MOTORGLIDING

MARCH 1973

(Editor's Note: The following article is reprinted from the December 1972-January 1973, issue of *SAILPLANE & GLIDING*. It is presented here for a change of pace, in that it represents a different mode of self-launched gliding, and because it is by one of the soaring world's foremost authors.)

ON BEING A ROGALLO DAD

By Philip Wills

In 1927, at the age of 20, I scared the lights out of my parents by learning to fly. They did their best to stop me, but fortunately failed. One consequence of this was that I felt fairly confident that my own children could find nothing left to scare *me*, but if they succeeded I realised that I was in no position to object. Our youngest, Justin, has nearly succeeded, on the first count anyway.

A month or so ago he arrived home with a large rolled-up sheet of transparent plastic, a few lengths of aluminium tube, some wire and yards and yards of sticky tape. In the course of a weekend, for the expenditure of some £35, he had knocked up a Rogallo.

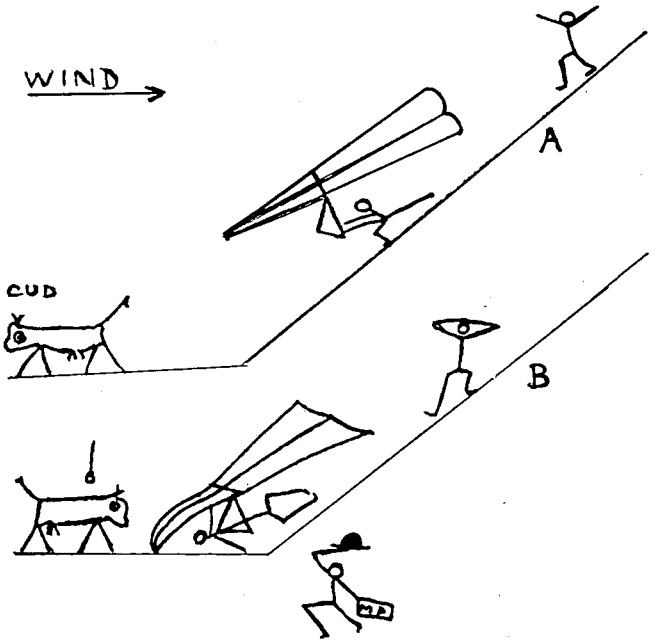
A Rogallo looks like a large diamond-shaped kite, under which the owner dangles at the end of a piece of string. In front of him hangs an A-shaped pole which is rigidly connected to the kite above. By pushing yourself away from the pole your weight moves backwards, hence the nose of the kite lifts and you climb. Pull your body towards the pole and you dive, to the left and you turn left, right, right. Right?

The contraption weighs about 35 lb when you hang your 140 lb on it; then it has a wing loading of under 1 lb per square foot, and it takes off a around 12 mph. If...

Carrying the thing, you clamber up a very carefully selected hill. It must exactly face the wind. It must have an almost smooth slope of between 1 in 2 and 1 in 3 (which makes clambering quite a job) and it must have an unobstructed field at the bottom. There aren't many available, but the country round Marlborough seems the most favourable we have yet found.

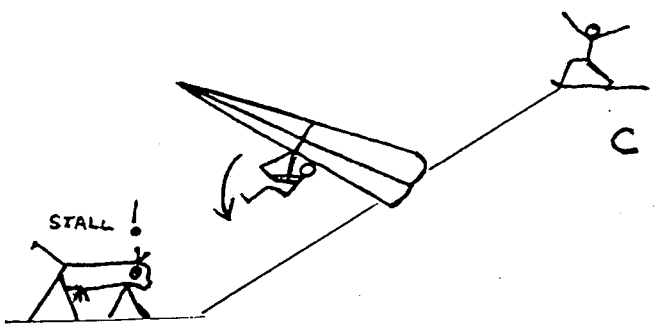
Since you aren't exactly brimming with confidence at first, you only clamber up a fairly short way for the first try. You stand the thing right way up, with its nose on the ground, strap yourself to the rope, and lift it up.

What you haven't realised is that, when standing on a steep slope, the nose of the kite has to be lifted much higher than you think, otherwise the wind is still blowing against its *top* surface. As you start running, the wind will force the thing more and more nose-down, you push the bar as far away as you can, and end up practically head to foot parallel with the hillside (A).



Then the nose of the kite plants itself in the ground like a turnip (B), and your speed reduces from say 10 mph to zero in the twinkle of a black eye as you proceed head first through the kite itself.

After accident no 1, you arrive home Sunday night, limping and with a sprained wrist. Monday and Tuesday mornings your parent or girl friend has to tie your shoelaces, knot your tie, and fasten your port cuff-link. By Wednesday you can do the shoelaces yourself, Thursday the tie, Friday the lot, leaving Saturday to repair the Rogallo and Sunday to set off for accident no 2.



Accident no 2 (C) is the reverse of accident no 1, and it need hardly be painful at all. You have become so scared of starting to run with the nose too low that you now start to run with it too high. The thing has now become a drogue, and is hopelessly stalled.

