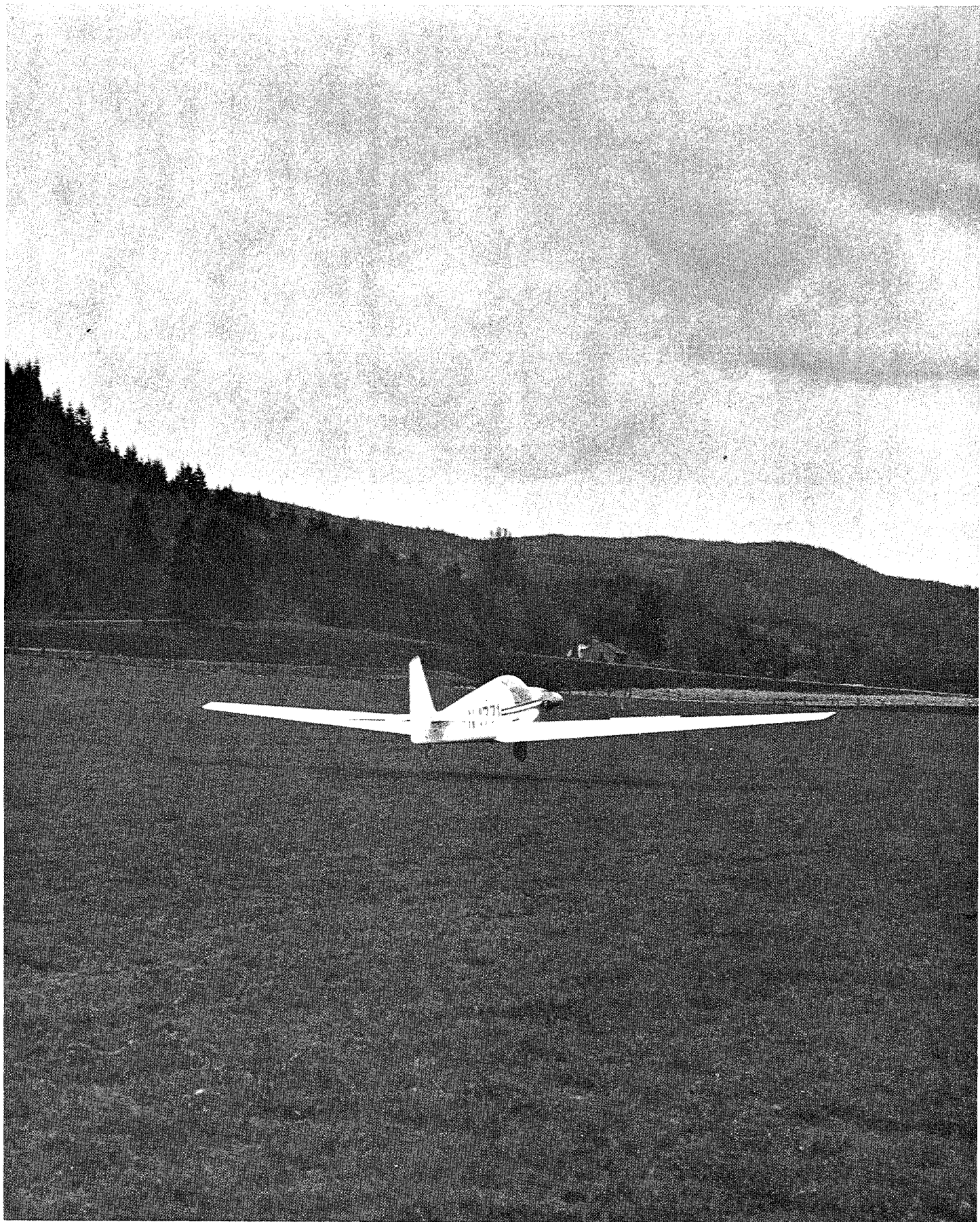


# MOTORGLIDING

APR.-MAY 1976  
50 CENTS

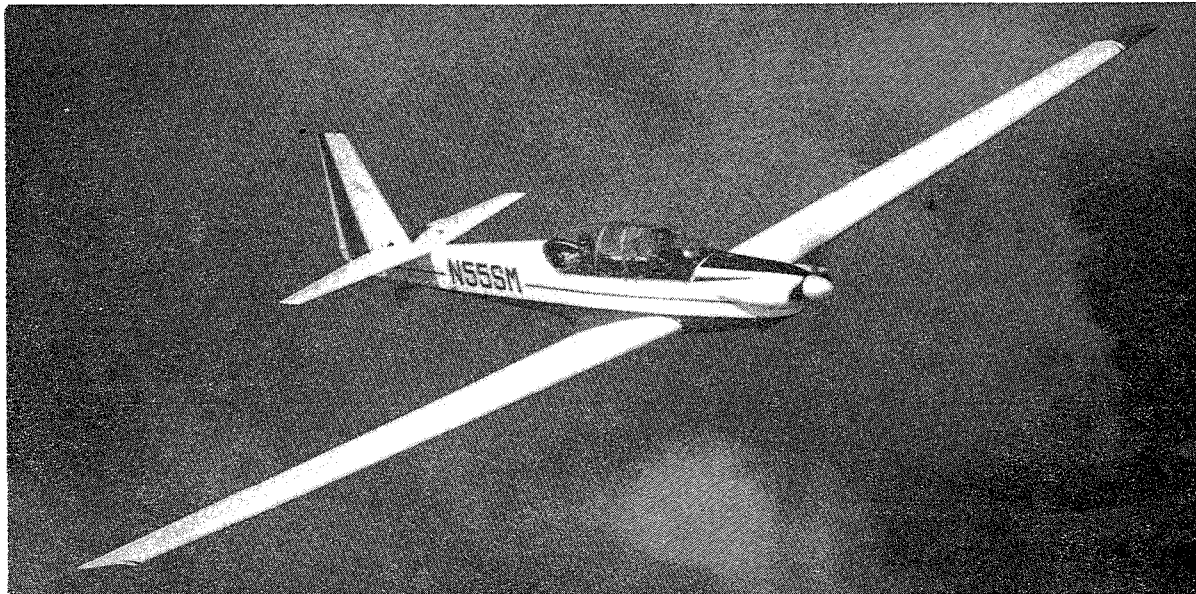


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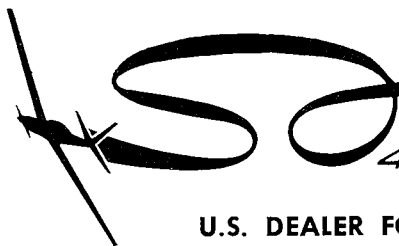
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# MOTORGLIDING

