bad news, availability is estimated at 12 to 18 months...See you next month,

Dick Henderson

MOTORGLIDERS, THE FAA, AND US
(or Where do we Stand on Certification?)

by B. S. Smith

A Spring Soaring Weekend at Elmira, New York on May 11, 12 and 13, 1973 was sponsored by the Soaring Society of America, Harris Hill Soaring Corporation and the National Soaring Museum. The primary program related to National Soaring Museum direction, plans and activities; it was highly entertaining. Of particular interest to *MOTORGLIDING* readers was an adjunct meeting with Federal Aviation Administration representatives on self-launching sailplanes which was attended by about 35 persons including this reporter. We are indebted to Paul and Ernie Schweizer (and no doubt others to whom I can't give credit by name) for arranging this opportunity to hear directly from those in FAA who are involved in the rule-making process.

The purpose of this report is to further promulgate the intent of the meeting; i.e., to let interested persons hear from key FAA personnel on the status of Airworthiness Requirements and Operating Rules for self-launching or powered sailplanes. And vice versa: Input to FAA from attendees was vigorous during the course of the discussion periods and was further encouraged by FAA requesting to hear from all concerned.

The meeting was chaired by Ernie Schweizer. Representing FAA were Nels Shapter, Chief, Airframe Branch, Flight Standards Service; Doug Benefield, Test Pilot, Flight Test Branch Engineering and Maintenance, Flight Standards Service (a Lt. Col. in the USAF on a 5-year assignment to FAA with about 15 hours pilot time on the Concorde--how's *that* for a Motorglider); Bob Auburn, Chief, Propulsion Branch, Flight Standards Service and Russ Maynard, Operations Specialist, General Aviation Operations Branch, Flight Standards Service. Mr. Shapter and Mr. Auburn have considerable background and experience as personal participants in soaring activities. We are indeed pleased that these four gentlemen participated.

As further background information to help explain what has been taking place, you should know of an early 1972 working meeting jointly held by FAA personnel Shapter, Auburn and others with Floyd Sweet, SSA Washington D.C. representative; Harry Perl, SSA Powered Sailplane Committee Chairman; Dick Schreder, SSA Airworthiness and Certification Committee Chairman; SSA Director Harry Higgins, an Engineer with Boeing Aircraft Co., and SSA Member Ernie Schweizer of Schweizer Aircraft Co. SSA recommendations were made to the FAA on the matter of criteria to be used in developing rule-making to establish a new category, namely powered sailplanes. There is a lot more that can be said better by others on the background for some of the thinking that has gone into developing the SSA "position". Maybe we can persuade them to write for a future issue of *MOTORGLIDING* on the pragmatic considerations involved that will necessarily keep powered sailplanes from being as wide-open a category as one might like.

Well, to finally get into the meat of this Elmira meeting. It should be understood that these points to follow are *not* settled but were merely being presented by FAA as a common ground from which a Notice of Proposed Rule Making (NPRM) will be developed. This represents the present thinking of FAA and is subject to possibly considerable modification, both "good" and "bad", depending upon one's viewpoint.

The first obvious point to be made in relating the history of this matter on the part of FAA was the need to develop a reasonable and practical Self-Launching Sailplane Category. (Already the meeting was treading on toes. Some of the audience thought the terminology should be "auxiliary powered"). A proposed standard was drafted in June of 1968. Review of foreign government regulations was made in January 1969. There was an industry review in May 1969. A year later, May 1970, changes to the powered criteria were made by FAA. Power loading of 30 lb/hp, an L/D of 20/1 with a minimum sink of 3 ft/sec and a maximum of 45 minutes of fuel represented their thoughts at that time. More industry coordination took place in December 1970 and then came the SSA industry meeting review instigated and hosted by Floyd Sweet as referred to above in May 1972. Included in the recommendations then by SSA were minimum L/D of 20/1, minimum sink of 5 ft/sec, 300 ft/min minimum climb rate and dropping of power loading and climb angle as unnecessary and redundant with the other criteria. Single-ignition was recommended.

A proposal was then sent to the FAA regulatory staff for review.

Further considerations were that two basic types of motorgliders were possible—self launching and non-self launching. The latter probably should meet all the requirements deemed necessary for the former except takeoff criteria, with useable fuel not to exceed 30 min. flight at continuous power and the engine limited to operations other than takeoff for flight 1500 ft or more above ground.

Further explanation of the FAA position was that some additional requirements for motorgliders would be a need to qualify as a sailplane (such as 4 ft/sec minimum sink). Also, if an engine fails on takeoff, it should have the capability of a safe on-airport landing—this means field length and altitude determination. Criteria for this might be a takeoff speed greater than or equal to $1.1V_S$ with a rate of climb greater than or equal to 300 ft/min at the $1.1V_S$ (or higher—as selected for the demonstration). A safe abort would be required to be made by demonstrating a takeoff and climb to a critical abort height greater than or equal to 50 feet, failing the engine and either landing straight ahead or performing a 180° turn and landing. A few new flight items, for such as power-on stall and trim changes might be required and then all the above incorporated into the flight manual including the takeoff data and maximum takeoff altitude certification.

At this point more audience discussion occurred on nomenclature. What are we talking about? Powered sailplanes? Auxiliary powered sailplanes? Or self-launching sailplanes with the additional desire expressed from the audience to closely adhere to International/OSTIV requirements if possible?

Basic FAA philosophy in their proposal was represented as considering that the primary usage to be considered was a soaring sport device with power for launch and initial climb. Safe recovery and landing should be possible if power fails at *any* time. Simple low-cost engines with minimum requirements are desired. Prevention of hazard to aircraft and personnel resulting from engine failure must be provided. Consideration of engine failure as similar to rope/wire break was briefly touched upon with some favor.

At this time, they have no on-going proposals for rule-making concerning rating requirements. It was pointed out that Washington FAA presently considers airplane certification necessary for both ship and pilot but that field FAA personnel have given authorization in writing to fly motorgliders using only glider pilot certification. FAA is open to more suggestions on this and asked several of the audience present whether they thought power instruction should be required. (My personal view is that it's more important to have a soaring-trained pilot than a power-trained pilot if it's to be a soaring craft.) Others pointed out that minimum check-out for engine operation was simpler than the formation flying required in aero-towing. Pilot physical requirements are also long from resolution--but the possibility exists that glider medical certification procedures could be adopted for powered sailplanes.

