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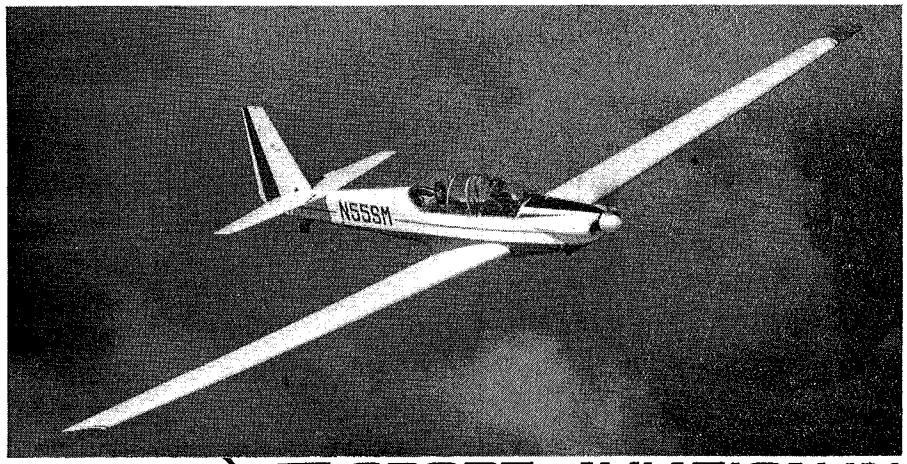

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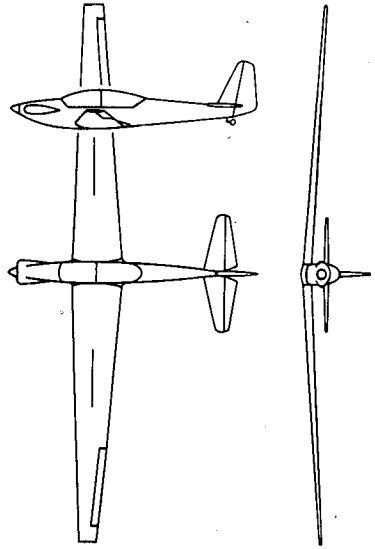

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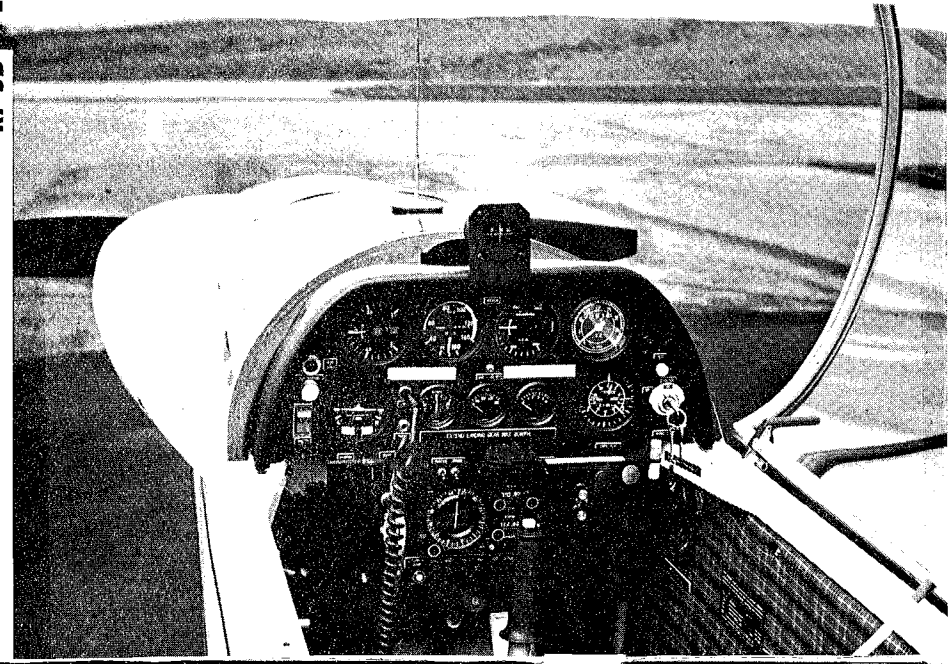

MOTORGLIDING

Donald P. Monroe, Editor

Vol. 7, No. 2 Published by The Soaring Society of America, Inc. April-May 1977

Contents

Cover: Scheibe SF-28A *Tandem Falke*, by George Uveges

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Circulation of the February-March 1977 issue was 1100. This issue was mailed in November 1977.

FLIGHT FROM A VIRGIN

by Doug Terman

Dawn in the tropics is not the subtle alterations in light values of the northern latitudes. . . a merging of black into grey into rose. Or the outlines slowly changing from blurred to solid forms. South of Cancer and north of Capricorn, the sun crowbars open the eastern horizon and the day is *now*.

As it is on this June morning in Beef Island, British Virgin Islands. A distended ball of fire comes up out of the sea and light floods the green hills and folded valleys. A flight of frigates lift off in the morning light, working up the ridges in lift from the sea wind. The boldest two peel off for a thermal and spiral up into the cloudbase, IFR.

I pause in my walk-around to watch bosun birds streaming out to the east... going where? And laughing gulls, hovering in the wind's eye, scanning the lagoon for their breakfast which still swims in the shallow, green depths.

I spread the WAC chart on the dry grass beneath the wing, checking final courses. Five hundred seventeen miles to Haiti over islands named for saints and sinners, navigators and thiefs, all long dead. Met says it will be a fine day with haze; winds fifteen knots on the tail. Delta Tango has over ten hours on the engine now, and oil consumption is near zero. Fuel consumption has stabilized at 2.6 to 2.7 gallons per hour.

Tap-tap-tap. Enter 15 and divide by 2.7. . .tap. . .equals 555.55555 ad infinitium. Subtract. . .tap. . .20 miles for climbout. Call it 530 miles range to dry tanks. Winds aloft are 15 knots plus from the east. More than ample range for the 517-mile push to Haiti.

The Limbach fires on the first swing and I taxi Delta Tango to the western end of zero-eight. Seagulls gawk from the edge of the tarmac and STOL off to the south. One lingers longer than the others and cocks his head, yellow eye watching.

The gauges look good. I note the time on the edge of the chart, adjust my sunglasses against the morning sun and then call tower.

Tower says I have momentary title to the possession of all that real estate herein described as runway zero-eight and I roll. We break ground in seconds and clean up the gear. I call tower to relinquish my title and he gives me a laconic fare-thee-well.

"Deltatango clearedfo' raighthand departure. Adios."

"Adios, Beef Island."

Puerto Rico is muddy; just dim greys and browns in a yellow soup. Once every few years, the African high velde drys out and the wind comes along and vacuums up the dust, sucking it high into the stratosphere. Carried trans-Atlantically by the winds aloft, it finally settles out, attracting water vapor. The result is generally *partially obscured and two miles with scattered mud showers*. The West Indies Tourist Association doesn't speak of this.