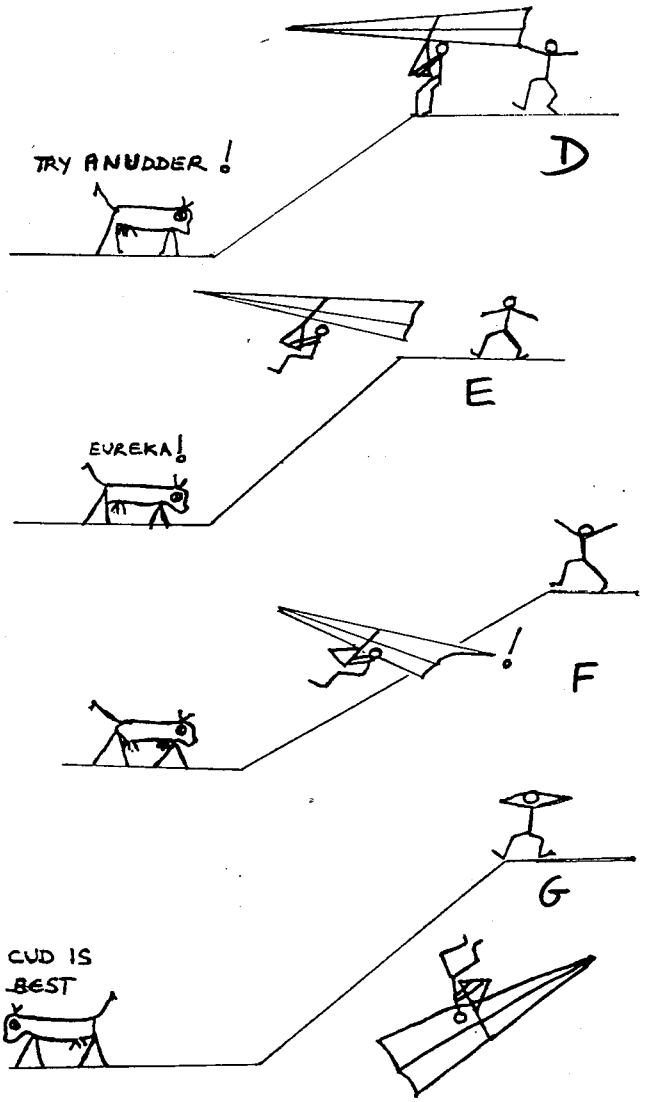
You leave the ground for a moment, and sink back to it at an alarming rate. Your legs strike the hillside and you try desperately to run still harder. You progress down the hill in a series of grasshopper leaps, each landing more audibly thumping than the last. If you keep your legs down and don't execute any of these landings on your behind (which could hurt your spine), you walk away from accident no 2, which produces you in fairly good heart on the next weekend for accident no 3.

By this time you have realised that it is really much easier and safer (or less dangerous) to take off from the flat top of the hill, where you start on an even keel, and the wind will be strong enough to enable you to leave the ground after only two or three gentle trots. This you do, and it works (D, E).

To your surprise, however, you find that in a 12-mph wind, with you flying at 15 mph, you are only moving forward in the air at a slow walking speed, and the consequence of this does not occur to you until too late. For if you turn more than a few degrees, so little that you may not even notice it as you peer anxiously forward (though to your nervous friends standing on the hill behind you it is all too clear) the very slight cross-wind component produces an alarming amount of drift, and you are carried sideways and backwards into the hill (which of course you cannot see because it is behind you).

The leeward trailing edge of the kite strikes the hillside at, say, one mile an hour, and the whole affair is blown over on to its back. For a moment you don't know what is going on, for you are to your surprise standing again on the ground and the rope on which you have been dangling has gone loose. But then it tightens abruptly and you are whipped over after it like a stone on the end of a sling (F, G).

Although anything might be broken on accident no 3, it happened to someone else (twice running) before it could happen to Justin, and the damage was fortunately confined to the Rogallo.



There is however, a boring variation. Accident 3B happens when you are standing up facing into wind and even before leaving the ground. There is a slight change of wind direction, due to a gust or whatever. The into-wind wing then lifts uncontrollably, the other tip digs into the ground, and the subsequent gyration is the same (probably slightly less so) than in accident no 3 proper. This accident is mitigated by someone holding a wing-tip firmly as long as he can.

Variations of these mishaps and subsequent repairs led to a moment when we could assess the cost of under five minutes flying at around £10 in material alone, so con't take to it on the grounds that it is not expensive per hour of achieved flight. Or that pride will be the dominant emotion infusing the parental breasts as your pathetically waving and insubstantial legs pass over their heads.

WHAT I'M FLYING

By Tasso Proppe

It is a European self launching sailplane (motorglider) of moderate performance, type *Kraehe (Crow)*, designed around 1958 and type-certificated for group and home shop construction, i.e. if somebody builds it under government inspection exactly to the plans, it receives a license in the category "Motorglider".

There exists an agreement between European states and the U.S. to mutually recognize each others certification; however, the category "Motorglider" does not exist (yet) in the U.S. FAA system. Therefore, a sailplane with the capability of launching itself is considered a powered "Airplane" in the U.S. and since it does not and cannot comply with a number of requirements imposed on such utility aircraft, it can only be registered as an "Experimental".

During the past decade, some 20 copies of the *Crow* have been built in Europe with three different engine installations in the 30-HP range. There are some 30 more under construction.

My *Crow*, Serial Number 22, has been home built by an enthusiast in Austria, 1962-1963 and has served as a test bed for several engine installations and airstart schemes. In spite of that, it has flown 250 out of 400 hrs. with the engine off, just for the fun of *soaring*.

Its design concept—medium performance—represents an ideal utility compromise between high performance and operability.

It will *not* put me on a list of world record holders (that would require about $13,000 worth of fiberglass machinery—not counting the self-launching feature) but it *will* provide an excellent opportunity for everyone to get into the swing and develop the skill—at much lower costs and risks than any other vehicle.

And she's fun to fly. *You* are occupying the unobstructed Grand Stand Seat which otherwise is taken up by the engine. *You* are sitting in *front* of the wing, not under or over.

The design has undergone changes to improve the performance and the ease of shop construction. The fuselage of the second generation design is now a steel tubular frame, and the propeller rotates *around* the upper empennage boom. It has a fiberglass landing gear that makes it completely self-sufficient on the ground also. This improved version, the *Austria Kraehe*, has completed its type-certification tests with an Austrian made "Steyr-Puch" 40-HP engine and will be available in kits as well as a complete, ready-to-fly version.