Finally, the most encouraging statement was that it was hoped a Notice of Proposed Rule Making would be released before this year is out which would propose a powered sailplane category. Inasmuch as bureaucracy works in strange ways and there are many pressures from voices numbering more than ours, one shouldn't expect too much. Mr. Shapter, when I told him I would write this up, wanted to be very sure everyone understood that none of these proposals are rules (or even settled to be offered as rules) but still in the talking stage.

Some readers may remember the multi-year battle to get a glider cloud-flying rating (was it seven years?) only to have the NPRM on that little goody withdrawn without action after industry comment. There's a lot of other industry around to comment on this powered sailplane category with what might be a highly unfavorable slant. But we've got to keep plugging away and SSA's official position is to do all it can to back what is considered most reasonable, desireable and necessary to the future to soaring activity. The FAA at the meeting recognize that we need all the help we can get, and so do they need help. Support of the need for powered sailplanes from higher-ups in FAA (Mr. Baker is the head FAA General Aviation man) and in Washington D.C. from such as your elected Legislators seems highly desireable.

The following is a summary of comparative proposals/requirements (underlining denotes subject matter):

Present FAA Powered Sailplane proposal thinking	FAR 23. Airworthiness Standards: Airplanes	FAA HANDBOOK GUIDE	OSTIV Recommendations
Engine installation would not crease any hazard with failure at any time	Ensure safe operations	Same	Same
Type Certificate Engine per Part 33 or new Part for Powered Sailplanes	Type Certificate per Part 33 (Airworthiness Standards: Engines)	No Type Certificate; Detonation Test 50 hr. Endurance Single-ignition	Type Certificate glider; engine 45 hr. Endurance test
Type Certificate Propeller per Part 35. Prop failure at any time would create no hazard	Type Certificate per Part 35 (Airworthiness Standards: Propellers)	No T.C. 2 hr. at T.O. rpm	No T.C. No hazard
Fuel Tank Max. useable capabity for T.O. and climb to 4000'	At least ½ hr. at max. cont. thrust	5 gal. max.	No limit
Exhaust system per FAR 23	Same	Same	Same
Power plant Fire Protection 118.3 lines & fittings 119.1 firewall 119.3 cowling (All from Part 23)	Same	None	None
Design features none that might cause hazard due to failure or malfunction	No similar requirement	None	Establish that engine and accessories are satisfactory
Fire Protection minimize possiblity line protection	Part 33.17 Same	None	None
Turbine Engine blade containment and rotor suitability	Part 33.19 and 33.27 Same	None	None

Present FAA Powered Sailplane proposal thinking	FAR 23 Airworthiness Standards: Airplanes	FAA HANDBOOK GUIDE	OSTIV Recommendations
Vibration Operate throughout range without excessive stresses	Part 33.33	None	None
Vibration same as Part 33.43	Part 33.43	None	None
* None	Part 33.37 dual ignition	None	Establish that single ignition is reliable
Calibration test either before or after endurance test	Part 33.45 requires prior to endurance test	Same as Part 33	Same as FAA proposal
Detonation none throughout operating range	Part 33.47	Same	None
Endurance test 43.75 hours	Part 33.49 150 hours	50 hours	Same as FAA proposal

* It was stated that there was possibly an internal FAA problem in gaining acceptance for a single-ignition proposal.

Any errors of omission or commission in the above material are not the fault of any but the lack of this reporter's expertise in getting all the data as presented. Pertinent and helpful suggestions and viewpoints on this subject from readers to Harry Perl and Dick Schreder will be appreciated. Support of the proposal when and if finally issued by FAA will of course be necessary but it's not too early to let others "higher-up" know of the need for a powered sailplane category as suggested earlier above.

NEWS NOTE: Richard Bach *(Jonathan Livingston Seagull)* visited SSA office October 16, 1972. Has a "Snow" (rebuilt) Fournier RF-4D. Thinks motorgliding has a *very* bright future in the U.S. as soon as someone ATC's one.

A letter from Dieter Scheiba, of Brussels, printed in July, 1972, *Air Progress*, mentioned a German-built Doppelraab training glider fitted with four lawnmower engines. This aircraft had been observed at an airshow about seven years ago in Belgium. Scheiba said it made a terrifying noise.—DPM

In the July 23, 1972, *Skrzydlata Polska*, there was a photograph of a model of the new Polish SZD-45 motorglider. It was described as a two-place side-by-side motorglider with a 45-HP VW-Stamo engine, and a fixed-pitch pusher prop. The model was displayed at the 1972 International Aviation and Astronautical Show, at Hanover, West Germany.—DPM

FLYING THE MOTORGLIDER *KRAEHE*

By Tasso Proppe

Motorgliding in the U.S.A. is still in its infancy, and it will remain underdeveloped and somewhat crippled as long as the FAA refuses to recognize it as a category of its own. It is well under way in Europe, and it turns out that its operating objectives range from practice soaring and training on homebuilt plywood-and-fabric ships to reaching the waves in high performance fiberglass machines with associated price ranges from about $7000 to twice that amount and more.

News media coverage generally deals with the sensational and the extravagant; therefore, little is known about the utility workhorses that accumulate flying hours for fun and practice rather than wait for record flights. They fly at weather conditions where the expensive ships stay home because it's not worth the trouble to pull them out.

The *Kraehe* is one of those lesser known designs that emerged at the beginning of the European Motorgliding movement. Its design objectives:

Low cost.
To be built in home shops with limited tooling
Using materials with simple technology.
Sturdy, to be able to take beginners' punishment.
Easy to maintain and to repair.
Easy to handle and to transport.
To fly, perform, and feel like a glider, slow, small turning radius to soar in narrow thermals; and the seat up front--not under or over the sing.

These objectives force a compromise towards moderate performance, of course; but here is where the motor comes in: instead of buying high performance with expensive fiberglass wing spans, you augment your L/D by adding a little power if and when required to stretch your gliding angle.

Motorgliding is referred to as "self launching",—take off on your own power., be independent of the tow airplane or the winch and their waiting lines. Not quite as well-known: It searches out lift areas away from the takeoff airfield, or at altitudes which would be too time-consuming to reach by aerotow.

And it can work lift areas without worrying about drifting beyond the point of no return; when the thermals become weak, it flies home under power.