I look down at the sea and there is none. Nor horizon. Just blobs of Puerto Rico, indefinite and 12,000 feet below. Two solutions: descend into the muck and try for a landing in PR or climb on top, if there is one. Delta Tango shows she's still good for 200 feet per minute up.

"San Juan Radio, November two one one Delta Tango on 123.6."

"November One Delta Tango, San Juan. Go ahead."

"Ah. . .passing south of Puerto Rico. Do you have any reports on the top of the haze layer?"

"November. . .Two. . .Tango. Squawk. . .hiss. . .two zero at fifteen. Altimeter. . . . . .niner five. . . awk."

I squeeze the mike button. "San Juan, Delta squawk. Many flud bisk. Dango Hawk clear."

He comes back clear as a bell. "Delta Tango. You're breaking up."

I do the honorable thing and squeeze the mike tit twice. Some you win, some you lose and some you just break even.

Flying in mud requires concentration. The air is smooth. But there are no gauges to tell me where the center of the earth lies. Only magnetic compass, vario, ASI and altimeter. I lay the whip to the 50 ponies under the cowl, 3000 rpms, set trim for 120 kilometers per hour and concentrate on a magnetic compass heading of 270. No rudder. Just micro-adjustments to the ailerons.

We top the haze layer somewhere over 15,000 which provides a razor-sharp horizon, something like flying over the

sludge of the LA basin. It's rather lonely up here and a smug voice in the cockpit keeps telling me that I bear a strong resemblance to a statistic about to happen.

We seem to be balanced on the top of a point, neither moving nor static. The engine sings and needles waver; vibration and a persistent leak of air under the canopy. But there is no movement. The haze remains static beneath me, unmoving. I dial in 114.7, Santo Domingo and twist the OBS. Needle centers and flag says *TO 273*. Puerto Plata now for a cross bearing. Flag says zilch and needle twitches and plays dead. Patience, lad.

Three quarters of an hour slide by. Still on top of the haze, motionless. Nothing projects out of the sea of yellow fuzz. Not one cloud, not one mountain.

The smug voice in the cockpit says, "A little sweaty under the arms, aren't cha?"

I nod. "A little. It'll work out."

"But," he says, "notice that funny little catch in the engine. Like a valve sticking. Look at the waver in your oil pressure."

I notice but don't admit it. "Looks OK to me."

He mocks me. "*Looks OK to me*. Seen that on accident reports a million times. Look at the gas gauge."

I look. Quarter full, but the gauge has alwyas been wildly pessimistic. "The gauge is wrong. I've burned less than eleven gallons. . .less than four hours since takeoff."

"Aw. . ." he says. "You think the gauge is wrong. What if it's right?"

I tell him to get stuffed.

Santo Domingo flutters on the Omni, does a flip flop, and then reads *FROM*.

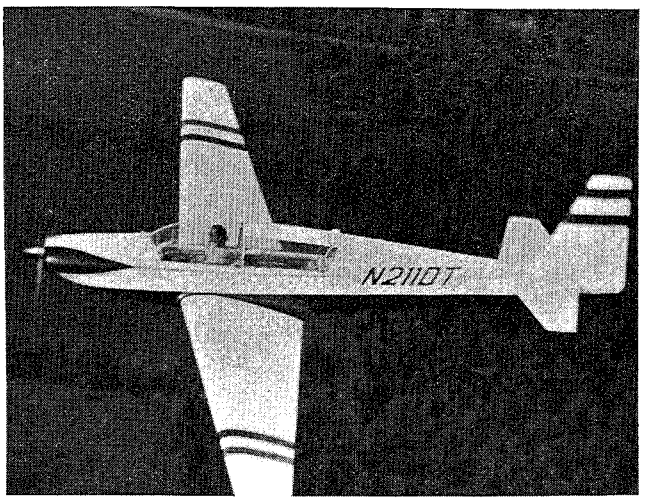
I scratch on the chart and push the E6B around a bit. One fifteen knots! The smug voice in the cockpit is quiet.

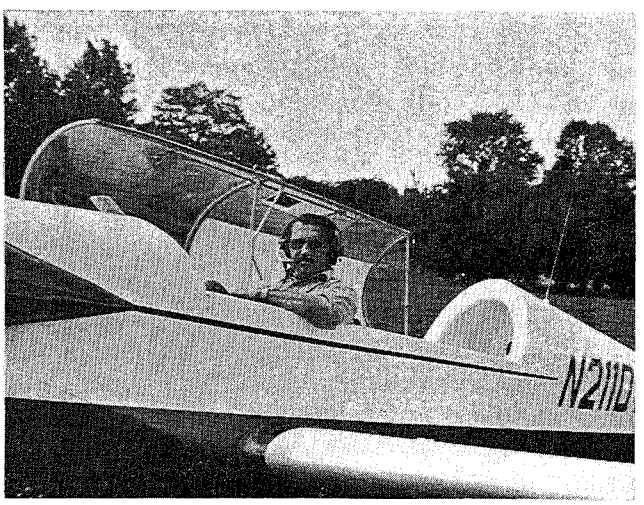
Haze is lighter in the west with more definition to the land. Crumpled mountains litter the landscape beneath; Cordiller Central the charts say dryly. Towns dot the litter with threads of highways creeping out through the folded foothills. That one is Padre Las Davas, the city on the edge of the plain. Beyond that; El Cercado.

I wonder whether Cowboy will be on the ramp at President Duvalier International, in Haiti, enthroned in his wheelchair with his attendant court jesters. They all yield greasy rags and offer to wipe your windshield for a buck. You pay them a buck not to wipe your windshield while Cowboy tells you how it was in New Jersey in the 'twenties. A bit mad, Cowboy. But a bright relief on a dull Immigration line in sharkskin suits, mirrored sunglass and loose fitting sports coats. Watching you. I'll refuel, check weather and press on for Great Ignauga before sundown.

The chart says about a hundred miles. I pull back the power and then on impulse, cut the magneto, then the master. The prop flops a few times and becomes static. Quiet before, almost silent now. A long valley lays before me with a shining lake; Lago Enriquillo for the record. We slide down toward the west, the mountains coming slowly up to meet us.

With the engine off, I feel each molecule of air as it diverts to let us past. Smells in the cockpit of stale Hershey bars, leather and wood. The smallest of vibrations is transmitted through the stick, marking our passage.





And I wonder, suddenly, why one man can be so filled with joy. Nothing extraordinary here. Fabric and wood, flesh and bone; sum total.

A peak slides by beneath my wingtip, the visibility now clear as gemstones. A marker of time and place; of that nameless mountain, breadth and depth in the ocean of air. A green valley notches the windshield.

Nothing extraordinary, but there is an answer. Because this plane and I are *US*.. And we are doing what man has dreamed of for as long as man has been. Flying. . .tracking down the path of the western sun.

Carl has told me once about this feeling. . .*Every man his own Columbus*.