A sheet of leading particulars shows the figures of the *Austria Crow* with deviations from my ship.

If you are interested, you should contact: H. W. Brditschka, A-4053 Haid/Ansfelden, Austria.

He is the designer of the Austria improvements and handles plans and kits. He is also the previous owner of my ship, S/N 22. I will be glad to help with the correspondence. I may be contacted at: 1786 Eldora St., Lemon Grove, Calif. 92045; (714) 463-1570.

MOTORGLIDER *KRAEHE (CROW)* N11224.
FLIGHT MANUAL

The Controls:

Fuel shut-off, on right hand side, open=fwd.

Engine starter button, instrument panel, works only with ignition on.

Throttle, lefthand side, open fwd, idle 2000, full power (ground) 5500 RPM

Choke: the small lever by the throttle, only for cold engine, sparingly, floods warm engine; at full throttle, it reverses to *lean*.

Spoiler, lefthand wall, pull back to extend, has catch for full extension, ship becomes nose-heavy.

Wheel Brake: motorbike lever on control stick—not very effective, beware!

Canopy Lock, match 2 locator pins. Canopy hinges come apart to eject and jettison.

V-belt release, between rudder pedals, for emergency engine start: ignition on, increase airspeed to 100 km/h, pull V-belt release for 15 sec until propeller windmills audibly, let go.

The Indicators:

Generator/Battery Charge Light: like an automobile (alternator) light. If it comes on in flight, you have 3 more hours to go before your battery goes flat.

Oil Pressure: "1" = 14 PSI, observe color bands; normal is "4"

Oil Temp: very slow response, observe color band.

Cylinder Head Temp: on right back wall (use mirror) normal is 150 Centigrade, max 200, loitering 130 C

Exhaust Gas Temp: measures in Micro Amps (Thermo Couple). 26 is normal, 30 will kill the valves eventually.

Fuel Quantity: left back wall (use mirror), depends on flight attitude, reads in liters, and is right only at 70 km/h level flight (4000 RPM). At 4000 RPM the consumption is less than 4 ltr/hr.

Air Speed: In kilometers/hr (72 km/h = 45 mph) 70 km/h is best for everything. Theoretical min sink is at 65, but controls become soft, and in climb, the engine does not get enough cooling at 65. Below 65 km/h the ship becomes mushy. The high wings don't provide much ground effect. Approach 75 km/h. Speed limitations: 140 km/h for spoilers and in gusts. 170 max.

Operations:

There is a ground loop tendency. Check for aileron stick clearance at knees. Use plenty rudder at takeoff — it gets you out of trouble. Keep away from the line of parked airplanes, in case of abort and ground loop.

Takeoff abort: just like a snapped cable on winch or aerotow.

Climb 70 km/h for engine cooling; throttle to 5100 for valve preservation. If the generator/charge light comes on, there is no reason for panic; you can fly 3 hrs on battery only.

Search for thermals (loitering) 70 km/h and about 4000 RPM.

Engine switch off: Throttle down first to reduce shaking during the last convulsions.

Propeller position: To hide the propeller behind the fuselage pod knife edge: Use mirror through hole in canopy and look where it is. Declutch V-belt to let it windmill into the desired position. Check through mirror what you accomplished. Better yet: don't bother. By the time you have the prop where you want it, you have lost the thermal.

The book says shut the fuel off during engine-off flight; I don't. (For safety reasons—you forget to turn it back on.)

PROPPE AND *CROW*, by GEORGE UVEGES

Engine re-start: crack throttle slightly. Ignition on before starter button—starter button does not work without ignition. If engine is cold, allow for a little warm-up before demanding power.

Emergency engine air start: Ignition on, increase airspeed to 100 km/h or more, declutch V-belt for 15 sec until prop windmills noticeably, let go.

Approach and landing is more comfortable with the engine off. Due to high idle, the engine keeps providing power which makes for excessive ground run. For touch-and-goes, I restart the engine after touch-down.

Approach speed 75 km/h. The machine settles sudden below 65 (it takes me by surprise—but you guys are used to fly them to the ground, so you will have less of a problem).

Spoiler effectivity moderate. Make the machine a little nose-heavy; side-slip helps fine.

The brakes are not much. Keep in mind that the wings are high. Once you loose aileron control, you swing around when they touch the ground—keep away from parked airplanes on your approach.

Rigging time from transport trailer to flight readiness approx. 45 min. for 3 people, (less for an experienced crew).

The engine can be started by an electric starter motor. My ship only: as an emergency alternate, the V-belt drive propeller can be de-clutched and its windmilling inertia utilized for engine air-start.

The empennage is braced with 4 cables to two reinforced points on the wing trailing edge.

AUSTRIA CROW 1972

Span	39.4	ft
Length	23.0	ft
Wing Area	154.0	ft^2
Engine: Puch 650 TR II		
2 cyl. 4 cycle	40	HP
Ignition 12 V DC Battery/Coil		
Propeller	61	in dia
Weight empty	550	lb
Payload	253	lb
Gross weight	803	lb
Wing loading	5.23	PSF
L/D max	22	
at	52	mph
Rate of sink	236	ft/min
(dead engine)		
Stall speed	34	mph
Cruise	100	mph
V max	109	mph
Takeoff run	300	ft
Distance to 50 ft Altitude	500	ft
Tank Capacity	9	gal
Range at Cruise	530	mi
Rate of Climb	690	ft/min
Time to 3,300 ft	7	min
Service Altitude	21,000	ft
Gas Consumption:		
at takeoff power	2.1	gal/h
at cruise (75 mph)	1.2	gal/h
loitering	.8	gal/h

(that's 10 hrs on a full tank for $3.50)

My ship has only 27 HP, and the weights are 525 lb. empty, and 730 lb. gross. Maximum L/D for my ship is 18, at 70 km/h. Minimum R/S is 1.3 m/sec. Fuel capacity of my ship is 14 liters.