However, what I want to stress, is it can work weak and marginal lifts for fun and practice by running the engine just at or under the minimum power requirement level—I call that "adjustable gliding angle".

It is this latter feature that makes soaring a lot more independent from unique weather conditions and allows the non-expert to enjoy trying his wings on weekends when the record-oriented experts don't think it worth while to drag out the glass —and there are a lot of non-experts around who like to fly (the soaring kind of flying) for the fun of it.

I have to admit that the supreme enjoyment is when you switch the engine off. Minimum power is close to idle, so the engine runs at a comfortable hum, but that's still *noise*. On the other hand, you stay airborne, and the variometer reference becomes zero rather than your normal rate of sink. If you hit something, it reads "plus", and you work it for what it has to offer.

I have typical examples for this kind of flying:

Elsinore, August 6: Noon takeoff; the thermals were too weak for anybody to stay up. I had to switch the engine back on about seven times. The fellows that joined me up there on tow had to give up after a 10-min. fight. This went on for 1½ hours until one of the thermals provided real lift. From then on it was soaring until 15:30. The fellow who happened to be with me at that time stayed up; the others on the ground had to wait for their turn on the tow line. It took about another hour until we all congregated upstairs. Some of the thermals that afternoon were pretty narrow. The *Kraehe* is slow enough to fly the core inside. In spite of its rather high rate of sink with the propeller dead, it sometimes outclimbs the glass ships which have to fight around the fringe of the lift.

Total flight time: 3 hr. 15 min. Total engine time 53 min.; max. altitude gain from the last engine off: 6000 ft.

Hemet, December 27: The weather wasn't much of anything, a general overcast. I

was primarily interested in testing a different carburetor anyway. It turned out that there was some lift around, not enough to gain altitude, but with the engine off, or idling, I could hold my own for a while until whatever was there dissipated.

Total flight time: 1 hr. 30 min. Total engine time 66 min. with about five re-starts.

Torrey Pines Cliffs, February 4: Beautiful weather--hardly a breeze ("a beautiful, *lousy* day"). Only the *Bowlus* managed later to hang on for 15 min. Everybody else got a little altitude from the winch and, after two passes, had to turn in. Three guys missed doing that in time and went into the nudist beach below. I took off in the *Kraehe* to familiarize myself with the cliffs and simulated soaring by using just enough power to stay at the edge. If there was any wind it was parallel to the cliffs. So, after a while, I added power and climbed to a small cloud further inland, switched the engine off and worked the cloud, gaining a few hundred feet. When I came back to the gliderport, the wind had picked up a little and turned west. I still had to switch the engine back on, all right, but I could slowly reduce power to near idle (which on a two-cylinder engine without a flywheel amounts to 2000 rpm and probably 3 to 4 HP delivered to the prop). Result: Two flights at one hour each, and ridge soaring at its most enjoyable: I do not have to maintain a safety margin to be able to turn in before the wind dies down too much. If I get below the edge, I add power and pull myself up again.

Yes, I can hear the purists lamenting about contaminating the *Art*. But I have heard the purists before, in the early thirties, when we started using aero tow as a means to find thermals in the flatlands instead of bungie-launching from the mountains; "What a dirty way of cheating, having yourself pulled to an easy altitude by the very power planes that we despise so much--no Silver "C" achievement should be recognized on this dishonest launching method..."

Well, purists, too, are subject to change of mind...

Of course, I logged "normal" flights, too: Running into a thermal at takeoff, at the end of the runway, at an altitude at which you certainly would not un-hook during an aero tow. You just try the lift with the engine still running, and when you have it centered, you switch the engine off.

Ramona, November 4: Engine off 5 min. after takeoff at 2600 ft. MSL (1200 ft. above ground) and soaring for 1 hr. 20 min. Cloud base was 5000 ft. MSL—not much vertical elbow room to go on. Without the engine available, you would stay close to your landing strip and pass up lift because of the traffic.

The *Kraehe* I fly is an oldtimer. It was built by an Austrian father-and-son team to type-certificated plans designed by Fritz Raab who is quite renowned for ultra-light aircraft design. It has a

(text continued on page 11)

PHOTO-ESSAY, by George Uveges ⟶

A get-together to acquaint two glider pilots with a motorglider at the Hemet-Ryan Airport, Hemet, California, on Saturday, March 10, 1973.

Owner: Tasso Proppe; pilots: Walt Mooney and Ernie Shattuck.

The motorglider represented here is one of the original designs in a series of Austrian designs using this configuration.

1. Motorglider: *Kraehe*, N11224, S/N 022
   Engine: Puch 650 TR II 2 cylinder, 4 cycle, 27 HP
   Span: 39.4 ft.
   Length: 23.0 ft.
   Wing Area: 154 sq. ft.
   Empty Weight: 525 lb.
   Payload: 205 lb.

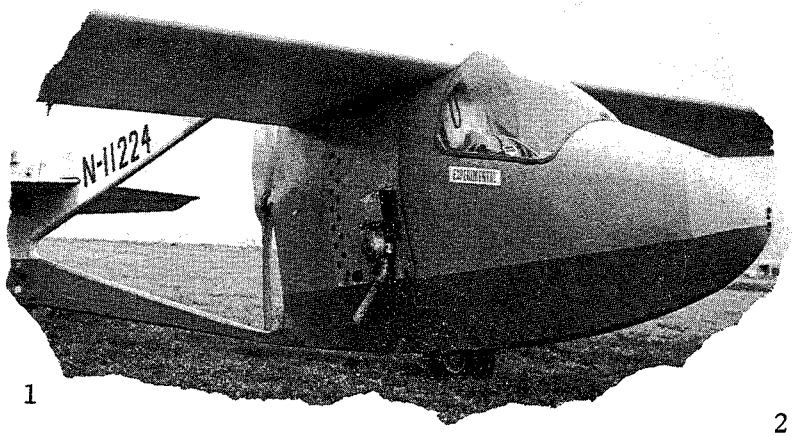
2. One following this rig gets the feeling he's behind a three diamond glider.