Donald P. Monroe, Editor

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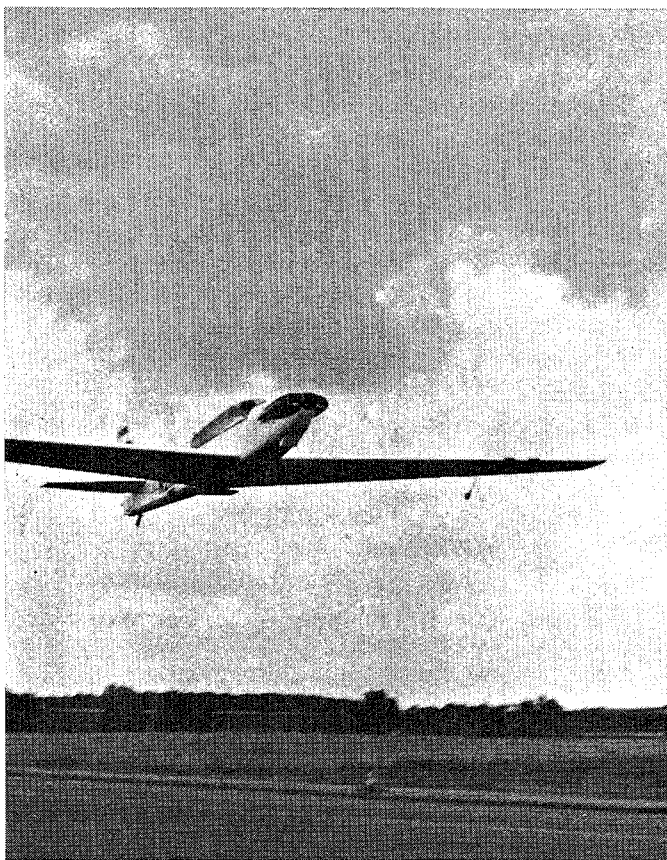
RARA AVIS (of sorts)

by Doug Terman

Spring is the cruelest season in the tropics. At least for a New Englander. The beaches are still flour white, the sea still an incredible blue and the palms still flopping in the Trades. But one knows that the Green Mountains of Vermont are shrugging off their snow cover and the valley floors are bursting with color and the Mad River is roaring its song. And if I have a home, it is Vermont.

Access to Vermont is only a matter of signing on a BWIA flight and five hours of boredom. But this passage between the States and the West Indies is a very special thing to me. I have made the trip five times in small boats and once before in a light plane. And as an additional factor, the acquisition of a small plane has been lurking in my bank balance. So the stack of *Trade-A-Planes* keeps growing. And I look for an ad which I can never find...

TWO PLACE aircraft for sale by reluctant owner. Aerobatic, low-wing with long-range tanks. Low fuel costs, retractable gear and soars like a bird. Reasonable offers considered....



One evening at the Wiki-Up, Earl the Squirrel and I are lofting Tuborgs. (Earl flies twins for the local pea patch airline.) Earl firmly believes that man was not meant to fly without his right hand firmly connected to a throttle. So I lavish words of L/D, minimum sink and green air upon his Lycoming-deafened ears.

Earl is a West Indian and his exposure to soaring is limited to an instructor, some years ago, pulling off power in a simulated engine failure. But his face registers his appreciation for my enthusiasm. He finally tells me of a strange aircraft he has seen lurking in a hangar in Martinique. Not really a glider because it has an engine. Not really a powered aircraft because it is used for soaring. No idea of the manufacturer.

Now Martinique is the Atlantic outpost of Gaul. It is French. Therefore, they speak French. I do not speak French. But Earl speaks French with a patois overlay. Earl also has access to an airplane. We exchange money and promises and at dawn, we lift off from Vigie Field, St. Lucia for Martinique. This is how I was introduced to FOGEK.

FOG EK is a Fournier Sportavia RF-5 powered by a VW engine out of Limbach. Two-place, low wing and aerobatic with some restraints of g-loading on her 47-foot wings. She consumes about 2.8 gallons per hour. This process can go on for about five and one-half hours at a startling 97 mph. She is fashioned of wood and fabric, metal and love.

The cockpits are tandem. No sitting to the left of centerline. Everything snuggles around you and is comfortable. The panel speaks metric-meters per second, kilograms per square centimeter, degrees in Celsius, and kilometers per hour. And, a short stick with buttons on it! Many the bloody *Fokker* I've caught streaking for the lines from behind a towering cu at sundown. A short burst on 123.5 and he's a flamer.

The back cockpit is decently removed from my sight and hearing. Some souls have ballasted this area but its general function serves as luggage area for a sleeping bag, tools, a life raft and a spare set of shorts. But to be fair, its fun to fly with mutual FOG EK fans.

Soaring? No, not a *Nimbus*, but still great fun. I guess that well over half of my total time has been thumping around in thermals over Vermont, ridge-running the Alleghenies and riding wave in Maine.

and cross-countries are an adventure. Hang the ETAs. If the vario goes well into the green the power comes off and FOGEK and I renew our love affair.

But then there's something even more about an aircraft like FOGEK. It is the great joy of being one with an aircraft. That great joy of response and precision and even of mutual trust and sometimes of mutual disbelief in what we can attempt and accomplish together. She constantly teaches me the art of aviating. A poor flare, not enough spoiler and her gear kicks me skywards in a series of mushy hops. We blush together. And lack of sufficient airspeed for entry must be avoided for the engine will not generate enough ponies to drag you over the top. But back to Martinique.

FOGEK was owned by the Beech dealer, Amedee Rambeau. No one was interested in learning to fly her. But for what? Certainly not to export fish in, or to fly to Venezuela with the family and over water—out of the question. It only has one magneto. It is made of wood! It is powered by a VW!!! So Amedee and I also exchange money and promises and bits of paper. No check ride as the owner before Amedee is somewhere down island spraying crops. Amedee has not been checked out. The mechanic shrugs, starts the engine, points to the oil pressure gauge, holds up his finger implying the number "one," wags his finger to imply "no," pats me on the back and walks away.