AN SLS PILOT ADDRESSES THE PSEUDO-PURIST

By Ray Elsmore

In 1970, Bennett Rogers, then Editor of *SOARING*, had some correspondence with a glider pilot who signed his letters, "Purist". This term seems to have stuck as a definition of a glider pilot who considers an auxiliary-powered glider to be an aircraft equiped with a "cheater", or a machine more closely related to a towplane than to a sailplane.

At the risk of some damage to the tender sensitivities of those glider pilots who would categorize themselves as purists, I would like to suggest a more accurate definition of the word as it is applied to the realm of flight. Purist: One who flies an aircraft using no source of propulsive power other than that which his own body and the capricious air mass provides. This definition fits the flying birds; those who would compete for prizes in man-powered flying machines; and the hang-glider pilots. (I must admit to a growing feeling that the latter reap great satisfactions from their flights.)

When the would-be purist hitches his glider to a bungee, a winch, a motorcar, or an airplane, I maintain that he is using a "cheater" and thus becomes a *PSEUDO-PURIST*. While you are under tow, Mr. Purist, you are flying a powered glider, and using a hell of a lot more power than that which

tows my AS-K14. When you release, yours is no longer a powered glider; when I feather my prop, my glider is no longer powered.

"Yes," you argue, "but the thrill of soaring—the very essence of the sport--is gone out of it if, at the time of release, you can be certain that your flight will terminate on the landing area of your choice."

Okay, so this is your bag, and I don't knock it because I know soaring means different things to different pilots. And I must assume you can afford the possibility of damaging or destroying your ship. However, since I consider it quite likely that there is a powered glider in your future, I want to tell you how you can fly this thing and still keep your bag in the game. *Don't ever* make an air-start of the engine. When you get skunked, set her down in the best field you can find. Now, see, it's just like having a pure glider, except that you have avoided a long wait for a tow and a tow fee. And most likely you centered your first thermal quickly and easily while under "tow".

I can see by the expression on your face that you're thinking there may be times when you won't be able to resist the *temptation* to restart your "cheater", thereby ruining your whole day because you didn't do the daring thing and crash in the forest below. Don't despair! I can help you in this area as well, and we'll make your motorglider super-pure. All you need is a positive no-restart device. Once you "release", power is no longer available to you, even if your will power should fail. You must land and re-set a switch outside the cockpit before the engine will be capable of running again. That is, if the area where the switch is located is still intact. Otherwise, forget it, 'cause the engine won't start again anyway, and you don't need it anymore.

Have we solved your mental reservations about your someday-in-the-future SLS? Oh, yes, the extra weight. I notice that you dump water into your wings just to make the ship heavier. Isn't that what makes you go fast? Okay, so you can jettison the water when you start scratching. How about if the SLS you buy has a little button you can push and thwomp, out goes your engine, hanging by a chute? Then you call your crew to retrieve the engine instead of retrieving you and the whole ball of wax. Might be this engine will be designed to shove back into the ship faster than you can take the ship apart and put her back together.

Performance? Well, I can't brag about my K-14's glide ratio and penetration, but it's still a lot better than some pure ships have while still setting records. But did you notice how that two-place Caproni did in the '72 Open Nationals against a bunch of real skinny ships? I'll tell you a secret: They're going to stick *jet engines* into some of those birds. No drag, just push. At the rate things are going, there will be some pretty respectable-performing motorgliders available when you buy yours.

Now, from my own experiences in modest-performing Sierra Papa, let me tell you about some of the nifty advantages you're going to have with an SLS. Like savings. You've already granted that I save a lot of money on tow fees. My average engine time on launches, from start-up to "release", is five to eight minutes. At full throttle I get one hour and forty minutes on five gallons of fuel. But have you thought about my saving on retrieves? Figure up what it costs you to own and insure a vehicle sturdy enough to race around and about chasing you, and then add your fuel and maintenance costs.

I'll bet you haven't even thought of the potential savings in your own time, even if it's not worth very much money per hour. Unless you're wealthy or retired, there is a limit to the amount of time you can devote to this sport. Travel time to your soaring site, and the time required to put things together is unavoidable. But Then there's the tow lineup, maybe sixty to ninety minutes long. So you get in early, at the front. You blast off, fall out of the sky and go to the end of the line. Or you choose a position about fifty minutes from the front of the line, and the first guy off makes an eight-hour flight and a new state distance record.

I want to tell you right off that I *do* restart my engine in flight. This is not *only* because I can't afford to ding or crash my uninsured ship. I do this to get more utilization out of both the glider and my available time. I often launch before any pilot in the tow queue would consider such foolishness—too early for lift. Usually, but not always, this proves true and I have to take one or more airborne relights before I get started. I'm not embarassed about this because I see you often take more costly and troublesome relights. But at least I get the first sustaining lift

without the risk of moving into the tail-end-Charlie position back on the ground.

Then maybe I'm eighty miles out on my planned course and fall into a big hole which means a landing for you. So I re-light and climb to the next source of lift (usually a one to five-minute burn), where you would have hopped to retrieve, re-rig, and get up again to catch the last, fading thermals. More likely, your soaring day had ended.

