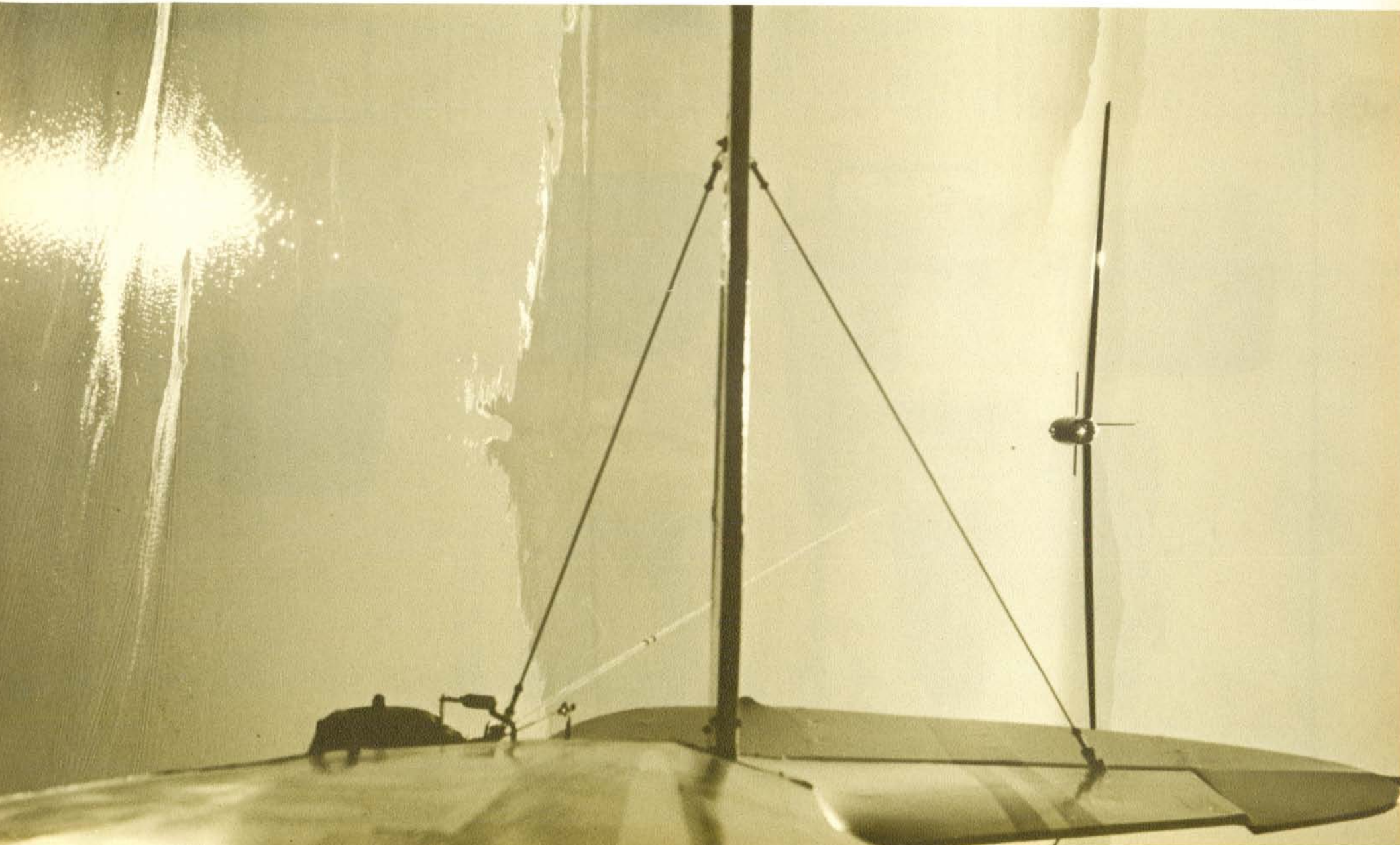
50¢ May 1968
The Journal of
The Soaring Society
of America

soaring



ALTIMETER

WINTER BAROGRAPH

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TURN INDICATOR

A-13A CLOCK

SIGNAL MIRROR

ALTIMETERS

20,000 ft. brand new, just manufactured. A fine U.S. made sensitive altimeter for use where high altitudes not required. Fully certified to FAA C-10B specs. to 20,000 ft., matte white dial, price $115.00

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Rainco is buying 50,000 ft. altimeters and will pay cash for your used Kollsman 50,000 ft. instrument in repairable condition.