I shut down the engine, go back to the hotel and hire an interpreter to translate the manual. The manual is hand-copied in French from the German factory-prepared manual. My translation of German into French into English reads:

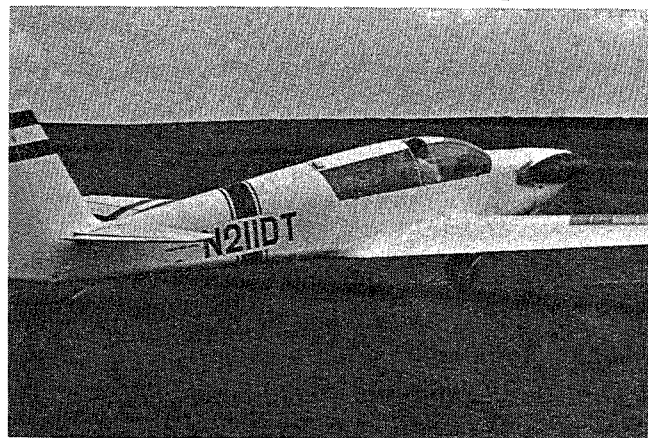
"On proceeding to break the ground sometimes observe some things of note. The speed of air when not sufficient will fall the aircraft only."

I resolve to implement a test program and neatly lay out a schedule of taxi runs, high-speed taxi runs, a gear retraction test, dynamic and pitot system check, liftoff and immediate landing on Martinique's massive runway, a whole NASA type program.

The following morning Amedee cheerfully tells me that I have a one-time ferry flight permission from Paris. It must be done this afternoon at 13:15 hours. There must be a chase plane to mark my position in the sea when I ditch. I may have to post bond to cover the cost of

search and rescue. Beyond this, I must go at 13:15 hours for this is the appointed time. There may not be any alteration in the time. The airport manager is unhappy as the registration has already been cancelled due to the sale of the aircraft out of French registration and the FAA has not replied to my requests for temporary registration for a ferry flight. And how else may an aircraft fly unless it is registered? This is the first law of aerodynamics.

So, as they say, be it. At 13:14 FOGEK and I sit quivering at the end of Lamintine Airport's runway 08. The stick is sweaty in my hand. The cockpit overpoweringly hot and cramped. Rpms to 2800 and we are rolling. No airspeed indication. The tail is up and still no airspeed. Rpms to 3100 now, oil pressure good and the engine sounds fine. But no airspeed! The variometer is showing signs of life and I consider aborting the flight and all the while FOGEK is happy and alive and climbing out in the afternoon sunlight. I pull the gear up. Snick-thunk. We're clean and climbing at 2.6 meters per sec. The cockpit cools to a pleasant temperature and the needles have settled into familiar places. I clear the pattern and notice that the crash trucks are returning to their positions near the tower. I level off at 3000 meters and explore the

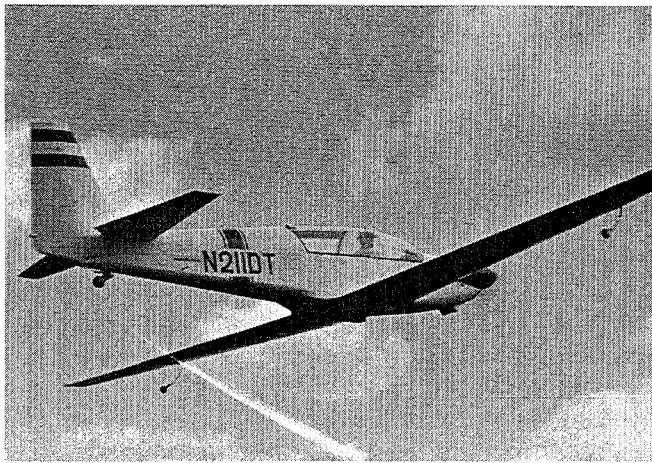


envelope of flight. I nudge the stick and something happens. Immediately. The rudder seems to require pedal application to turn properly. I try them together and we turn immediately with lots of pressure on the seat of my Levis and the ball cosily nestled in its doghouse.

Trade wind cu are aligned in streets below me and I can see islands well to the north. Dominica there. Guadeloupe perhaps that smudge beyond. To the south the white sand beaches of St. Lucia ringing the green mountains. And beneath is the sea patterned by the wind and burnished by the sun.

The pucker factor is easing considerably now. The alien stick is now cool and easy in my touch. No longer a sweaty grasp but light beneath my thumb and index finger. Tentatively, I pull back power. The rpms sink smoothly to 800 and the only sound now is my breathing and the wind. Approach to stall, power off, decaying air-speed, slight burble and she breaks cleanly and without fuss. Lots of aileron control left right up to the break and rudder enough to fan a sultan. Stick eased forward, some rudder and recovery. The sea's horizon again parallels the canopy sill. Canopy! I can look not only to the left but equally well to the right. And up and even back. I can see all of the world from up here! The cockpit is not some replica of an instrumented boudoir with brocaded bench seats and color-coordinated instruments. It is leather and stark dials and a gull's-eye view.

I try a departure stall and then a spin entry. FOGEK's manners are impeccable. Spoilers out and back with no noticeable change in pitch. A gear cycle and clean up. I sit there happily in the sure knowledge that this is a once-in-a-lifetime airplane. The trim and stick feel familiar beneath my touch. My hand falls naturally to the spoilers. The lifeless air speed indicator seems nothing more than a poor reflec-



tion of the sound of wind flowing past my canopy and the firmness of the controls. FOGEK and I have made our peace.

St. Lucia is now less than ten miles away and with all of my playing around, I still have 2000 meters of altitude in my hip pocket. I pull the throttle back to its stop and try to find the attitude-air-speed-wind whistle to give me my minimum power-off sink. The vario stabilizes at a little over one meter/sec. The lazy disc of the propeller also becomes stationary. There also seems to be a warning

buzzer making discordant noises from somewhere within the recesses of the cockpit. Instant pucker.

My engine has stopped. All airplanes have engines. Engines keep airplanes from falling out of the sky. Therefore, my airplane will fall out of the sky. Forget about soaring. That's just for fun. This is for real. That's the dark, deep, rotten Caribbean Sea down there!

Training. Selective Response. Right. That's what I paid those guys \$8 an hour for. Checklist. Proper airspeed and control of the aircraft. I am nattering to myself and FOGEK is happily continuing on her way. I recheck the vario. The sink is still slightly above one meter per sec. Let's see—1500 meters altitude divided by 1.2, ah—well let's plan 1.5 equals—ah 1000 seconds—ah divided by 60 equals—ah—*sixteen minutes*. Death, it would seem, is still sixteen minutes away. The cockpit is now stuffier with the lowering altitude and trade wind cumulus are brushing by the wingtips. It's getting bumpy and every few seconds FOGEK has a tendency to raise a wingtip. I glance down at the vario and it flickers to 4 meters per second *up*. The powered airplane driver leaves the controls and the soaring pilot takes over. We spiral up in green air at 45 degrees of bank, the altimeter singing



a song. We lose the thermal and bust through sink into another bubble of lift. FOGEK swims upward through a sea of rising air. We play and soar and sink and soar again. St. Lucia is straight below. I try the area over Mont Jeaulouise and the vario indicates massive *up*. With all the engine controls rechecked I touch the starter and the 62 ponies start cantering again. Just a throttle stop adjustment.