I'll often set for myself an out-and-return which I know may be too ambitious, but I'll try it even if it may mean the humiliation of making part of the return flight sounding like a motorcycle. On straight-out flights, my retrieve flights have usually proven to be soaring flights. When I do find it necessary to use power to get from point to point, I prefer to lob the ship; to make long climbs followed by glides about triple the climb times. In either case, the flight-retrieve is much more pleasant and instructive than a drive down the highway with a swaying trailer behind.

On a planned soaring flight (versus one meant to simply move the ship from one point to another where I want it to be), I restart only when the alternative is a landing, airport or off-field. These airborne relights are usually made below five hundred feet, from a position in a landing pattern for a suitable field. One reason for this practice is to gain experience in searching for that last-moment, saving lift. A more practical reason is the fact that the little, two-cycle Hirth is as unreliable in starting as its brothers in the snowmobiles. I'm not saying that the Hirth is not one of the best modern two-cycle, hand-starting engines on the market. But with any of this type, you screw-up with the choke, brother, and the engine is out of business until you pull those plugs and clean them. A dubious procedure while in flight. This fact should make you, Mr. Pseudo-Purist, interested in this generation of motorgliders. One should fly them with the same degree of regard for suitable landing areas as you do with your present ship; whatever degree that may be. Another thing you'd like—one has to play pure-glider when landing this bird, and if you goof your approach, it's probably too late to restart. The idle RPM is factory-set rather high. Level flight IAS is seventy-five knots, and you just can't land it at such a speed.

With the tip wheels on Sierra Papa, I am quite independent of a ground crew. I have landed unannounced and unattended at many airports, pulled the ship clear, and gone about whatever business I had there. Once this was to buy a bottle of canopy cleaner at Palo Alto Airport. Most recently, at Quincy after a flight from Minden, my business was a visit to the men's room and a coke from their machine. Returning to the ship alone, I rolled her back to the runway shoulder and cocked the nose forty-five degrees to my take-off direction. I put the windward wing down, climbed in and started up. Starting the take-off from that position, I was runway-aligned by centerline, and wings-level shortly thereafter. I had been on the ground seventeen minutes.

Power pilots with no soaring interests have asked if I thought the K-14 would be a nice, economical ship for a person to get about in. My answer is always, "No, you need an airplane. Maybe the SLS's of the future will fit your needs, but none that you can buy today."

Then there is the pilot who likes soaring, but only when conditions are real good. He will suggest that this ship must be great for getting through those weak lift areas--just fire-up rather than scratch, or hang on the ridge with occasional re-starts. Another thinks plain *gliding* is the best; no turbulence. He thinks my ship must be neat for going up and down, up and down, on a day when the air is dead and stale. To both I say, "No, I'm afraid that soaring is simply not your bag. Why don't you try golf or something?"

Commercial glider operators, Les Arnold and Bud Murphy excepted, seldom ask my opinions of the SLS. If they did, though, I would reply, "As soon as two-place ships are available with a U.S. Normal Category certificate, replace your primary training fleet with these as quickly as you can afford to. The lower cost to the students up to the solo stage will vastly increase their numbers. You can triple your utilization with the present number of your staff. But don't take my word for this. Write and ask Instructor Piggot at Lasham Airfield, United Kingdom."

Well, Mr. Pseudo-Purist, I want to thank you for listening to my prattlings. I'll be looking for you in a few years, up there in the wave, jet ducts closed and a smile on your face. You'll recognize me by the feathered prop on my nose. (Reprinted from January 1973 *West Wind.*)

OPEN LETTER TO ALL MOTORGLIDER ENTHUSIASTS
April 17, 1972

First, let's take note of the super efforts of Bennett Rogers to bring motorgliding more strongly to the notice of the SSA Board of Directors and the SSA membership at Dallas last winter.

Second, let's take note of suggestions to hold a motorglider meet or rally or what have you on a national scale, under the watchful eye of the SSA Directors.

But third, shall we have a note of warning?

Let's NOT hold it with complete disregard of the excellent camera turnpoint proof system developed after years of trying to find a simpler, better way of avoiding manned turnpoints, a system that takes off the shoulders of the contest committee the need for making endless and difficult decisions as to whether or not a turnpoint photo really proved the glider has rounded it, decisions reaching to judging the very integrity of the contestants. Who wants to take the responsibility to the contestants of saying a man didn't round a turnpoint purely on the basis of a borderline hand held photo or even that the photo was taken from that glider during that task by that pilot at all? No gentlemen, I urge you not to ease up the SSA turnpoint camera rules in the interest or over-zealous quest for economy, or even from ignorance or laziness for that matter.

Every contest pilot in every Regionals and Nationals and in the last Internationals has been using dual mounted Instamatic cameras for some time now and it has worked very well.

If a man will spend weeks away from home, drive thousands of miles with a trailer in vacation season, spend the hundreds of dollars it all costs to compete, and pay an expensive entry fee, the least we can do is to score him fairly and properly. By all means adhere to the letter of the turnpoint photo rules. They are one of the greatest economies of modern contest soaring not to mention the relief they give to a contest committee in doing a decent and fair job of scoring and running a meet and the impression it will make on SSA directors and members.

Stephen du Pont

Comment by Bennett Rogers:

The remarkable thing about the First American Motorgliding Championships will probably not lie in putting on a flawless letter-perfect contest but in bringing off any contest at all. Consider the problems. First, we are hoping to attract about one out of every four motorglider owners in the whole country. (If a conventional sailplane meet could attract this kind of percentage, there would be more than 600 entrants.) Most of the people who we hope will enter our meet have no contest experience; in fact, many of them are relatively inexperienced soaring pilots. Therefore, to attract enough people to make a championship worthwhile, we need to make newcomers feel comfortable by putting as few obstacles in their path as possible. In short, we need to make it easy and fun for pilots to compete. Or we might not have a contest.