3. The *Crow* is towed behind a VW sedan.

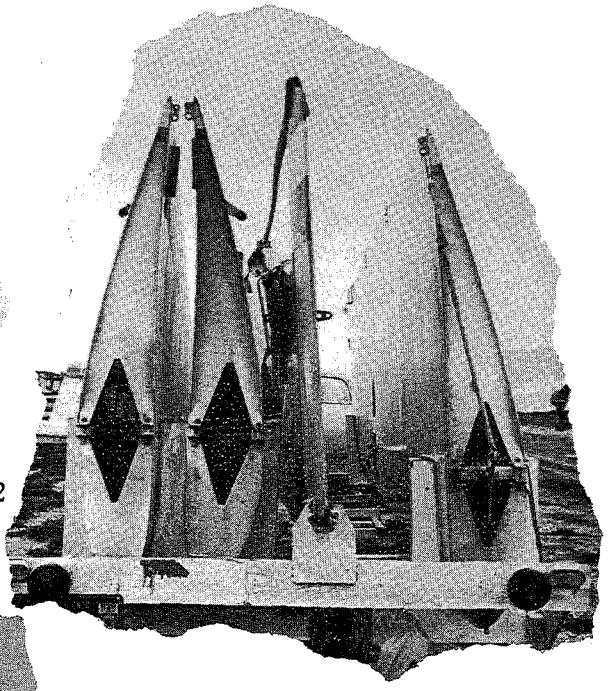
4. Mr. Tasso Proppe, the proud owner.

5. The center section is attached to the fuselage with three spar pins.

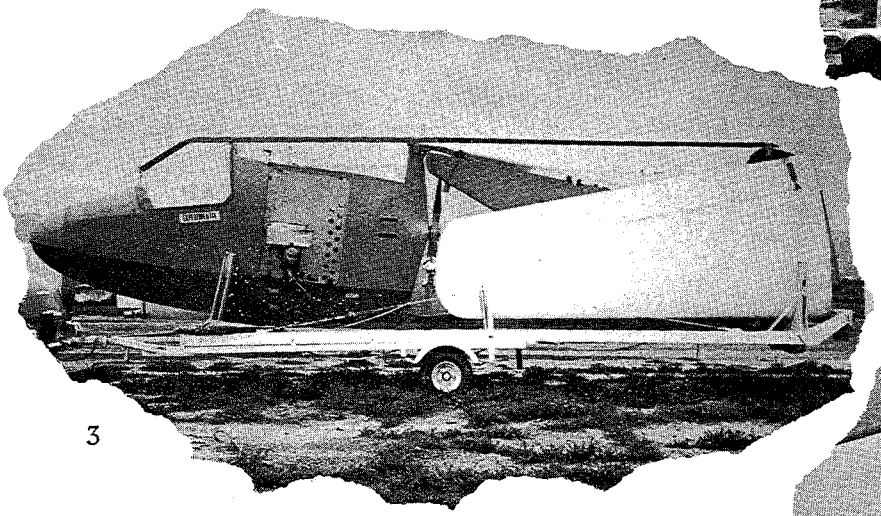
6. Walt Mooney overseeing the assembly of the horizontal surfaces.