But there are still two hours until sundown and perhaps the ponies can rest for just a bit while FOGEK and I play.

by Tasso Proppe

My employer, General Dynamics Convair, finally put me out on the pasture for being over-age; company policy does not allow employment of people over 65.

So, the first order of business for me was a vacation trip that I had put off for years. One of those \$400 charter flights to Germany to visit friends and relatives—and, of course, snoop around gliding activities and manufacturers to maybe come up with new ideas for something I could afford to do back home (in San Diego).

It was quite convenient that the Feuerstein Motorglider Meet coincided with my vacation schedule (or vice versa)—but I only had two days to spare to attend it and one evening to give them a little presentation on what we do here, what problems we face, and what I think the direction of the development effort should be.

This is what I found noteworthy—keep in mind, though, that *my* interest is oriented towards flying and soaring as a popular sport, for *fun*, for the experience to master the air and what it has to offer, and *not* to establish distance or speed records by developing costly machines, too expensive for ordinary people to own and operate:

The Burg Feuerstein Meet is not a competition to push a singled-out one-sided feature like "penetration", "fuel consumption", "speed". It's objective is to compare the existing designs in their ability to respond to a variety of salient requirements—"economy", "soarability", "utility", or "noise pollution".

There is no victor and no champion.

The comparison is sometimes loaded in favor of "minimum engine time", sometimes in favor of "speed", or "minimum fuel consumption". And the result is a better idea for what the characteristics of a motorglider really are and what compromise to shoot for in design and development for general utility.

The meet no longer tries to imitate the one-sided (distance and speed) championship competitions of high-performance sailplanes. It is geared to everyday soaring usefulness. The evaluation formula for 1000 possible points on a prescribed course may be:

$$600 \times \frac{\text{lowest fuel consumption}}{\text{this airplane's consumption}} +$$

$$400 \times \frac{\text{best time}}{\text{this pilot's time}}$$

that is: the contest today is loaded in favor of low fuel consumption. Tomorrow, the point system may be in reverse and a factor of 700 maybe attached to time (speed) and the best fuel useage is only valued 300 points. There is also an evaluation of start reliability (stop watch from the signal "go" to actual engine start) and noise pollution (sophisticated gear to record the noise profile around the airplane coming and going at specified altitude.)

The task of the day and it's evaluation are discussed at night after supper with an exchange of ideas: where are we going, where should we be going, what's the order of our priorities?

There is bickering, too, about details. Fuel consumption is measured by taxiing up to the gas pump and filling up to the brim. After the task accomplishment, the glider pulls up to the pump again, is filled up to the top, and that amount is measured. The two-cycle people have to mix additional oil into the gas—five percent. They feel disadvantaged, because the oil consumption of the four-cycles is ignored.

On a miserable day with no wind and no lift anywhere, the task was simply: "stay airborne for a fixed time" (three hrs, I believe). This is representative of a typical motorglider operation, loitering in search for thermals). The ensuing results were somewhat of a surprise. The minimum power requirement to stay up is just a little above engine idle, and some engines cannot be operated in that range—unless you keep your teeth together by a brace, and that does not solve the problem of reading the instrument panel with all dials fuzzy and what this does to instrument survival. Some of those "all-attitude" carburetors (which I hate, as you may remember—*Motorgliding*, August 1973) increase fuel consumption in that range rather than decrease, and they foul up plugs that way. The thing that caused a few chuckles was the seating comfort: some pilots volunteered quite derogatory remarks about that aspect of the man-machine interface they had to sit on and endure for three hours. Imagine an instructor having to spend six to eight hrs a day that way.

Yes, in real life, the 800 or so

licensed motorgliders in Germany are primarily dualseaters used for training in soaring schools and clubs. The student learns to handle the airplane under the power with enough time between takeoff and landing to get the feel for the controls. Then he advances to power-off (propeller stopped) approach and landing, and he needs only two or three dual winch launches under supervision for the transition to a normal sailplane. You hardly see an aerotow in a club operation—they just cannot afford them.

The Feuerstein objective seemed to be primarily tailored to that utility requirement. It so happens that it coincides with good soarability in the medium performance class.

Hans Zacher told me—with his usual emotional involvement—that, for the first time in the history of the motorglider meets, he got close to his goal of separating the design and achievement parameters of motorgliders from those of the purist glass ships and coming up with a direction towards *soaring utility* and *fun*.

Was there any sensational new development? That depends on your viewpoint. There was something like a *Motor Nimbus*, I believe, but I haven't seen it fly. It had engine start trouble, I was told, and it seemed out of place a little, in a crowd of workhorses, a highly-bred glass ship, probably built for eccentrics who like the Churchill Downs Steeplechase. Too fickle and delicate for my taste.

There was an interesting engine installation: the engine buried in the wing on one side, the propeller swinging in a slot at 60% chord, the thrust vector about five feet right of the airplane centerline. The off-center propulsion works fine but the propeller in the slot makes a terrible noise generator.

The successor of my *Crow*, the HB-3, has a Cessna-type landing gear, the propeller swings around the upper fuselage boom—and it is powered by what appears to me to be an exciting new engine, a two-cylinder, two-stroke 40 hp Rotax, completely self-contained with its own cooling blower, baffling, alternator, electric starter, dual solid-state ignition *and* muffler! All of it weighing just about 100 pounds. It sounds like a four-stroke, even idling and displayed a start reliability that was amazing. *That*, to me, was a sensation. This unit has a type certificate as an aircraft engine (motorglider) from

the Austrian FAA which is recognized by all western countries (except USA) and costs short of \$1000.

Rotax also produces a 27-hp unit, *not* ATC'd, with ripcord starter and single ignition that should be worthwhile investigating for the type of desert-fun motorglider that I keep dreaming of. With cooling blower and again *with* muffler, it weighs 60 pounds at a cost of \$275. On my request for information material, Rotax promised me more details, when available, which I will pass on to *Motorgliding*. The *Crow* also has a dual seater tandem sistership, the HB-21, powered by a V.W. conversion with 65 hp, more span, and generally better performance than the old *Crow*.