My view is that we will have to require that each contestant have a barograph with a power-source recorder. There is simply no other way to tell if and how long a pilot uses his engine during a flight — which goes to the heart of any motorglider scoring system. Also, the barograph can be used to determine the altitude of a ship at the time it passes over the start line, eliminating the need to set up a start gate. Finally, a barograph allows a pilot to achieve either FAI badge legs or records during a contest flight.

The other essential ingredient of a motorglider contest is turnpoint photography. Because all contest flights will finish at the takeoff airport, we need to know that each contestant did indeed fly around the prescribed course for the day. I share Steve's enthusiasm for the well-proven SSA system, and would highly recommend that each contestant have two bracket-mounted cameras in the cockpit if for no other reason than it makes taking an acceptable turnpoint photo considerably easier.

But if a contestant feels he can take a decent hand-held photo and is willing to

chance equipment failure by relying on one camera, I believe that this is his decision, because if he fails to provide an adequate photo of each turnpoint, he is the only one whose score is harmed. We do, of course, want to reduce any obvious temptation to cheat. Therefore, we plan to provide a declaration board to be photographed prior to each flight. This eliminates the possibility of a contestant switching films, because the substitute film would not have the declaration photo on it. This means that the only possible way to cheat would be to take inflight cockpit photos of previously prepared pictures of the turnpoints. Taking photos of photos in a sailplane cockpit while flying is a highly demanding endeavor whose final results could easily give the cheater away. Additionally, pilots will probably not know the turnpoints until the contest takes place. If someone is determined to cheat, there are simply more productive lines to follow.

Of course, it would be desirable for motorgliding contests to upgrade their procedures to conform with established SSA practice just as rapidly as possible. This first year, however, if a pilot has to make a choice between buying and mounting a motorglider barograph or fooling with a camera installation, I would rather see him give priority to the former.

But the final decision on regulations should lie with the contestants themselves. We will probably put forth a suggested set of rules for comment among those who will be entering the contest, so that pilots can vote for whatever kind of event they want. I sense that most entrants want a low-pressure competition. But in deciding how many restrictions are necessary for a meaningful championships, I'm certain they will take Steve's thoughtful and constructive remarks into consideration.

Incidentally, I use the camera mounts sold by Motorless Flight Enterprises (125 Farmstead Lane, Glastonbury, Ct. 06033): mount only, $24.75; with two Kodak X-15 cameras, $65; with two Kodak X-25 cameras, $18.50; and with two X-45 cameras, $131. This hardware works quite well, and a detachable mounting plate allows instant removal and return of the cameras to the aircraft. One trick I use is to stick on pieces of sponge-rubber weatherstripping all the way around each lens so that the rubber actually touches the canopy glass when the cameras are installed in the mount These "sun shades" not only eliminate all reflection off the glass but also insure that the cameras can't bang against the glass.

HP-17 INFORMATION

February 14, 1973
Dear Editor:

Thank you for your letter and kind comments on my AS-W17 article (*SOARING*, Feb., 1973).

Here is an item for *MOTORGLIDING*:

The new Wortman FX 72 MS-150A airfoil could give a real boost to motorized sailplanes. Specifically, this new wing section offers much higher lift/drag ratios at low speeds which means that better take-off and climb characteristics can be obtained with smaller engines.

A small West Bend go-kart engine flew my HP-14 at 70 miles per hour but wouldn't get it off the ground or give it enough rate of climb to be practical because that sailplane couldn't fly efficiently below 60 miles per hour.

The HP-17, which is now being built, will fly at 40 mph on 2.2 HP. With such an engine producing 8 HP and an efficient propeller converting 6 of that into propulsion, a rate of climb of 334 fpm could be realized.

This low cost, light-weight, easily retractable installation would eliminate the crew and towplane requirements and provide a handy 25 cent launch. After the propeller is retracted, the HP-17 will beat anything now flying up to the super class lead sleds.

I think that this is the ultimate dream of all motorgliding enthusiasts.

Enclosed are a description, specifications, and three-view of the HP-17 with the proposed rig extended for powered takeoff.

The engine installation would weigh about 25 lbs. and cost approximately $350.

We are going to get the prototype ready for the two nationals and then install the engine.

Sincerely yours,
R. E. Schreder
Bryan Aircraft, Inc.

HP-17 DESCRIPTION

The HP-17 is a high performance, 15-meter span sailplane designed to meet OSTIV Standard Class specifications.

Except for 4-inch spaced structural foam wing ribs, all metal construction is used throughout. Special attention has been given to simplified assembly, rugged construction, best possible pilot protection, comfort, good performance and light weight. Water ballast is carried in bags contained inside the wing box spars. Cross country performance is improved by the use of optional, full-span, flap-dive brakes and spoiler-type ailerons.

The following features simplify construction and reduce assembly time to approximately 700 man-hours for a builder with average mechanical aptitude:

1. Main wing spars with caps premachined from solid aluminum plate stock.
2. Elimination of most wing skin riveting by use of precut, structural foam ribs spaced every 4 inches.
3. Preforming and heat treating of all skins and sheet metal parts.
4. Completion of landing gear, controls and other items requiring welding.
5. Preformed canopy and frames.
6. Prefabricated control cables.
7. Simplified assembly of front and rear fuselage sections.
8. Complete supply of rivets, bolts, nuts, washers, cotter keys, cement and all other necessary parts. Paint and instruments are not included in the kit but can be supplied at extra cost.

No complicated jigs are required. Wings and tail surfaces are built on a table. Templates are provided for checking proper alignment. Rear fuselage cone bulkheads are supported on a 13-foot length of 3-1/2 inch O.D. black pipe. Drawings and patterns are furnished for a simple, front fuselage jig. A 24-inch hardened steel drill guide is furnished to facilitate drilling accurately spaced holes.