FOREIGN SCENE

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

1st Austrian APSs Contest,
June 12th-19th, '77

As noted in the last issue the 1st Austrian APSs Contest with international participation took place in Schaerding-Suben. Of particular interest was the new evaluation formula used to determine the standing.

The German *Aerokurier* (8/77) carried an interesting article about this event, written by the well known Dipl. Ing. Hans Zacher. Actually it contains two subjects: the flying events and the discussion of the new scoring formula.

Here are the highlights from the article:

In addition to the usual aims in promoting the auxiliary-powered soaring and technical development, it was decided that all tasks would be "free distance", but not in a straight line (somewhat similar to the cat's cradle), and the scoring formula should contain the engine time, distance flown and glide ratio.

All of the expected 17 team-participants showed up (1 Swiss, 6 Austrian, 10 Germans); in addition there were also 3 Germans flying as visitors (2 *Nimbus-IIM)*. There were 7 single place auxiliary-powered sailplanes: 1 *Kraehe V*, 4 AS-K 14, 1 SF-33* and 1 AS-W 15RM of which one AS-K 14 and AS-W 15M were Wankel powered.

The two-place class consisted of 4 HB-21, 1 AS-K 16, 1 SF-25E, 3 SF-28 and 1 RF-5B.

The contest site, an airport with a grass runway, is located at the west Austrian border with Bavaria (Germany).

Of the six scheduled contest days four had flying weather. During three days tasks having up to five turnpoints and with a possible distance of nearly 310 miles were laid out; one day had only two turnpoints with stipulation that the starting point could be overflown only once.

Some participants were plagued by poor engine-trace recordings resulting in a penalty of 100% engine time. Because of the new scoring formula the 1st day winner was the *Kraehe V* (with a glide ratio of 18!) in spite of the engine trace problems, resulting in full engine time penalty. Second was SF-33 (flown by W. Hoffmann [Germany] who eventually, because of his top performance on following days, became the winner) having a glide ratio of 27.

The 2-place class winner was AS-K 16 flown by Fuchs (Switzerland) of the College Soaring Group Zurich. The 2nd, 3rd and 4th places were won by 3 HB-21, nicknamed the "guy wire squadron".

The new scoring formula

$$\frac{D \times 100}{HF} - (T \times HF) = \text{Points}$$

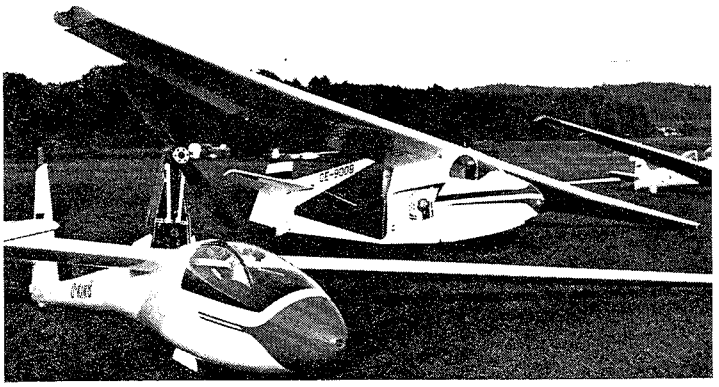
whereby: D - distance flown (km)
T - engine time (minutes)
HF - Handicap factor

was the subject of discussion and some complaints, keeping the scoring committee busy. It is markedly different from the usual "Burg Feuerstein" formula (see February-March 1977 *Motorgliding*, p. 13). The biggest problem appeared to be the Handicap Factor (HF) which contained the glide ratio and had to be declared at the registration, as given in the owner's manual. In all, it was a trying time for the contest management.

---

*powered by a BMW engine; apparently a further development of the SF-29 (see Foreign Scene, July 1974 *Motorgliding*.) *(See also Scheibe release in this issue. - Ed.)*

Participants flying high-performance auxiliary-powered sailplanes had no possibility of winning. In order to mitigate the disadvantages it was agreed to introduce a correction factor of .6 with which to multiply the glide ratio. Since the scoring of an APSs contest is markedly different from a sailplane contest because of the "engine time", as well as "one class only", eg glide ratio 18 (*Kraehe V*) to 37 (AS-W 15M) or 47 for a visitor, the difficulty to establish a just scoring formula becomes rather impossible. According to Zacher's opinion additional parameters should be included, such as engine power, gross weight and the amount of fuel (hopefully he means power loading and wing loading, respectively, since they govern the performance of a given APS - advocated by this writer for some time).



The unequal participants in "one class": *Kraehe V* and AS-W 15 M

To sum it up: it may be better to have an APSs meet rather than a contest or championships. Thus, the next year's Burg Feuerstein International APSs Contest should be of special interest.

During the two rainy, non-contest days a visit to a brewery was made, a film was shown and a talk was given by Zacher about the advances and limits of soaring. Also, a lengthy discussion developed about the further developments of auxiliary-powered sailplanes, covering such areas as impossible features (at present) and expectations, diverse views on training, single and two-place APSs, performance, retractable vs non-retractable power package and engine power. Some useful proposals and suggestions could be derived for the benefit of flying teams and manufacturers.

The closing festivity on Saturday evening featured a brilliant solstice sunset, grill, and costumed dancing group with wind orchestra, bringing together the contestants, and the prizes were given to the winners.

The article begins and closes with poetry by W. Busch which is a rather unusual way, but nevertheless appropriate and well chosen. In translation it reads:

Opening verse: Ah, that the man so often is mistaken,
never knowing what will happen.

Closing verse: As we all know,
everyone wants to have his likes fulfilled.

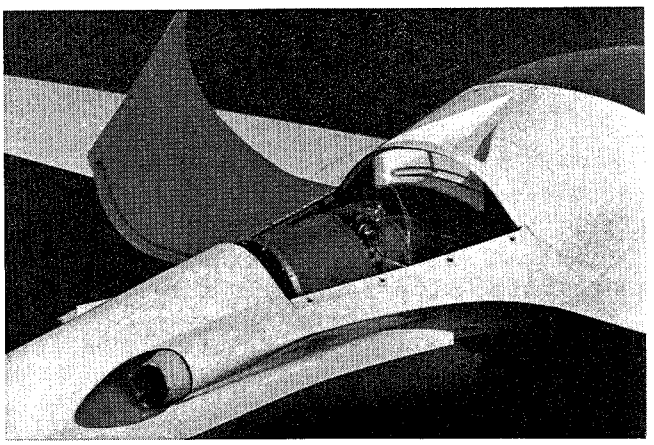
Caproni A-21 SJ *Calif* - a new look

The French *Aviasport* (7/77) carried an account of the well known aviation exposition, "Salon du Bourget 77". Among the big and little birds displayed were eight sailplanes and three auxiliary-powered sailplanes: Caproni A-21 SJ, Fournier RF-9 and Romanian IS-28-M2 (the last two previously described in Foreign Scene).

The summary of the article on Caproni A-21 SJ is given here.