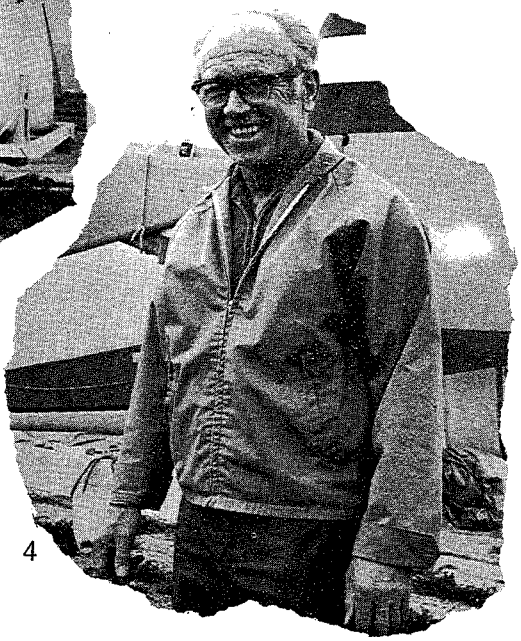
1



2



3

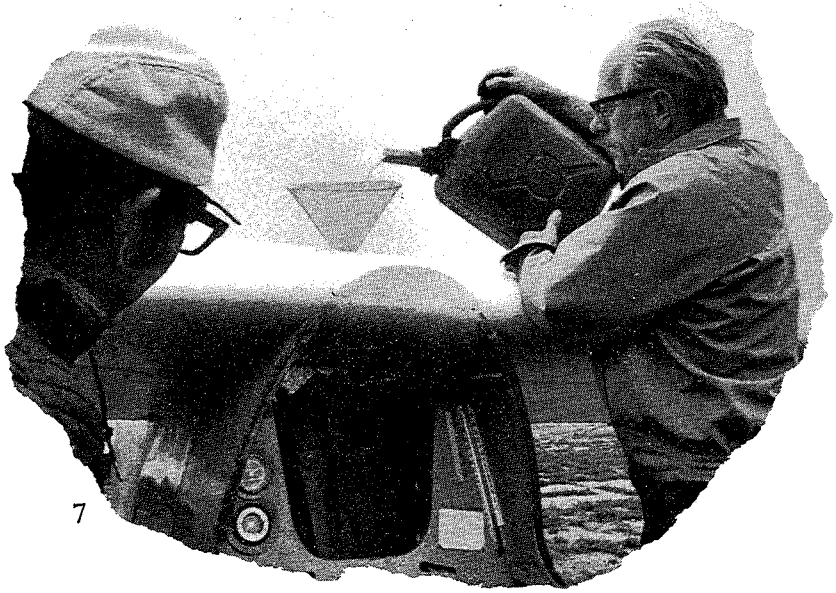


4

5

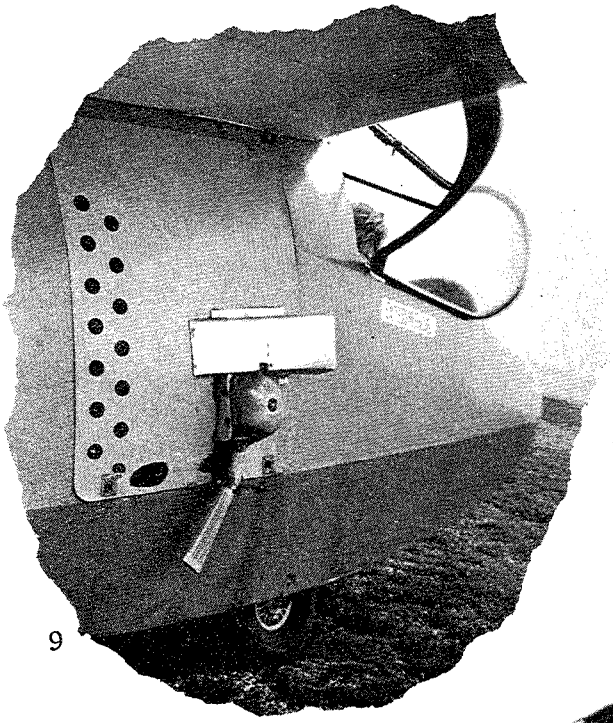
6

9

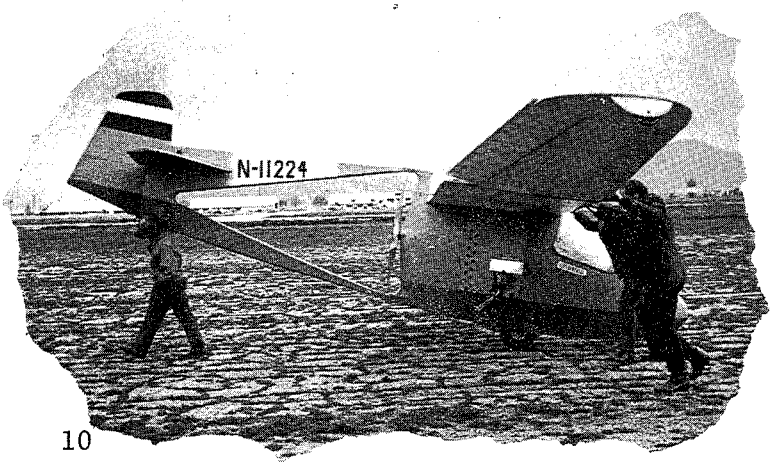


7

8



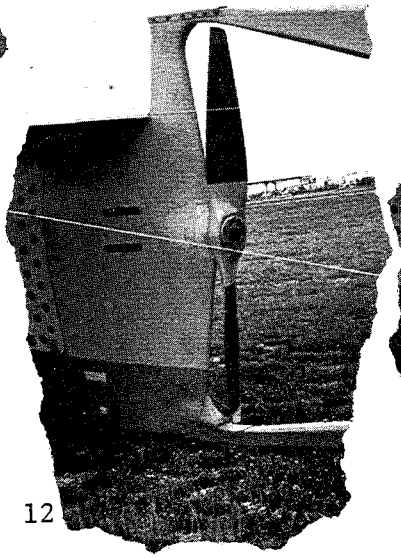
9



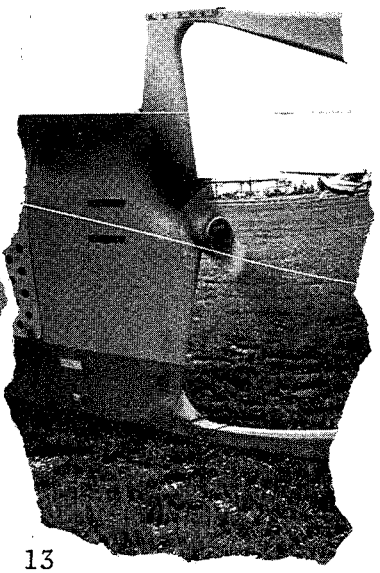
10

11

10



12



13

pusher prop aft of the fuselage pod that swings between two broomstick type empennage carriers.

The empennage itself is stabilized by 4 steel-cable guide-wires from the trailing edge of the wing. The *Kraehe* has no landing gear, only one wheel under the fuselage, like any glider.

The engine is an aircooled two-cylinder 4-stroke Austrian Steyr-Puch powerplant from a minicar with about 27 HP at 5500 rpm, geared down to 2750 by a 5 V-belt drive. It looks like half a slice of a VW. The cooling fan and drive have been removed so that cooling is provided by slipstream only. No taxiing. The ignition is still the battery/coil/distributer system with a small alternator for battery recharge. The alternator drive (a flat belt) is a problem child. With the alternator failed, ignition can run some 4 hours on battery only, plus a few engine re-starts.

The engine starts like a well-maintained automobile engine; you just push the starter button. In the air, it is even easier. The prop aids windmilling rotation.

The *Kraehe* handles with ease. With a little wind, she hops off the ground amazingly fast. The rate of climb is moderate, but with its low forward speed, the climb angle is no different from any other airplane; climbing into a wind gradient is sheer fun.

To help keeping the wings level during takeoff requires tail-dragger type foot work on the pedals. The propeller blast on the rudder makes it very effective. An abort at that stage ends in a ground loop.

The propeller is pitched for climb and over-revs at flight speed (44 mph); I throttle a little immediately after breaking ground.

The engine tachometer indicates 5500 rpm at take off; minimum power to maintain altitude is at 3800 rpm. The best airspeed is 70 km/h = 44 mph. Theoretically, minimum sink/best climb should be at 65 km/h, but I do not measure any difference. Climbing at 70, the engine gets better cooling and soaring, the overall control is firmer in bumpy thermals. Below 65 km/h she becomes soft and mushy, loses plenty altitude but remains controllable in roll and yaw throughout stall.

On climb-out, I use thermals as soon as I'm out of the traffic pattern. If the vario reads a suitable increase over the normal power climb, I feel free to switch the engine off entirely. It is difficult to hang on to a thermal that close to the ground; they are narrow and frazzled--so what; if you lose it on comes the engine again, together with a little embarrassment for a missed show-off.

There is a lot of concern about the propeller position. Due to the V-belt drive, there is no defined compression stop. To hide the propeller behind the fuselage vertical edge requires de-clutching the V-belts and letting the prop windmill into that position which, in turn, requires a mirror to watch what you are doing in the back and a third hand to hold it. By the time you got the prop vertical, you have lost the thermal. To fly a good circle inside yields a lot more lift than a vertical prop—so I only go through this ritual when I know somebody is taking pictures.