The builder needs only hand tools, rivet gun, electric drill and air compressor. No previous sheet metal experience is necessary but we recommend that you have help from a local aircraft sheet metal man to get started or come and spend a few days with us to learn how to rivet properly.

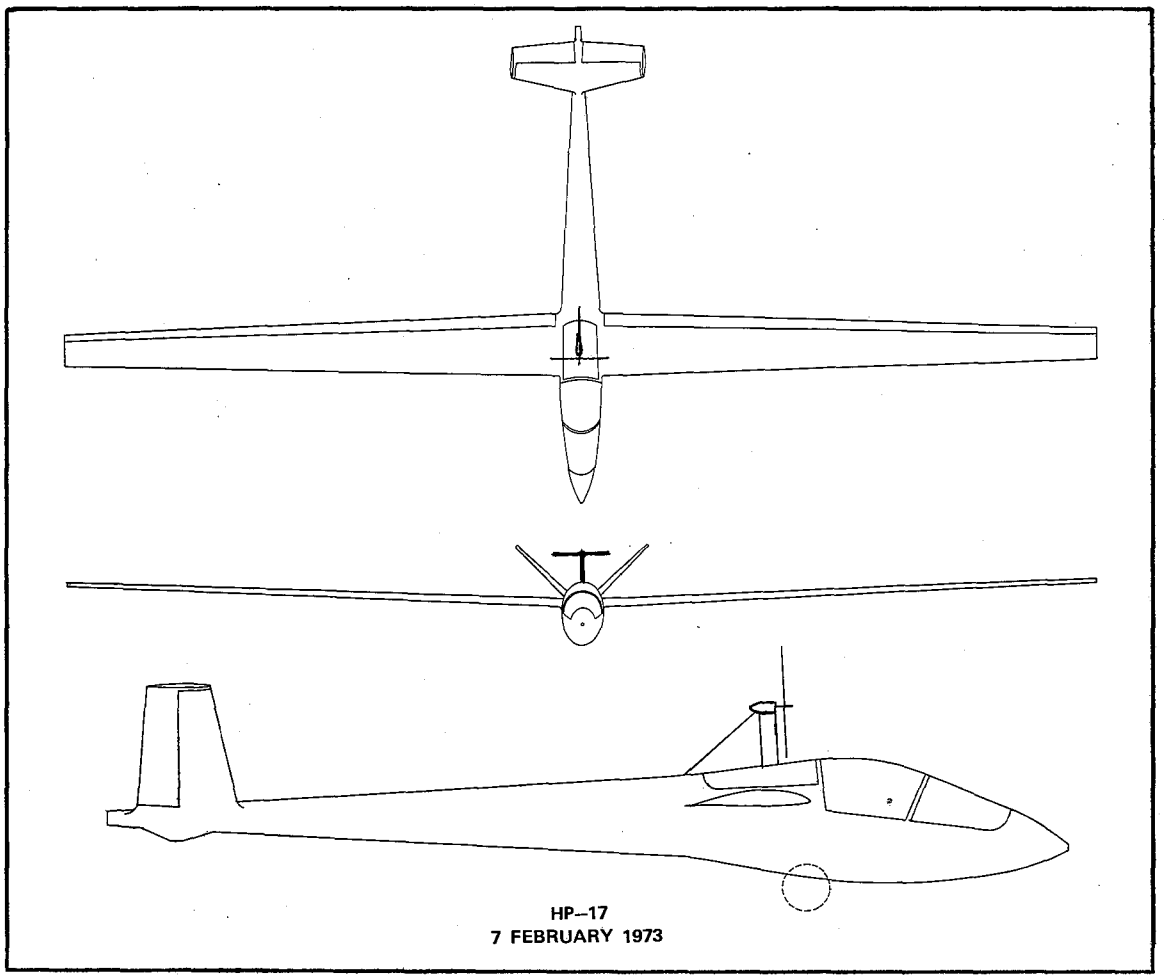
Assembly drawings and instruction sheets are provided for all operations.

Prices, F.O.B. Bryan, Ohio are as follows: Tail Kit, $195; Wing Kit, $1895; Fuselage Kit, $1995; Complete Kit, $3995; Trailer Kit, $750. Terms: Cash with Order.

HP-17 SPECIFICATIONS

Span	49.2 ft
Length	22.8 ft
Height from ground at tail:	
Tail extended	48.0 in
Tail folded	62.0 in
Cockpit:	
Width	24.0 in
Depth	36.0 in
Length	60.5 in
Area:	
Wing	113.0 ft^2
Flap dive brake	26.3 ft^2
Stabilizers	8.5 ft^2
Ruddervators	7.0 ft^2
Aspect Ratio	21.4
Dihedral	2.3^o
Twist	0^o
Taper Ratio	2/1
Flaps	-12^o to $+60^o$
Weight:	
Wing Panels, ea.	110.0 lb
Fuselage	220.0 lb
Total Empty	440.0 lb
Payload	300.0 lb
Water Ballast, Maximum	200.0 lb
Normal Gross	740.0 lb
Maximum Gross with Ballast	940.0 lb
Wing Loading:	
170 lb. pilot, 16 lb. chute	5.5 psf
Normal Maximum	6.5 psf
Ballast Maximum	8.3 psf
Maximum Air Speed:	
Rough Air	120.0 mph
Smooth Air	150.0 mph
Aero Tow	120.0 mph
Winch or Auto Two	90.0 mph
L/D Maximum	40/1
Minimum Sink, 626 lb, 40 mph	1.7 fps
Stall Speed: 0^o flap, 740 lb	36.3 mph
60^o flap, 740 lb	32.0 mph