The original version seen at '71 Salon du Bourget had a Microturbo jet engine installed behind the cockpit, in the bottom portion of the fuselage, at an angle of about 15°. Not only was the accessibility rather poor but problems arose because of hot exhaust gases damaged runways, deteriorated adjacent fuselage and the low air intakes ingested debris.

The "new look" version has a NACA flush intake, good accessibility and two side exhausts, located at the end of the wing-fuselage fairings. It also features a new jet engine, TRS-18-046, developing



198 pounds of thrust (same engine is used in BD-5J).

During the soaring flight the flush air intake is closed by a flap controllable by the pilot. It has two additional positions: fully open for powered normal flight and half open for slow flight.

The two fuel tanks are located in the center wing panel and above in the fuselage. The capacity is 36.4 gallons, sufficient for 50 minutes. The starting procedure is controlled electronically. While the flight characteristics of the sailplane and auxiliary-powered version are supposedly the same, the wing loading of the latter comes close to 10 psf.

The takeoff distance on a hard surface is supposed to be about 1000 feet, longer yet on grass thus limiting the takeoffs to long, suitable surfaces.

However, the biggest disadvantage lies in the price: $50,000 to $60,000; limiting this product even in USA to VIPs who can afford something special. What a pity.....

In spite of this, according to the British *Sailplane & Gliding* (August-September 1977) some five A-21 SJ per month are scheduled at Caproni factory, in addition to possible licensing manufacturing in North and South America.

Neither article mentioned any noise levels or noise suppressors.

Closing Comments

As indicated elsewhere in this issue, *Motorgliding* came to an end - suffering for a long time from orphanitis, resulting in chronic irregularity. While attempts were made to improve this condition, no response was received. It may take another generation or two before auxiliary-powered sailplanes, man-powered aircraft and soaring technology become regular parts of *Soaring* - where they belong in the first place - instead of having separate publications or none at all.

Auxiliary-powered sailplanes were the dreams of the early soaring pioneers over half a century ago; today they have the brightest future - regardless of those purists! One shouldn't forget that the only known "pure" soaring creature became extinct millions of years ago; the survivors (insects and birds) are either powered or auxiliary-powered to suit best their environment and purpose.

I want to use this occasion to express my sincere thanks to domestic and foreign readers who wrote those nice, encouraging letters and even provided sometimes useful information. You may be wondering how did I ever get involved in writing the Foreign Scene articles.

One of the previous *Motorgliding* editors, the capable Elena Klein, mentioned in one of her editorials (5/73) that there is much material published in foreign magazines about APSs and would anyone volunteer to make translations?

Having been raised and educated in central Europe we had to learn a few foreign languages..... Thus I thought it might be a good opportunity to get a little practice in addition to learn of new developments. So, I volunteered.

What looked like a picnic soon developed into long hours of work. The copies of prospective material sent by the editor had to be read, then those of general interest were sorted out, translated, typed and mailed back. Often the original material might have been poorly written, or the writer was only vaguely familiar with the subject matter; then the translation is seldom a straight forward process since a proper word on occasion may be elusive, and even being familiar with matters of technology, one can get stuck - temporarily.

But in spite of all these limitations (I'll never get to be a UN translator!) I enjoyed the work, hoping that others may find the Foreign Scene articles with the news of interest and inspiration.

DANISH MOTOR GLIDER RALLY

The first Danish motorglider meeting was held at Arnborg from May 19-22, and 17 of the 21 in the country took part or paid visits. It was run on similar lines to the Burg Feuerstein meetings in Germany with competition flights — mostly 100km triangles — lectures and discussions. Soaring time was 90.6% of total flying time between crossing of start and finish lines. Apart from the contest, demonstrations proved that even the good-natured *Falke* can spin if sufficiently provoked. Instructors from each participating group were taken up. (Per Weishaupt.)

(From *Sailplane & Gliding*.)

SELF-VERIFICATION FOR SAILPLANES AND MOTOR GLIDERS

by Gunter Cichon

Some few years ago Hans Nietlispach, Switzerland, proposed to record the line of take-off and the finish line by means of a data camera (the date and time with minutes and seconds being imposed onto each photo). (See *Sailplane & Gliding*, April 1974, p84.) He argued that in championships there would be no more unrecorded, and therefore invalid, crossings of lines due to the pressure on the observers.

Record attempts would likewise be free of problems concerning official observers at the start/finish lines, especially if these are not in the vicinity of the base airfield.

This method can be of great advantage if the best lift area is to be found far from the airfield. Furthermore, all the data of the flight will be available with complete clarity to the official commission and thus will prevent any manipulation.

There are also advantages for the pilot, because it will no longer be required to apply the troublesome regulations concerning the RTI (Recognition Time Interval) with possible necessary intermediate landings. It also means that official observers need not be in continual attendance.

If the barograph and camera remain sealed and the take-off and landing are also officially recorded, the official observer may leave the pilot to himself for several days without any possibility of manipulation existing.

Such a verification system is also advantageous for motor gliders. The point of departure often lies within a control zone or in an area of poor lift. For the sailplane it is possible to be towed to the appropriate point of release, and to any height of release. The motorglider can of course be allowed this only if the pilot can unequivocally verify his point of release (the point where the engine is stopped). This procedure is also applicable to the verification of the finish point at the end of a glider flight performance. It is also necessary for the control of "aerial Derbies" which are under discussion.

The data camera alone, however, is not altogether sufficient for self-verification. An additional control registration on the barograph trace is required. In this system the time of each photo can be seen on the barogram and must correspond with the time imposed onto the photo.

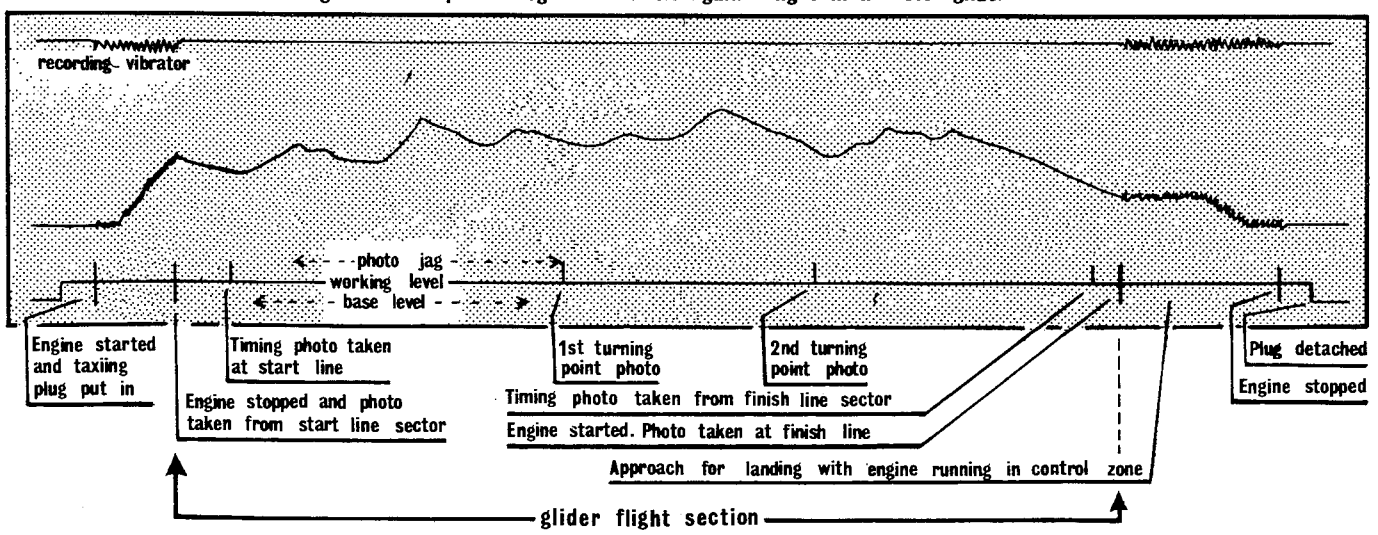
The respective altitude can also be ascertained from the barogram by means of the photo control jag. Any disturbance in the electric control system is indicated on the barogram by a pointer deflection. Moreover, an additional recording vibrator registers the running of the engine in motorgliders.