The Scheibe *Falkens* (side-by-side and tandems) are dominating the scene; and they dominate the market, too. They are slower than the RF-5's but they *soar* instead. With a fixed rather than retractable landing gear and a tubular steel frame fuselage, they represent sturdiness, maintainability, no-nonsense operability. I found one operating out of a godforsaken hinterland village gliding site with no visible shop support—just putting in a day's work, no fuss, no hassle.

Whenever I talked to the enthusiasts, a few major differences came to light between what we can and cannot do over here, compared with their problems. They are jealous of our "Experimental" Category. Whatever they do has to be done to licensing requirements—sailplane requirements, that is. A design, once approved, cannot be modified without re-running it through the licensing process. They design to a new category—"Motorglider", generally single wheel landing gear, sailplane characteristics—no dual ignition. They crank out commercial machines for commercial use.

When these machines turn up in the U.S., they lose their license and become "Experimentals" because the European category "Motorglider" is not recognized by the U.S. FAA. That prohibits any commercial use by gliding schools. It makes them toys for the rich rather than tools to promote soaring amongst the younger generation. And the insurance premium doubles. In the light of that paralyzing proposition, the Europeans would rather *not* enjoy an experimental category and retain the usefulness of their motorgliders. To them, the motorglider has infused a new lease on the survival of the sport of soaring.



## FOREIGN SCENE

by S. O. Jenko, Dipl. Ing. ETH  
AMTECH SERVICES

### 1975 Burg Feuerstein APS Contest

The last year's contest took place from September 8-12. Because the Soaring Division of the German Aero Club decided not to sponsor this year's event, and in order to carry on this traditional APS meet, Messrs. Jan Eilers, Gerd Stolle and Hans Zacher took on this task (see August 1974 *Motorgliding*). The November 1975 German *Aerokurier* carried a rather brief account of this international event, presented here in translation.

The purpose of this yearly contest is not only to make it international in scope but also to provide opportunities for demonstration, test and evaluation flights. There were some twenty contest participants who also took part with others in various technical sessions ranging from the elementary task of trying to define anew the auxiliary-powered sailplane to the problems of the traveling flight with an APS (see last issue of *Motorgliding*), the usage of an APS as a sport, the noise reduction, etc.

The flying part of the contest consisted of the following tasks:

Date (Sept.)	Task	Winner	APS
8	115-km tri.	C. Gad	SF-25E
9	130-km O & R	C. Gad	SF-25E
10	Endurance - 2.6 gal. fuel allow.	E. Heppt	AS-K 14
11	O & R - least fuel consumpt.	Gad/ Wiesbauer	SF-25E
11	200-km tri.	E. Heppt	AS-K 14
12	100-km O & R	Gad/ Laumann	SF-25E

\* Castle Pommersfelden

The first three daily contestants flew SF-25CS, SF-25E, SF-28A, AS-K 14, RF-5B, *Nimbus IIM* and HB-21.

From a technical view no entirely new designs participated. Instead, some improvements were noticeable. The point of

interest was again the *Nimbus IIM* (See June 1974 *Motorgliding*) which is now in production flight test stage. It features electrically retractable outriggers which can be separately actuated and is supposedly an advantage for hangar storage as well as movement on the ground.

The Hirth 0 28 engine (no longer in production) was modified by W. Collee who was one of the originators of this APS design. The modifications include a dual ignition and fuel supply. The maximum power is 55 hp, while the takeoff power is 50 hp. There are two main tanks of 7.9 gallons each in wings and two auxiliary tanks of 0.8 gallons each, providing enough fuel for a powered flight of 3.5 to 4.5 hours. Also, a new muffler was developed (67 dB(A)) which is below the required level of 68 dB(A).

At a gross weight of 1275 pounds the takeoff roll on grass is 1310 feet; the cruising speed is 93 mph and the rate of climb is 394 fpm at 59 mph.

During the next few months extensive test flying will be done in South Africa and some new records may be forthcoming....

Two other auxiliary-powered sailplanes of interest were the Austrian HB-3 and HB-21L manufactured by Brditschka (see May 1974 *Motorgliding*). The fabric cover gave way to a fiberglass skin. The two-place HB-21L has a new aircraft engine, based on the VW engine and developing 65 hp. The redesign was done by the helicopter designer Westermayer. Comparison testing with other conventional auxiliary-powered sailplanes showed these two designs to be on the same level.

### New Developments at Scheibe Aircraft Co.

The November 1975 German *Luftsport* has two very interesting articles about new development work at Scheibe Aircraft Company. They are presented here in translation.

### Auxiliary-Powered Sailplane SF-32

There is a new single-place auxiliary-powered sailplane prototype being built by Scheibe. It features a retractable pylon-mounted engine with propeller. The basis for this development was the experience gained from their SF-27M of which some 30 are still flying since its birth in 1967. Its steel tubing fuselage

provided good service; it is being used with some modifications, also for cost reasons, in the new SF-32. Instead of fabric cover fiberglass skin will be used.

The wing is not new either: it comes from the Swiss Elfe AN-17 sailplane of the Albert Neukom sailplane plant. The span is 17m and features a surface comparable in quality to fiberglass ships.

The Elfe AN-17A has a rate of sink of 1.8 fps at 46.5 mph, a gross weight of 815 pounds and a glide ratio of 40.

The two panel wing consists of an aluminum spar, the shell (skin) is 0.236 inch thick made of plywood and plastic honeycomb. The Schempp-Hirth type dive brakes are on the top wing surface only. The outriggers are removable.

There is a retractable wheel (380 x 150 mm); a swivel tail wheel is coupled to the rudder cables. Thus the SF-32 should be quite maneuverable on the ground.

The horizontal tail consists of a fixed stabilizer and an elevator.

The power plant is a two-cycle, two-cylinder engine Rotax 642 which also powers the Austrian HB-3 (mentioned earlier).

The Austrian engine manufacturer Rotax is primarily a snowmobile engine factory. A small portion of the production is modified into "aircraft engines": among other items an electric starter, dual ignition and a larger, quieter muffler are added.

The engine is about to be certificated in Austria and Scheibe Aircraft Company expects to receive it in Germany.

(We hope to receive complete information on this engine for a future article.)

The propeller is driven by a belt, the reduction ratio is 1/1.95.

The retractable power package is driven electrically. The fuel consumption

is about 2.6 to 3.1 gallons per hour. A 5.3 gallon fuel tank would be sufficient for a two-hour powered flight.

The test flight was scheduled for last January. The best part is the projected price: 35,000 DM to 40,000 DM.