Airfoil: Wortmann FX 72 MS-150A
Hydraulic Shock Struts
Retractable Tow Hitch
Retractable 500 x 5 Wheel With Brake
Steerable Tail Wheel



HP–17
7 FEBRUARY 1973

LETTERS TO THE EDITOR

March 18, 1973
Dear Editor:

I have written several letters to a great number of people during the time *MOTORGLIDING* has been out of print—since last May. I wrote to Jack Park, Bob Hovey, and Lloyd Licher several times. All this in an effort to find out what happened to *MOTORGLIDING* and what plans there were for the future. In one last effort to find out if the magazine was to be published, I wrote again to Lloyd Licher, and to my surprise and delight he told me he had an editor lined up for the publication of the next few issues, which would reach him soon, and that publication date is scheduled for the possible near future. His last card to me, mentioning you as editor, was dated 14 February saying you had completed editing the January & February issues and that the March issue was about ready to be mailed to him. I am behind you all the way and am willing to help in as many ways as I can; I have quite a few ideas that fall into the category of "Design Studies." These include, but are not limited to: a mast-mounted auxiliary power plant that rotates for limited soaring (sailplane used for the idea is *Duster)*, articles on steering control for aircraft (a spoof), on low-aspect-ratio wings (a type of boundary-layer control), on air and imagination, design for a super-light powered sailplane (10-15 HP) of about 2 PSF wing loading, and other kinds of think type things.

Also, to prove I haven't completely lost ALL my marbles, I am a member of the Southern California Hang Glider Association (Lloyd Licher is President) and a member of Self-Soar Association. If that isn't enough, I'll whip up some cartoons for you.

I am looking forward with great anticipation to the resumption of *MOTORGLIDING* and towards its becoming the mouthpiece of a great sport.

Sincerely,
Dick Henderson

January 17, 1973
Gentlemen:

The enclosed check for $5.00 is happily enclosed in anticipation of renewed publication of *MOTORGLIDING*. Please send the new subscription as well as back issues to the following address: Col. Thomas J. Barrett, Box 198, Maricopa, Az. 85239; rather than to my permanent address of Box 98, Glen Arbor, Mich. 49636.

You might be interested in the three issues of *Air Facts* (Nov. '72, Dec. '72 and Jan. '73) which contain motorglider articles (AS-K14) written by my wife originally for *MOTORGLIDING* but submitted to *Air Facts* after last May's suspension. We hope to write for you again soon.

Good luck,
Tom Barrett

THE RUMOR MILL

Vic Swierkowski is working on a couple of ex-works Slingsby HP-14Cs which escaped the fire a couple of years ago, with Klaus Nielsen and Thierry Thys to convert them into 22-meter two-place *powered* sailplanes. They are adding a 12-foot center section, extending the fuselage fore and aft to accommodate tandem seating and to give a better control arm for the tail. They have analysed the designs of the Caproni, AS-W17, *Nimbus II* and the *Kestrel 22* (604) to get their average measurements and used this information to design their birds. With Vic's knowledge of the BD-5 (he is building one of those, too!), they are incorporating a two-cycle (probably a Kiekhofer-Mercury outboard) engine which will retract in flight a-la-Hummingbird, for self launch and then go after the two-place records, along with all those Capronis and the soon to be produced two-placed Glasflugel *Kestrel 22*. T. Thys, in case you haven't been keeping track, is the gentleman who owns part of one of the Marfa *Kestrel 19Ms*, and a *couple* of BS-1s, one of which he flew from Truckee to Arizona and did his own retrieve, a couple of winters back, using waves. Vic Swierkowski is the segelflieger who back in 1955 invited Doc Sawyer and myself to come over and try the new soaring site he had discovered, which last year was used as the site of the Open Nationals, Minden, Nevada. It was great even in those days. (Region 9 Newsletter, Vol. III No. 2)

Understand even Stan "Cherokee" Hall is building a *VW powered Cherokee* "Two". Now if I could convince Harland to put a Mazda Wankel in his R-6, extend the span to 22 meters,.....(Region 9 Newsletter, Vol. III No. 2.)

LeRoy Clay gave a fine talk at the last meeting on his extensive analysis of powered sailplanes. One of his criteria for performance was to be able to launch from fields whose elevation is similar to that of Black Forest and still produce a reasonable climb rate. This led to a search for a suitable engine. Consideration was given to motorcycle engines, snowmobile engines, Volkswagen, outboard marine engines, etc. One fact became apparent in his search and that was a weight of 2 lbs per horsepower probably could not be improved on without extensive engine modifications whether a 2 or 4 stroke engine was used. Any starting unit further added to engine weight but Clay considered it mandatory since he wanted the operation of his powered sailplane to be fully independent with regard to launch support. The result was that a 55-HP engine was chosen for his design.

The configuration studies were both varied and interesting. Some designs he presented were "way out" and beautiful. One utilized a twin-boon and pod arrangement with an inverted Vee tail. As various considerations were made the design slowly evolved into a low wing with a pusher engine set-up. This resulted in a clean fuselage with excellent visibility for the pilot. With the small engine turning a small diameter wide bladed propeller drag of the installation was kept at a minimum.

LeRoy indicated the information in his studies is available if any one is interested in carrying the project further. (No doubt some cost of reproducing the info would be required.) (Reprinted from *Variometer*, Feb., 1973)

CLASSIFIED ADS

SKYSURFER Magazine, 20 page journal. Devoted exclusively to the man-prominent flight sports. Covering foot-launched, ultralight aircraft activity from simple kites to sophisticated man-powered types. It presents historical, technical and general information. Box 375, Marlboro, Mass. 01752. $6.00/year.

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

ARCH K SCHOCH, JR 12 MG
PO BOX 1893
HIGH POINT, NC 27261