Example Barogram

The drawing of the motorglider barogram in Fig 1 serves as a model explained as follows:

The top line is the registration of the recording vibrator. The median line denotes the usual registration of alti-

Fig 1 Example barogram of a triangular flight in a motor glider



tude. An innovation is the three-graded bottom line, the "base level" being lowest; the "working level" above it, and the photo jag pointing upward. Each photo is marked in the barogram by such a photo jag. Thus the time when and the altitude at which the photo is taken can be read from the barogram.

A picture can be taken when desired by manual release, but the camera automatically takes a photo whenever the engine is started or stopped. Both types of photographs taken can be clearly seen on the barogram; that taken manually is marked by recording only a photo jag upward, whereas those taken automatically, by changing the engine(*ie* starting or stopping the engine) are marked by a photo jag upward and downward in a continuous line.

The photos taken automatically record the place, the time and the altitude at which the engine is started or stopped. The photos taken manually serve to record the essential points of the glider flight section, namely the departure point, the start line, the turning points and the finish point, *ie* the finish line in speed flights.

Following from this, a down stroke reaching the base level will never be found during the glider flight section. If it does, it would always annul the flight and indicate *ie* the starting of the engine, the detaching of the camera or barograph plug, or an attempt to manipulate electric connections.

In a sailplane barogram there is no vibrator or a downward jag in connection with the upward jag of the photo. So a downward jag or a prolonged fall of the control line down to the base level would indicate an attempt to stop the recording of a photo by loosening a plug or by manipulating electric connections and the flight would thus be invalid.

Only before takeoff and after landing the plugs can be detached whereupon the control line sinks down to the base level.

Points for Official Observers

As in the past the only task of the official observer is to seal the barograph and camera. Before sealing the camera he should check that it is adjusted to the correct date and time. Also for checking purposes he may detach the plug for the camera or barograph before takeoff or after landing to check that the control line is really sinking down to the base level, and that it is functioning properly.

While analysing the barogram the observer must ascertain that during the glider flight section the control line has not sunk to the base line; this would render the flight invalid. He can check that the times marked by the photo jags on the barogram correspond with the times imposed on the photographs.

Technical Solution

The basic principle is comparatively simple. The wiring diagrams shown in Figs 2 and 3 are applicable to 12v cameras.

Fig 2. Wiring diagram for sailplanes (12volt camera)

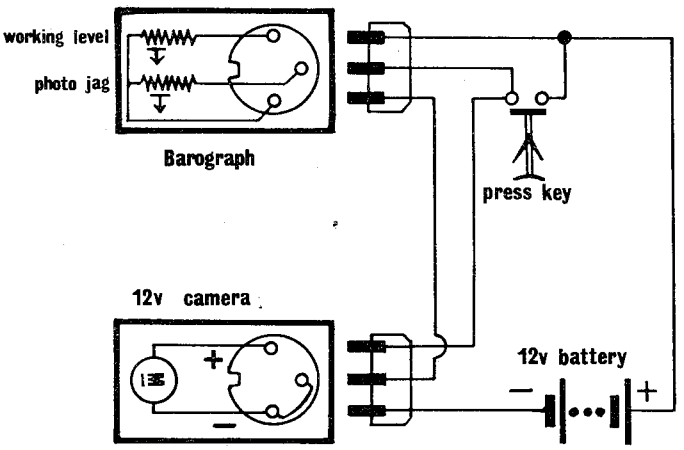
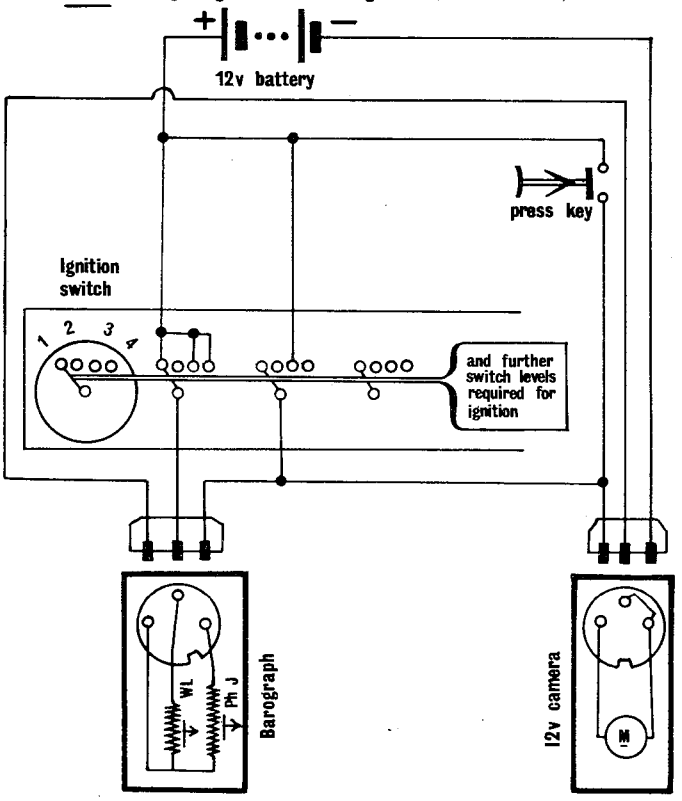


Fig 3. Wiring diagram for motor gliders (12 volt camera)



A little more complicated was the circuit diagram in Fig 4 for the system designed by myself as an experimental pattern with a relatively cheap Super-Baldamatic camera. Three different working voltages had to be used; 12v for the aircraft power supply and photo jags; 8v for the working level; 3.6v for the camera. The voltage had to be reduced to 8v because the working level spool in the barograph was unable to carry a constant load of 12v.

Unfortunately, this cheap camera is no longer on the market, but the more modern cameras all operate on 12v. However, the circuit diagram for the 3.6v camera has been incorporated into Fg 4.