#### Auxiliary-Powered *Bergfalke IV*

As reported here occasionally some builders have converted a few *Bergfalke* sailplanes into auxiliary-powered sailplanes. From the first flight in 1969 there are still some 50 flying. Thus it is of no surprise that Scheibe Aircraft Co. is developing its own auxiliary-powered version whereby the two-place capability is being retained.

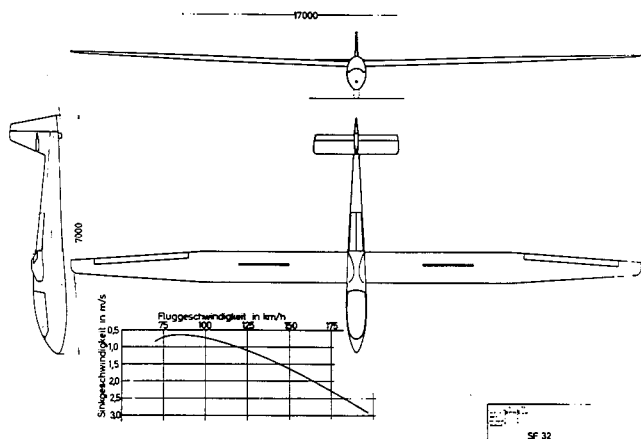
The engine used in this modification is a Hirth 0 28 (52 hp), provided by the known APS enthusiast W. Collee. The retractable power package is positioned behind the second seat; it takes about 20 seconds for retraction or extension. This auxiliary-powered sailplane is now in flight test stage.

Some technical data:

APS model	SF-32	<i>Bergfalke IV</i>
Number of seats	1	1 + 1
Wing span	ft 55.8	56.6
Wing area	sq. ft 143	188
Aspect ratio	21.73	16.98
Empty weight	lb 747	880
Gross weight	lb 990	1320
Wing loading	psf 6.9	7
Best glide ratio	37	31
	at mph 56	57
Min. rate of sink	fps 2.1	2.6
	at mph	50
Stalling speed	mph 43.5	43.5
Rate of climb	fpm 394	296
Engine	Rotax 642	Hirth 0 28
	40 hp	52 hp

#### Latest News—Stop the Presses!

The airmail just brought the latest issue of the Chinese *Humming Dragon*, containing an article on a revolutionary new engine, specifically designed and developed for auxiliary-powered sailplanes, about 40 hp at 3200 rpm, having a weight of only 20 kg (44 lb) including *all* accessories with a 50 dB(A) muffler. Certificated production models to be available at \$150 fob West Coast. We'll try to have additional information and a few illustrations in the next issue....



## EULOGY OF THE CROW

by Tasso Proppe

The *Crow* is dead, at least, it seems so, and we are waiting for a report from its last owner, Bob West, on what might have happened.

I test-hopped it July 1975, after landing gear repair, still without canopy, and it flew the way it always flew—so I handed it back to Bob with the usual fatherly advice, and he flew it to my and his satisfaction. A few months later, a friend of his flew it and spun it in—all I know so far is: at climb-out in a strong breeze, making a turn into downwind. He and the *Crow* did not survive.

I am still emotionally attached to the clumsy but lovely little bird; so, I feel I owe it a eulogy and I couldn't think of anything more appropriate than to indulge in the memory of "My Neatest Flight."

By the time this is printed, it will be more than two years ago, April 6, 1974. The AGCSC (San Diego Gliders) had an outing scheduled in the desert—a good reason for me to join them.

I trailered her to Ocotillo Wells, an air strip on a dry lake in the Borrego Desert, some 120 miles east of San Diego, stuck her together with the help of volunteers—that's nearly two hours of work—and got airborne shortly after 13:00. After four minutes of powered flight at 900 ft above ground, I found a thermal, killed the engine, tried to work it—and missed. Getting uncomfortably close to the ground, I re-lit the engine three minutes later and climbed back to 1000 feet. At around 13:28, I found another thermal. This time, I kept the engine idling for two minutes to make sure I could stay in it, gained 200 feet, and shut the engine down for good.

From then on, it was *soaring*. The early afternoon thermals carried me only to 2500 feet and by 14:00, I made it to a comfortable altitude of 5500 feet or so—which allows me to devote some attention to the procedure of hiding my propeller behind the fuselage pod knife edge. That involves a hand-held mirror through a hole

in the canopy to see where it is, and beeping the engine starter button just briefly enough to keep it from going over the next compression. The starter only works with the ignition on—which shows on the "engine-on" trace on the barogram.

With the gliding angle of 18:1, this altitude is only good for 18 miles from base—theoretically, that is. If you consider a decent, non-emergency pattern approach and some possible sink you may run into, it will be more like 10 miles safe. However, if you have an engine that starts reliably when you need it, 5000 feet amounts to a beautiful altitude for soaring out into the country (Wolf Hirth called it "luftwandern"—air hiking).

The barogram shows that at around 14:40, I went down to 2500 feet, but that was no reason yet to re-light the engine. Sure enough, I ran into another thermal that carried me up to 6000 and eventually another to 7320 feet, a net gain of 6120 feet over engine shut-down altitude. By that time, I had travelled over Ed Fletcher's little Sky Ranch air strip, the Borrego commercial airport, to Clark Dry Lake, at the northern end of the Salton Sea basin.

A dip at 15:40 on the barogram was man-made: There was a Japanese twin jet trainer downed in the rugged desert a few weeks ago. They were dismantling it to get it out in pieces. There used to be an old rule amongst aviators that "one crash attracts another." So, spiralling down to take a look, I wanted to make sure my engine is available when I need it. That's the pip on the engine-on trace at 15:40. I started it up and ran it for 10 - 15 seconds before I glided down to wave at the dismantling crew—and to run smack into a thermal which proved to be good for 6000 MSL, slowly drifting out of an area that is marked on the map as The Borrego Badlands. That was one of the sweetest thermals I ever encountered to bolster my ego. The dismantlers watched me in disbelief pulling away with a dead propeller back towards Ocotillo Wells. They followed me later in their jeep to ask questions, still with a baffled look in their eyes. I made my way back in two hours in slowly decreasing thermal activity but without using the engine. The engine-on trace

shows the taxi run after touchdown and another low-level flight from one end of the dry lake to the tie-down area.

The punch line of this story is: A 4½-hour flight on less than one quart of gasoline—a purist fiberglass ship would have used five times that much to get started. It probably would have also covered five times the distance, yes. But it would not have dared to spiral down that low over the Badlands. I don't think this is a matter of operating costs. To me, it seems more a matter of taste. At my age, I enjoy the leisurely drifting around on a Saturday afternoon, poking my nose into the wilderness and the wonders of nature with the engine for independence of takeoff and in-flight freedom of decision without the hazard of running into a point-of-no-return situation.