If you happen to have some decent weekend weather (which California did not have to offer much of this year), she soars like an angel. With the engine off, she offers all the fun of real soaring primarily because of the small turning radius you can fly. You are up there with all that fiberglass, wallowing in U.S. Choice lift while they have to grind the hamburger around it. This changes, when everybody

(continued on page 14)

---

7. Ernie Shattuck observed the refueling operation by Tasso.

8. Tasso and Ernie go over the checklist after assembly. A thorough pre-flight inspection is conducted.

9. The power plant is housed in the pod, behind the pilot.

10. Ground handlers lend a hand to roll the motorglider to a favorable takeoff position.

11. Walt Mooney is assisted in the cockpit and given a final checkout before flight by Tasso while Ernie Shattuck looks on.

12. CLEAR?

13. Burrrrrrrrrrrrrrrrrrrrrrrr

SOARING ASSOCIATION OF CANADA
TECHNICAL COMMITTEE:

On 18th October, S.A.C. President Dave Marsden accompanied Terry Beasley on a visit to M.O.T. in Ottawa. Terry had submitted draft proposals regarding the aircraft and pilot licencing requirements for self launching sailplanes and we wished to discuss them in person with M.O.T. Other items were also discussed very briefly.

Self Launching Sailplanes:

We were very pleased to find that Ministry of Transport accepted our proposals, as presented, (with minor editorial changes). For convenience, these are reproduced separately. (See below.)

It is believed that the ease with which these were accepted was a result of "making haste slowly". Terry wishes to thank those clubs who replied to the questionnaire on the subject; particularly those who prepared constructive comments which were used.

It will be noted that these requirements are by no means "all-encompassing". For example, they do not mention the man who wants to install an engine into an existing glider. This type of thing was briefly discussed with M.O.T. and we believe that such cases can be considered covered by the existing ultra-light requirements. The modified glider, for example, would be considered an SLS in the Ultra-Light category, provided that it met the SLS definition.

Power Licences for Glider Pilots:

M.O.T. are receptive to suggestions regarding changes in the requirements for for issue of a power licence to an experienced glider pilot. What are your views on this? Any glider pilot who later took a power course is invited to advise S.A.C. of his views. How many hours to go solo? Did his instructor feel that he really needed to fulfill the full requirements?

Glider Pilot Privileges for Power Pilots:

Under the present regulations a PPL holder can, legally, fly a glider. Should he have to obtain a glider licence by submitting an application with supporting recommendations from a Glider Instructor? Are you aware of any accidents or incidents attributable to a power pilot's glider inexperience? Is the fact that he holds a PPL sufficient to ensure that he knows enough so as not to try and solo a glider without proper instruction? (From November-December 1972 *Free Flight*.)

S.A.C. PROPOSALS TO M.O.T. ON SELF-LAUNCHING SAILPLANES

1.0 DEFINITION

To qualify as a SLS the aircraft must meet the following requirements:

(a) Max. takeoff run to clear 15-meter obstacle not to exceed 600 meters.
(b) Min. rate of climb 300 meters in four minutes.
(c) Max. stall speed 45 knots.
(d) Min. (L/D) max. 20:1.

Note: M.O.T. may introduce a maximum seating (2) or max. payload figure; neither of which we consider unacceptable.

2.0 CERTIFICATION

Upon recommendation of S.A.C. an SLS having a foreign type approval may be recognized as an approved type and be eligible for an M.O.T. Permit to Fly (Private). This will be renewable annually using the CCI procedure.

3.0 PILOT LICENCING

Approvals will be by endorsement of a glider pilot licence.

3.1 Student:
Instruction in a dual-controlled SLS may be taken under the supervision of an instructor endorsed as required under 'Instructor', item 3.3 following. No person shall solo an SLS unless he holds a student glider permit or any higher category permit or licence.

3.2 Private:
An endorsement of a licence for SLS will be issued according to the requirements of either A, B, or C, following:

(A) Licenced Glider Pilot:
A licenced glider pilot, having a minimum of 10 hours as pilot in charge of gliders may apply for an SLS endorsement upon pre-

sentation of:

(i) A letter of recommendation signed by an Instructor on SLS (see 3.3 following), and

(ii) Evidence of a minimum of five hours flying time (as pilot in charge) on SLS, to include a minimum of 10 takeoffs and landings and 10 engine air starts.

(B) Licenced Power Pilot:
A licenced power pilot may apply for an SLS endorsement (which will be by endorsement of a private glider licence) upon presentation of items (i) and (ii) as in (A) above.

(C) Ab-Initio:
A student who has trained ab-initio on an SLS may apply for an SLS endorsement (which will be by endorsement of a private glider licence) upon presentation of:

(i) A letter of recommendation signed by an Instructor on SLS (see 3.3 following).

(ii) Evidence of a minimum total of 15 hours flying time as pilot in charge of gliders, SLS, or powered aircraft.

(iii) Evidence of a minimum of five hours flying time on SLS, as pilot in charge, to include a minimum of 10 takeoffs and landings and 10 air starts.

Note: Item (iii) may be included in item (ii).
Note: Where no two-seater SLS is available, the required flights (for (A) and (B) only) may be made in a single-seat SLS, provided that they are under the direct supervision of an instructor, endorsed as in 3.3 following, or, where no such instructor is available, are under the supervision of a licenced glider pilot holding both an instructor endorsement and a power licence.

3.3 Instructor:
A licenced pilot holding a glider instructor endorsement may be endorsed for instructing an SLS on presentation of a letter of recommendation and showing evidence of a minimum of 10 hours flying time on SLS, as pilot in charge, to include 20 takeoffs and landings and 20 air starts. If the applicant holds a private pilots' licence (aeroplanes) these figures may be reduced by one half.

3.4 Written:
Applicants for endorsements in either the private or instructor category shall write the M.O.T. examinations as required for private pilots' licence (aeroplanes). This requirement shall be waived in the case of aeroplane private pilot licence holders.

4.0 AUXILIARY POWERED SAILPLANES

An auxiliary powered sailplane (APS) shall be defined as a glider fitted with an auxiliary propulsion system incapable of meeting the takeoff and climb requirements for the SLS. It shall not be permitted to attempt to take off under its own power and shall be considered as a glider for purposes of aircraft and pilot licencing. (From November-December 1972 *Free Flight*.)

The following article has been translated into English by Richard Robinson of SOSA Gliding Club. It first appeared in *HOBBY*, a technical magazine published in West Germany. Unfortunately the photos which accompanied the article, could not be reproduced for *Free Flight*.—Ed. of *Free Flight*.