Technique of Crossing the Start/Finish Lines

The system as designed by me allowed vertical pictures to the ground while the plane was in an horizontal attitude. This was achieved by installing the camera in the bottom of the plane's nose. The test flights, however, revealed a factor of uncertainty in "hitting" the mark. The fluctuations concerned the pitch rather than the bank of the plane. Sometimes there were doubts as to whether the finish line had already been crossed or not. Thus to be certain of the target it is imperative to fly in a rolling motion.

The usual method of photographing along the wing proved to be more reliable, because it creates fewer ambiguous conditions for correct interpretation. In my opinion it is better to install the camera on the righthand side of the canopy edge. The reason is that cameras suitable for this purpose are not all that thin and could be touched by the pilot's shoulders. Also the lefthand side below the canopy edge is normally occupied by flap or landing levers.

I suggest that the crossing of the start and finish line should be proved by two photos each according to the diagram in Fig 5A. The first picture is to be taken from the sector behind the start line. (In motorgliders the taking of this picture could be combined with the stopping of the engine.) The plane is then accelerated to high speed and, according to Method A, directly above the start line rolled into a steep bank for a moment in which the essential timing photo is taken. When the finish line is

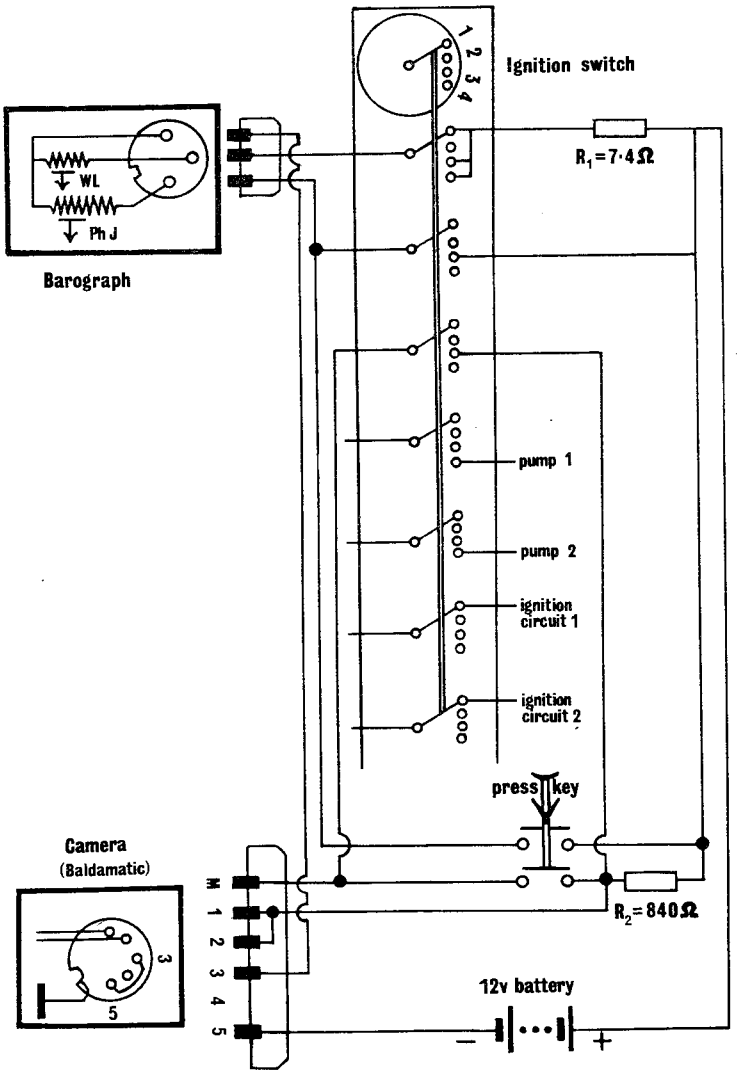
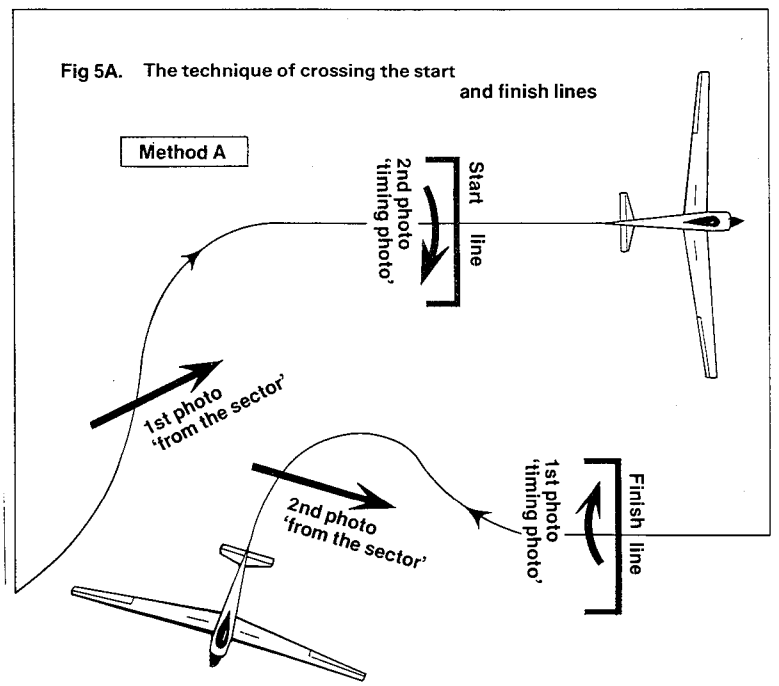


Fig 4. Wiring diagram for motor gliders with 3·6 volt camera and 8 volt working level



crossed the photos are taken in reverse order; first the timing photo and then the photo from the sector behind the finish line.

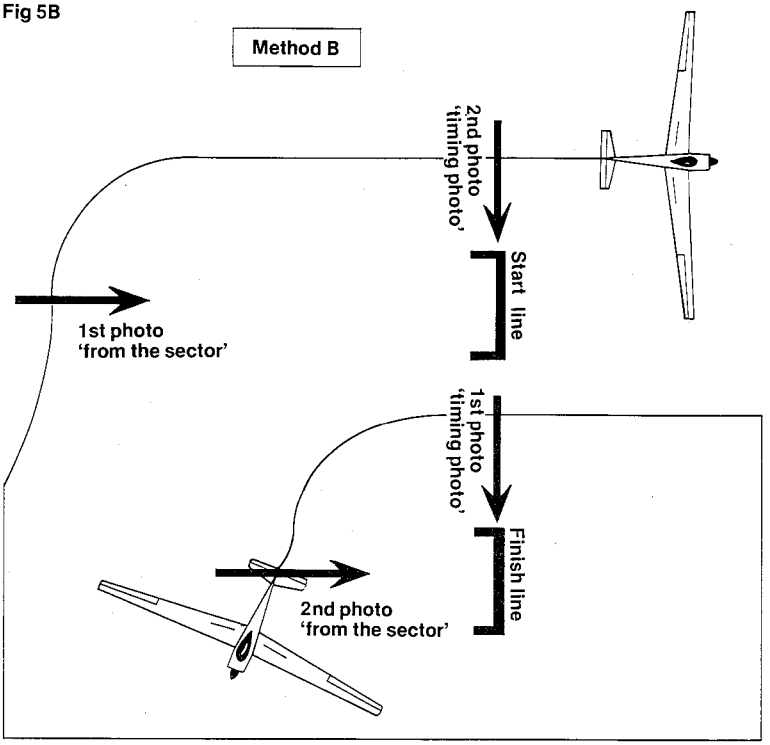
If the start and finish lines are not crossed by several planes at the same time, as in competitions, there is no objection to a steep turn above the lines for the timing photos. No time is lost by taking the picture at the end of the steep turn when the start line is crossed, and at the beginning when the finish line is crossed.