The *Crow* provided just *that*. The only misgivings I had was that she was designed for being kept in a hangar. I had her on a trailer at home alongside the house,

covered by a plastic canvas. Everytime I wanted to fly, I had to build me an airplane with the help of volunteer onlookers, a nearly two-hour task—but that doesn't change the fact that she was truly the first workable and operational motorglider back in 1963 and still good in 1974!

There is a little addendum for the barograph: Since I am not competition-minded anymore, I don't have it calibrated. I carry it for my after-the-flight evaluation, and the altitude figures are taken from flight instrument readings which I read into a tape recorder together with time, location, and other pertinent data. I use smoked mylar sheet instead of aluminum foil. After fixing the record, I use it like a photographic negative and do my evaluation (like the typewritten entries) on copies thereof. The engine-on track is an improvisation I added with the help of a cheap 12-volt relay, the pen attached to the armature.

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#### BETTER PROSPECTS OF USE OF MOTORGLIDERS FOR SPORTING PURPOSES

by Per Weishaupt

After having been appointed President of the FAI/CIVW Motorgliding Sub-Committee last spring, I in June 1975 sent an Open Letter to a number of international aviation and soaring magazines asking motorglider pilots a number of questions under the title "Why don't we use motorgliders more for sporting purposes?"

A number of the magazines published the letter, and the committee got quite a number of interesting answers from motorglider pilots all over the world.

Based on these answers the committee arranged a discussion on the occasion of the Burg Feuerstein meeting in Germany last September. Although it was not a full-scale championships competition that

year and the more competition-minded pilots may have been absent, we had a very interesting discussion over three evenings.

After that, I sent the Bureau of the CIVW an interim report for their November meeting about my impressions of the situation.

I told them that many pilots were quite satisfied with the present FAI rules for motorgliders and thought new and better motorgliders would result in more sporting flights.

With regard to the nearly empty FAI record list for motorgliders we found out that the FAI originally by error homologated some German records which had been flown before the records were inaugurated on January 1, 1971, and for that reason they had been cancelled again.

Another reason for the few records might have been the minimum requirements in the 1971 Sporting Code. They seem to

have been too hard, and with the publishing of the 1975 Code they have been deleted. So we are now allowed to start with small records and improve upon them; this in itself may stimulate the battle of records.

With regard to badge flights quite a number of Silver and Gold Badges as well as some Diamonds have been flown with motorgliders, but as they are not registered separately their number is unfortunately unknown.

Competitions have been few owing to the fact that in most countries there are too few motorgliders and they are too scattered. There have been some informal meets and some motorgliders have taken part in regular gliding competitions, but the only real development with regard to competitions has been the German competitions which during the later years have taken place at Burg Feuerstein.

Until further experience with regard to competitions and competition rules has been gathered the committee find that any competitions at present should be run according to the German rules.

That the engine should be used as part of the sporting performance was strongly rejected by nearly everybody. And even if there still are people in the CIVV that like this idea I think that the *gliding* committee of the FAI ought to appreciate that the motorglider pilots really want to make gliding and soaring performances and not motor flying performances.

However, it was very much stressed by the motorglider pilots that they wanted to be able to use the engine not only to get into the air but also to fly, e.g. away from a control zone or otherwise away from their base to an area better suited for soaring. And after having performed a soaring performance they wanted to be able to restart their engine and fly back under power to their base. They wanted to improve safety, cost and frustration by eliminating out landings.

This was not possible according to the old code which prescribed a flight after passing a starting line to a *landing*.

However, in the 1975 Sporting Code the word landing has been replaced with Finish Point which is defined as "The Finish Line OR the Landing Place." This means that if only you can arrange your course with official observers in a way acceptable to your National Aero Club you can motor

out to a starting place somewhere, stop your engine and cross your starting line, perform, say a triangle, pass your finish line and after that restart your engine and motor back to base.

This brings us to the question of documentation which was eagerly discussed at Burg Feuerstein. Apart from some system with recognition time interval and site clocks to make sure that you have not photographed your turning points before passing the start line it would be nice with some more advanced systems combining clock, barograph and camera, and some interesting projects were shown at Burg Feuerstein.

We ought to get somebody to put out a prize for the best system. It would be of interest not only to motorgliding but to all performance soaring which could be made easier and cheaper that way.

The above points were all taken *ad notam* by the CIVV at its meeting in March 1976. The CIVV has no idea to force the motorgliding people to do something they do not want, even if there still are members of the committee that think that at some date some kind of sporting competition including some use of the engine will appear. Well, let us wait and see. One possibility is what the Germans call Wandersegelflug-competitions where the competitors during say a week fly a sort of combined tourist-and-soaring course, using the engine where necessary to reach the day's goal, and soaring as much as possible on days when there are the thermals enough.

The first thing to do, however, in my opinion is to fill out the empty—the many empty!—places in both FAI's and the National Aero Clubs' record lists for motorgliders. Let us show them that we *are* interested, and let us show them what the motorgliders we already have are able to make of performances—with time we can improve upon them, not necessarily with the *Nimbus M* but with the newer and not quite as expensive types as the new SF-32 and PIK 20E and what else are coming. And do not forget our two-seaters. They may not be so high-performance as we could wish, but they are certainly able to make impressive soaring flights nevertheless. And when we show we are doing this with them the manufacturers will understand we want something to beat them.

## LETTERS

Editor:

Interesting changes in motorsegler certification are forecast for Germany in the near future. Max allowable gross weight of 1000 kg vs. the present 750 kg, and minimum allowable L/D of maybe 25/1 are likely soon.

A recent short visit in Europe brought not only the foregoing to my notice but also that Italy has just adopted rulemaking allowing experimental certification. Homebuilding (and flying of such) is now legal there! And furthermore, putting the U.S. even further behind, Italian certification procedures for motorgliders are expected to be completed soon, possibly by year-end.

Bernald Smith  
Fremont, California

Editor:

Fournier RF-4D based at Compton Airport, California. Over 600 hours on it now. Most soaring flights under the LAX TCA in thermals kicked off by the oil refineries of Wilmington oil fields. Up to the 5000-foot floor of the TCA when the marine inversion lifts. Up to 8500 feet in convergence zone lift in the hole in the TCA north of Long Beach Airport. Up to 11,500 feet in wave lift directly over San Fernando Airport. Three-hour flight in wave lift over Malibu Beach during Santa Ana wind condition at 3500 feet. Most flights during weekday lunch hours. Gave up motoring to Elsinore—lift is better over the city most times. Flown to airshows in Canada, Mexico, points east as far as Oshkosh, Wisconsin and all over California. Wouldn't part with the little Fournier for anything.