POWERED BLANIK

"The Sigmund-Flugtechnik in Mosbach/Baden, West Germany, has developed the first motorglider with two engines. The aircraft maintains the same excellent flight characteristics as the "basic Blanik" according to the developer.

The "thing" really flies; and not bad at that--the world's first motorglider with two engines! The designers at the Sigmund-Flugtechnik are excited: "the modified 'Blanik', a high performance sailplane built at the Czechoslovakian aircraft works in Kunovice, is better than any single-engine motorglider; and at DM 40,000, not even that much more expensive than a single-engine motorglider",

praises the chief designer, Mr. Alfred Vogt of his showpiece.

The maiden flight is completed, but there are still two hurdles to overcome. One is the approval of the Air Ministry; the other to establish contact with the Czechoslovakian manufacturer. There is a market potential of at least 30 modified aircraft per annum, provided that the Czechs can deliver.

"It is out of the question to manufacture the Blanik in Germany; the final sale price of DM 100,000 would be prohibitive. We intend to purchase the machines in Czechoslovakia and modify them here", we are told in Mosbach. The modification of these sailplanes should commence in 1972, but the chief designer, Mr. Vogt and the owner of the company, Theo Sigmund, don't want to divulge too much more. They do mention, however, that "the marketing possibilities for this aircraft are really tremendous".

Flight Test:

At the maiden flight of the aircraft, everything is rather hectic. With IAS of almost 150 km/h or approximately 95 mph, the motorglider circles over the Odenwald mountain tops at about 800 m. AGL.

Mr. Vogt, the pilot, reports "that the aircraft 'feels' fine and he will now test the gliding characteristics". About a half-hour later, the test pilot lands the machine smoothly and exclaims happily, "We have done it; the aircraft is okay".

After that, some of the until-then carefully-guarded secrets are revealed! The Sigmund-Flugtechnik will try their hand at small-aircraft building and the modified Blanik will be their first example of ability and "know-how".

Engine Mounts:

They are not just anywhere on the wings, but exactly where they aerodynamically should be. They are formerly manufactured by Lloyd, an automobile manufacturer in Bremen. They are two-cycle engines of 400 ccm displacement developing 22 hp at 5,500 rpm. They were built, however, for motor boats and skidoos.

To use them on the Blanik, duo-carburetors for three-dimensional aircraft movements were added. The exhaust gases did cause some problems which, according to Mr. Vogt, are now solved, however. The special exhaust system permits maximum power output at the best possible noise control.

The range of the aircraft can be increased from 500 to 900 km. by removing one seat to make room for a reserve fuel tank.

Flight Characteristics:

The modification did not alter the excellent flight characteristics of the Blanik. The gross weight is 620 kg or approximately 1,370 lb. The glide ratio is between 1:20 and 22. We are told that it will take a few more months before the Blaniks are ready to go on the market. The aim is to provide a completely foolproof aircraft, an aircraft for the enjoyment of many pilots. (From June-July 1972 *Free Flight*.)

...*KRAEHE* (continued from page 11)

high-tails it to some other place. I have *no* penetration. As seen from my cockpit, they just stay up there and at the next thermal stop, I have to work my way from the bottom on up.

That's no way to fly any record distances, of course, but it develops skill—which is something to be proud of, too.

Preparing for landing, I start the engine and run it a little before I join the pattern; coming down from altitude, the engine is too cold to be fully available should you need it to get out of somebody's way (I can afford to be polite) but for the actual landing, I go in dead stick. With the engine still idling, the ship floats too much. For touch-and-go's, I re-start the engine *after* touchdown, (make sure the engine is warm enough to accept full throttle).

No-wind or crosswind landings are a little awkward. You lose aileron control before you lose speed; the wing tip drops and you are in for an out-of-control swing.

That's about it,—needless to say, I like it.

May 27, 1973

Dear Ed:

I attended with Dr. Tawse of Mansfield the Meeting on Self Launching Sailplanes last May 11th on Harris Hill...I decided to write an appeal to all "interested persons" to write their opposition to the FAA concerning one proposed regulation which would severely limit the usage of any auxiliary powered sailplane.

Thus, I would like to ask you to publish the attached appeal; due to fact that these rules are in process of being written as a "Notice of Proposed Rule Making" my appeal should be published as *soon as possible*...

According to *MOTORGLIDING* there are some 1,000+ paid subscribers; if 1/10 of them respond by writing to FAA some positive action should be forthcoming.

To identify myself I would like to mention that I am a graduate engineer by profession, have my own engineering office, AMTECH SERVICES, and am for some time engaged in design of the best aux. powered sailplane, see my articles in *MOTORGLIDING*, May 1971 (p. 9), Jan./Feb. 1972 (p. 15). It appears I was the only engineer actively engaged in the design present at the above mentioned meeting.

Yours truly,
S.O. Jenko
Dipl. Ing. ETH
R.D. 8
Mansfield, Oh.
44904

URGENT -- ACT NOW!

As mentioned elsewhere in this issue (p. 3, B.S. Smith) FAA is in final stages of preparing a Notice of Proposed Rule Making (NRPM) governing the design, manufacture and use of Auxiliary Powered Sailplanes (APS) also known as Self Launching Sailplanes (SLS).

While the proposed regulations as presented and discussed during the meeting on Harris Hill on May 11, 1973 appear to be reasonable one specific rule which would limit the fuel tank capacity became the hottest issue of the meeting.

It appeared, everyone present opposed it.

The proposed regulation was part of the FAA "Philosophy of Proposals"

(1) Primary Usage
Soaring Sport
Power for launch and initial climb to 4000 ft.
(2) Safe Recovery and Landing
.....
(3) Simple, Low Cost Engines
.....
(4) Prevent Hazards
.....

Thus, in connection with (1) the fuel tank capacity would be severely curtailed from the present maximal allowance of 5 gallons (FAA Basic Glider Criteria Handbook). OSTIV has no limitation on fuel capacity.

The FAA concern to prevent a possible use of an APS as a powered aircraft for transportation purposes has its justifications. The situation is similar to trying to prevent a VFR pilot to fly IFR through clouds. One does not need to remove the pertinent instruments from the airplane; the VFR and IFR clearly define the situation.