It would, however, be better still to modify the *Code Sportif* so as to permit Method B in Fig 5B. It is highly appropriate for championships with group flights as well as for single flights.

According to this method the planes pass at the side of the start or finish lines abeam of the outbound or inbound direction. The picture is taken without excessive bank just at the moment when the start or finish line is in exact alignment with the plane. I feel that the second photo in each case taken from the sector is also useful for Method B.

For flights without speed classification it is not necessary to take timing photos abeam or above the start and finish lines. The pictures taken from the sector are sufficient for this purpose.

Fig 5B



(From *Sailplane & Gliding*.)

WINDOW SHOPPING IN PARIS

by Bob Rodwell

Romanian, Italian, French and Swiss exhibitors showed sailplanes at the 32nd, and largest ever, *Salon de l'Aeronautique* at le Bourget, Paris, in June....

U.S. *Lark* distributor Duane Sprague and the Romanians both have high hopes for the IS-28M2 side-by-side two-seater motorglider which was also shown at the *Salon* and which was the first displayed at Farnborough last year. First production models are due off the production line in September and are destined for the British market through distributor Vickers-Slingsby, with the first export sales to the United States to follow before the end of the year. Production is beginning at two a month, rising to six a month next year.

The distinct American preference for all-metal aircraft rather than glass-fibre or tube-and-rag gives the *Lark* series a pronounced advantage in the United States, the Romanians believe. Sprague sees the IS-28M2 as a practical light touring aircraft apart from its potential as a self-launching training sailplane. "We believe the entire U.S. soaring market, and particularly the commercial operations, are on the brink of a big swing over to motorized self-launching sailplanes," he said. His point about the touring aspect of the M2 was borne out by a member of Boeing's YC-14 STOL transport flight-test crew who walked into the Romanian caravan to slap down a deposit on one of the first U.S. deliveries, saying that at $26,500 it was "a helluva better funship" than anything produced in Wichita.

Silimon showed me photographs of the prototype tandem-seater variant, the IS-28M1, which was due to make its first flight shortly after the show. Unlike the M2 with its narrow track retracting undercarriage, the M1 will have a single retracting wheel on the centreline and two small fixed wheels on the underside at the wingtips. The motive force, a Limbach SL 1700E1 VW-derivative, is unchanged.

Italy's Caproni-Vizzola was bidding for the carriage-trade end of the motor-glider market with the latest, and definitive, A-21J *Calif* jet-powered two-seater sailplane. Caproni made a false start in 1971 with an earlier jet variant, in which the tiny Microturbo jet engine was mounted low in the fuselage, with low intakes and effluxes, thereby being particularly prone to foreign-body ingestion while scorching the grass and eroding airfield surfaces wherever it flew.

Technical director Dr. Livio Sonzio has now raised the engine location to solve these problems and to simplify engine maintenance. The engine now draws air through a flush topside intake behind the canopy, which is then beautifully flush-faired by a panel which rises when the engine is shut down for soaring flight.

About 50 A-21S unpowered *Califs* had been built to date, of which ten had been exported to the United States, said Sonzio. With the definitive A-21J flying for the first time on May 12, license negotiations had begun with potential manufacturers in both North and South America. Meanwhile, Caproni-Vizzola are themselves planning to build up to five a month in Italy. All *Califs* may be built as unpowered sailplanes with provision to install the minute 225lb-thrust TRS 18 turbojet easily. The engine has now been certified by the U.S. FAA and may be built by the Ames Corporation in the United States. First jet *Calif* sales to the States are expected before the end of the year, at a price of over $50,000. Caproni are promoting the aircraft as a practical two-seater tourer as well as a sailplane, with an operational ceiling of 30,000 ft. But with a glide ratio of 43:1 the possibilities of fuel saving by soaring *en route* whenever conditions permit are obvious....

(From *Sailplane & Gliding*.)

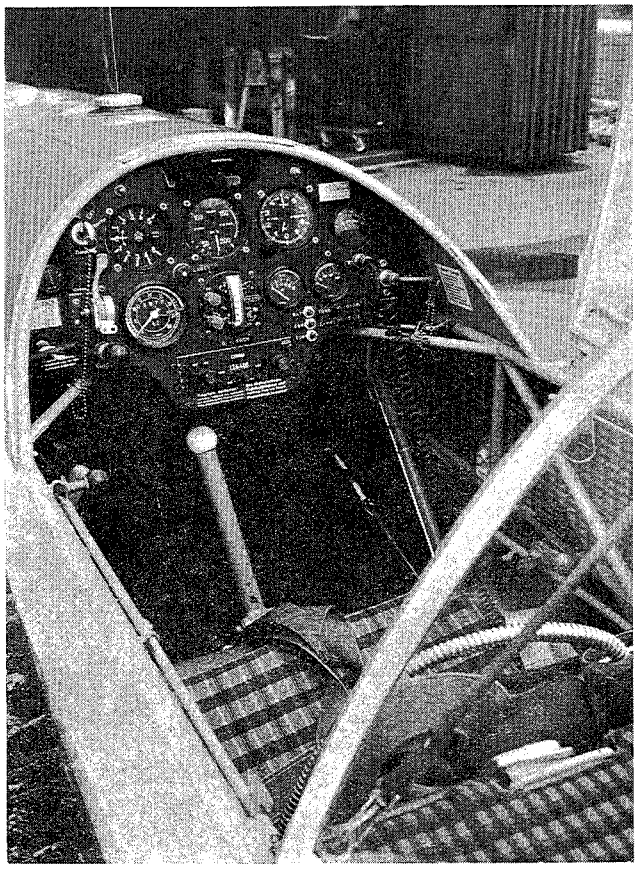
The Scheibe SF-33 Powered Sailplane with BMW Engine Low on Energy: 140 km on 6 litres/hour

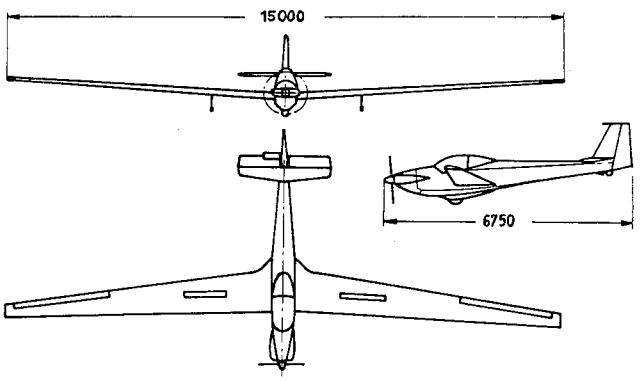
The Scheibe Flugzeugbau company has brought out a new powered sailplane designated SF-33, a single-seat low-wing model of mixed construction with engine in the nose. If Scheibe, a champion of fold-down engines, builds a sailplane with an internal engine, there must have been sound reasons for doing so.