Mike Bittner  
Manhattan Beach, California

## RECORDS

Three world motorglider records have been claimed in Germany. On April 19, 1976, Friedrich Kensche flew an SF-25E at 45.9 mph over a 100-km triangular course for a multiplace record. On April 28, Kurt Heimann flew an SF-27M on a 373-mile out-and-return flight, and on the same day, Gunther Jakobs flew an SF-25E with passenger for a 402-mile goal. These are all subject to approval by the German Aero Club and the FAI.

## POSTFLIGHT NOTES

We hope you have enjoyed this issue. The next one will tentatively feature Bob Tawse's paper, "Motorgliders: State of the Art;" Bill Budachs' article on delivering a *Falke*; an article exploring the possibilities of a tailless powered sailplane, by M. A. Zimmerman; and S. O. Jenko's "Foreign Scene." After that, well, it depends on you. If you are in a position to contribute an article or photographs, please do so. If we are to maintain a regular schedule we need contributions from those participating in the activity.

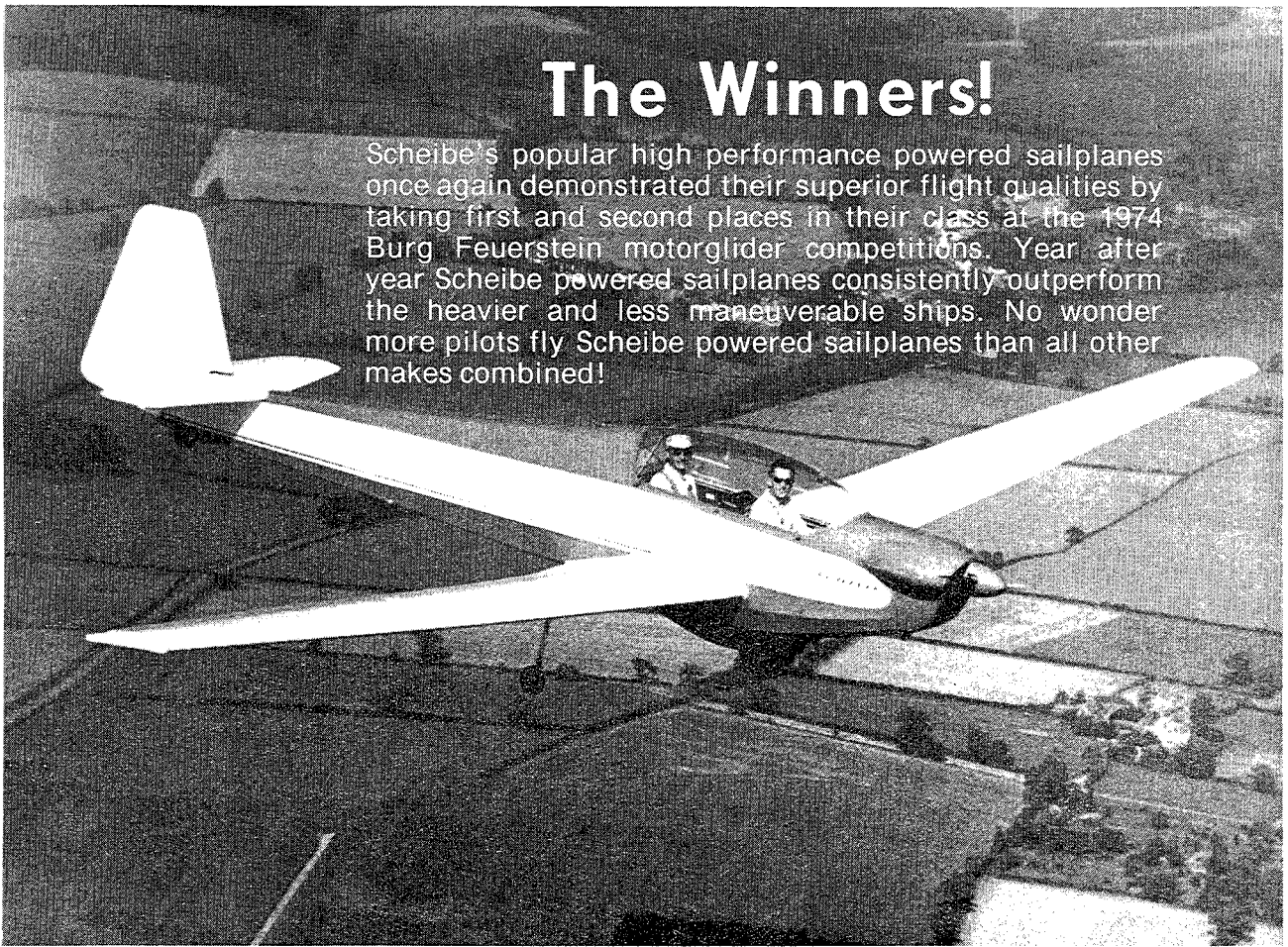
## CLASSIFIED ADS

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RF-5B, 600 hrs. Excellent condition. \$18,500. R. C. Graham, 1432 Sand Run Rd., Akron, Ohio 44313.

# The Winners!

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Maximum glide ratio	26/27 to 1 at 53 mph
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Scheibe SF-25CS Falke	DM 49,000

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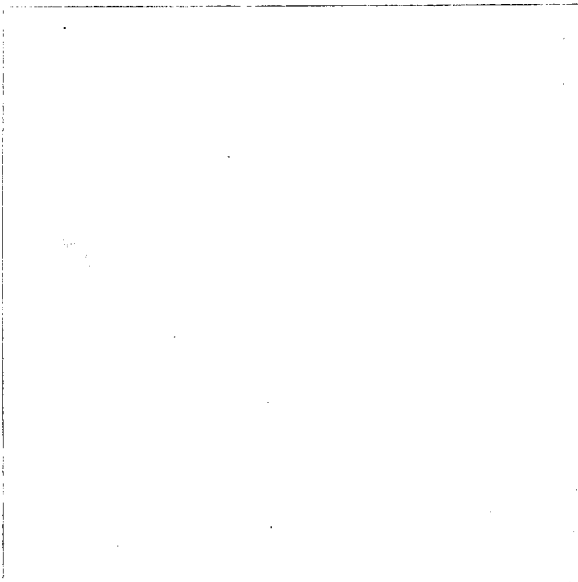
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