Thus, if the present FAA regulation, already sufficient, would be further implemented to read (addition 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."

then the usage is clearly defined.

Also, the present maximal fuel tank capacity (5 gallons) should remain or be replaced by a requirement that

"The fuel tank capacity shall not exceed a one hour supply at cruising speed engine power."

This would allow an APS with a piston engine three takeoffs and climbs to altitude with a little reserve left in the tank. In case the first climb is not followed by a soaring flight another takeoff can be made with some fuel remaining in the tank.

For decades the APS usage consisted of takeoff (self-launching) as well as an occasional use of power to overfly the sink areas instead of being forced to land. This feature eliminates a retrieval by car or power plane. In view of the present fuel shortage brought on by colossal mismanagement and misuse of natural resources the inherent capability of APS should indeed be welcome and promoted.

It may be easier to include NOW this fuel tank capacity requirement change than after the issuance of the NPRM. If you share the above view with other concerned APS enthusiasts then sharpen your arguments, manners and quill and write to your Friendly Aviation Administration. Address your comments to:

J. L. Baker
Associate Administrator for General Aviation
Federal Aviation Administration
800 Independence Avenue S.W.
Washington, D.C. 20590

It is important that you present your comments and views in a business manner. Derogatory, intimidating and "crank" letters have no place and are rightfully rejected.

So, act NOW in order to be able to fly your APS in the future!

P.S. Those who contemplate or already have a rubber band-powered APS should have no worries—at least for a while!

April 23, 1973

Dear Ed:

In the February 1973 issue of *MOTORGLIDING* there was a brief reference to a K-8B fitted with two stihl chainsaw engines observed at the Burg Feuerstein. Is there someone in the U.S. familiar with this retrofit or a similar one using chainsaw engines. If so, would you please provide an address in this country or Germany to write for details. This also should be of major interest to other readers of *MOTORGLIDING* if the details are available for publication. This is exactly the type of retrofit which if practical could provide a major boost to interest in motorgliding in this country.

Thank you
Carroll B. Butler
107 Meigs Dr.
Shalimar, Fla. 32579

April 9, 1973

Dear Ed:

I'm very glad to see *MOTORGLIDING* back in publication again. Thank you for sending my back issues. I am very interested in trying to locate information on any jet-powered sailplane. The only one I've been able to locate so far is the Caproni A-21J sold through AviA International. If you or any of your readers know of any other jet-powered sailplane available I would appreciate hearing from you. If you have no immediate information, perhaps you could refer me to someone who might?

Thank you
M. G. Meacher
16-66th Ave. #5
Playa Del Rey, Ca.
90291

September 24, 1972

Dear Ed:

It has come to my attention that Imported Engines, Inc., 2505 Main St., Buffalo, New York, will be stocking parts for Hirth aircraft engines and those parts that aren't can be ordered via Telex from Germany and should be delivered within five days by air freight. They would prefer to work through their local distributors when possible but a call to Mr. Floyd Zaephel at (716) 837-0100 should get immediate results.

Hirth has also established a research and development center in the Detroit area and Mr. Fred Anderson at (313) 477-4068 is in charge of the aircraft motors and seems quite anxious to help with any problems arising in their motors. Hirth has sold a considerable number of motors to Bede Aircraft and that probably accounts for their increased facilities.

Robert W. Tawse
341 Cline Avenue
Mansfield, Ohio 44907

May 7, 1973

Dear Ed:

I have been soaring for approximately two years out of Chester, South Carolina, Bermuda High Soaring Club, and on several occasions longed for a motorglider—not only waiting for a tow, but desiring to explore further afield safely.

The purist glider pilots hooted my desires.

In March, while visiting briefly in England, I went down to Biggin Hill Airport and spent two afternoons motor gliding with Brian Stevenson, who is the representative of Sperber Sportavia in England.

After coming back to the states, I ordered an RF-5B with full-feathering prop to be delivered in June.

It would be helpful for motorglider owners if you would print a list of the owners and their locations, which could be a prelude to a self-launching sailplane meet in this country.

Sincerely,
George C. Sells
P.O. Box 3547 C.R.S.
Johnson City, Tn.
37601

(See September 1971 *MOTORGLIDING* for an SLS census—DPM.)

April 23, 1973

Dear Ed:

During a business trip to West Germany in the fall of 1971 I just happened to arrive at the Sportavia Putzer Aircraft Co. in time to fly a RF-5B prototype. Needless to say I was impressed and took delivery on one in June of 1972.

Prior to this occasion I had done a substantial amount of sailplaning and enjoyed it thoroughly. Not being a purist nor desiring to be one, what had been left to be desired has been fulfilled with the RF-5B.

Two of the ships came over, one for Canada, and mine. They came in a container to Cleveland and were brought down to Wooster, Ohio, where they were assembled under the critical eye of Bert Buytendyk, distributor for Sportavia-Putzer in the U.S.A., Mr. Alphonse Putzer, President of Sportavia-Putzer and Herr Kruber, Chief Mechanic. Bob Bowman, Head Honcho of Wayne County Airport at Wooster, Ohio also demonstrated that he was quite capable of assembling and caring for these aircraft.

Flying was started immediately and a Genave 190 system was installed at Larry Lectronics in Akron, Ohio. This, plus an ELT, was the only domestic equipment installed as everything else including a Westerboer Audio/Visual variometer and a two-stylus barograph was arranged for in Germany.

Since that time I have logged over 200 hours under power plus 50 without power and the machine has exceeded published criteria plus my own expectations. I have had it to the E.A.A. in Oshkosh, Wisconsin last year, many local air shows, and most recently at the Black Forest Gliderport at Colorado Springs, Colorado. It certainly attracts a lot of attention wherever it goes and the questions concerning it are voluminous, ranging from the ridiculous to the sublime.

Its greatest advantage for my application, is utility in flying. However, it has provided very adequately the other properties that are basically important to me and those are safety and comfort.

Best of luck in the reincarnation of *MOTORGLIDING*.

R. C. Graham
1432 Sand Run Rd.
Akron, Oh. 44313

MOTORGLIDING
c/o The Soaring Society of America, Inc.
P.O. Box 66071
Los Angeles, California 90066

BULK RATE
U.S. Postage
PAID
Permit No. 31
Inglewood, Calif.

12 MG

1

Return Postage Guaranteed
Address Correction Requested