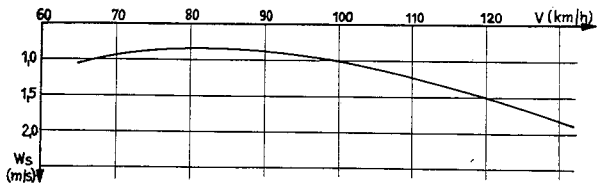
The aircraft, says Scheibe, owes its environmental compatibility to the new engine. This is a 900 cc BMW motorcycle engine which normally rates 60 hp at 6000 rpm, but has been derated to 35 hp at 3500 rpm for aircraft use. To reduce the rpms, the engine has been given a modified camshaft. It is also installed back to front and has a forward-facing exhaust pipe and only one carburetor instead of two. The drive shaft has been carried forward to take the Hofmann propeller. The (sic) difficulties have arisen at any time during the flight testing to date. The engine starts easily, even after lengthy shut-down in the air, cooling is adequate, oil and cylinder temperatures are in order, and the four-stroke engine consumes only six litres an hour, on which a distance of 140 kilometres can be covered. Future users will scarcely have to worry about rising fuel prices or increasing shortages!

Mathias Nahrlich, who is responsible for flight testing, gives the takeoff run as 150 to 200 m. The machine lifts off at 70 to 75 km/h, climbs at 90 km/h and 2 m/sec and reaches a cruising speed of roughly 150 km/h at 3000 rpm.

For soaring, the ignition is switched off, the propeller brake put on, the propeller set to windmilling, and the radiator shutter closed. Rate of sink is then 0.85 to 1 m/sec. To restart, the propeller is returned to the operating setting, the radiator shutter is opened, and the







starter operated. Throughout the test program to date the engine has always started up immediately.

During the landing approach it is advisable to come in at 90 to 100 km/h. Glide angle is controlled by means of the air brakes on top of the wing. The SF-33 touches down at roughly 70 km/h. It can also be side-slipped easily with full flaps.

The SF-33 is simple to fly. On cruising power it drops a wing on the stall at about 55 km/h and is immediately firmly under the pilot's control again. With power off, it goes into a steady-state stall at about 60 to 65 km/h. Spinning behavior is normal, and the machine comes out of the spin by itself when the controls are released. The glide ratio at 75 km/h is 28 to 29, roughly equivalent to the performance of a Ka-6CR or a *Superfalke*. The tank holds 22 litres, which is sufficient for three hours of flight.

There is scarcely any other company that has accumulated as much experience in the matter of nose or fold-down engines as Scheibe. For a long time the sailplane with retractable engine was considered to be the ideal powered glider. But these fold-down engines create considerable difficulties for the manufacturer. Apart from many technical problems concerning the folding mechanism, oscillations and heat dissipation inside the fuselage, it was found that aircraft of this kind were not so easy to fly with engine extended as a normal sailplane. They require more flying experience. In other words, powered sailplanes with fold-down engines are good for experienced pilots, for personal operators or small operator groups of two or three pilots, but not for rough club work and still less for inexperienced pilots. With the new SF-33, Scheibe has set out to eliminate all these difficulties. It is a sturdy aircraft suitable for club use and — thanks to its excellent economics and the reliability of its engine and its low noise level — for training and powered cross-country flights.

The aircraft is basically derived from the SF-29, whose development was abandoned because of the difficulties experienced at the time with the engine. The fuselage is of steel tube construction, and the wings and tail surfaces of wooden construction; the wing is in two parts. The SF-33 has a fixed main wheel and stabilizing wheels. The tail skid linked to the rudder makes it capable of independent taxiing.

A large canopy opening up to one side gives excellent visibility. The comfortable seat has adjustable pedals and a wheel brake actuated via the air brake lever.

The elegant low-wing design with high aspect ratio has a shapely backward swept rudder unit. The fuselage is lower at the rear and slenderer towards the nose than in the SF-29; the well-designed engine cowling is made of fiber-glass-reinforced plastic. Work on the SF-32 with fold-down engine is continuing.

(From Scheibe)

MOTORGLIDERS IN GERMANY

About 1400 motorized sailplanes have been built in West Germany, but says an article in *Aerokurier*, they are more expensive than two-seater conventional light airplanes and this is probably the reason why the market for them seems now to be satisfied.

(From *Sailplane & Gliding*.)

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A very sincere thank you is extended to all the subscribers of *Motorgliding*. You have uncomplainingly borne with our problems of not maintaining a regular production schedule.

I want to personally thank present editor Don Monroe who took over the unpaid editorship position to assist me and for which we are most grateful. Only for the last few issues has the editor position been 'paid' and that at a very low rate.

In any event, although I feel that *Motorgliding* is a natural, separate publication for SSA to publish (its over 1000 subscribers compare favorably to *Soaring's* distribution of 25 years ago), we are terminating publication effective with this issue. While *Soaring* will not publish *all* the material that *Motorgliding* did, it will contain a growing amount of material on motorgliders. It is appropriate here to acknowledge our great appreciation to you *Motorgliding* authors, columnists and advertisers who have so unselfishly provided the necessary material without which there would be nothing. Please do keep sending material into SSA. Doug Lamont will exercise normal editorial prerogative in selecting material to use in *Soaring*.

All subscribers will receive a refund for the unexpired portion of their subscription. This will amount to as little as 42¢ for domestic subscribers with only one month left to over $6.00 for longterm subscriptions. The average will be under $2.00 to be refunded. Should anyone for whatever reason not be satisfied with the procedure, please advise us immediately with a stamped self-addressed envelope and we shall attempt to accommodate.

Bernald S. Smith
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POSTFLIGHT NOTES

This is the last issue of *Motorgliding*. We wish to thank you, our patient reader, our advertisers, and our many contributors. It's not possible to name all of our contributors here, but a few deserve special mention: Jack Lambie for his warmly-told adventures; Doug Terman for his introspective looks at solitary travel; S.O. Jenko for his distillations of the foreign press, for every issue; and George Uveges, for saving us time and time again with his cover shots. Thanks, all of you. So long.

Don Monroe