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Prices just reduced on this temperature compensated high quality barograph. Selectable 2, 4 & 10 hour rotation. Cold-proof clock.

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50 Paper Strips, state range	3.50
Pen for Ink Recording	2.00
Ink, purple, special bottle for filling barograph	1.50
BAROGRAPH CALIBRATION SSA CLASS II Approved facility	10.00

MITCHELL PICTORIAL TURN INDICATOR

Special 1 minute turn rate for sailplanes in stock. 12 volt, 0.28 ampere input, fits small 2¼" cutout. Only 14 ounces, operates from same batteries as BEI radio. Provides turn rate in addition to roll indication and is fully TSO'd as direct replacement for standard turn and slip. $178.00 (B-6 accelerometer free with every Mitchell purchase.)

A-13A CLOCK

8-day, 2¼", 22-jewel aircraft clock and stopwatch. Standard 12 hour clock plus stopwatch reads 0-60 minutes with sweep second hand and minute recorder. Price $36.50

SIGNAL MIRROR

Standard USAF/NAVY signal mirror with lanyard, instructions for use printed on back $4.50

Rainco has reduced the price of many soaring instruments. Write for a complete listing or refer to our ad last month in this same place. Phoebus deliveries continue excellent. Send for complete brochure and price list.

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The Journal of The Soaring Society of America, Inc., a Division of the National Aeronautic Association

VOL. 32 MAY 1968 NO. 5

BENNETT M. ROGERS — EDITOR
VICKIE CLARKE — ASS'T EDITOR

CONTENTS

FEATURES

COVER PHOTO: Climbing above the golden haze of morning at Lake Elsinore, California, is the new Laister LP-49, piloted by Jack Jordan.

Photo by GEORGE UVEGES

Copyright by FRANZ HAUSMANN

$25 WILL BE PAID FOR ANY PICTURE SUBMITTED IF USED FOR THE COVER.

Material published in Soaring magazine is contributed by individuals for the reading pleasure of soaring enthusiasts. Anyone is invited to contribute articles or reports on soaring activities. Material will be acknowledged when possible but no guarantee can be made that it will be returned. A self-addressed envelope should be enclosed if the material is to be returned.

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LETTERS TO THE EDITOR

Zacher's Latest Data

Dear Sir:

On March 3, I had the opportunity to visit with Dipl.-Ing. Hans Zacher in Munich. SSA members will recall that he was the recipient of the SSA Tuntland Award for his excellent work in sailplane performance measurement. Zacher is now engaged in the measurement of the performance of a number of the high-performance sailplanes. Tests to date have been completed on the D-36 (exact), BS-1 (with scatter!), and AS-W 12 (comparison flights!). SSA members will be interested in these results as obtained from him because the final paper will probably not be published for quite some time as several additional sailplanes remain to be tested, including the Phoebus C, Cirrus, etc. As a matter of interest, Zacher stated that the real costs for these performance measurements and data reduction amounted to approximately $2500 per polar curve!

Zacher found that the D-36's maximum L/D was 44 at 93 kph. The stall speed was 67 kph with flaps, and the minimum sink with 0° flap was .56 meters per second at 83 kph. The 3-meter-a-second sink point of the D-36 was about 200 kph. The maximum lift coefficient was 1.48 with the flaps at 15°, and the minimum drag coefficient was .009 with the flaps at – 10°.

The BS-1 performance curve was found to be virtually identical in every respect to that for the D-36.

The AS-W 12 curve was also almost identical to the D-36 at low speeds. Zacher felt that the AS-W 12 might be slightly superior at high speeds – he stated, "At 180 kph *perhaps* .2 or .3 meters per second less sink than the BS-1 or D-36." However, the scatter of points obtained in the tests made it difficult to be certain of this fact.

I believe this information is quite timely and newsworthy and suggest that it be printed in *Soaring* Magazine in letter form, rather than wait a considerable length of time for the final paper to be printed. Herr Zacher has read this letter, checked the figures contained herein, and given us permission to have this information printed in the magazine.

JOHN D. RYAN

Phoenix, Ariz.

Advice for Newcomers

Dear Sir:

Someone should inform newcomers to soaring of the existence of available texts and literature on soaring which can be found in most good libraries, to say nothing of the *American Soaring Handbook* series published by SSA. For *Soaring* Magazine to publish elementary educational material would be a needless duplication and would defeat the primary purpose of *Soaring*, namely to publish articles on what is going on in the sport, to report on new developments in the field, and to thereby keep its members informed and current.

GEORGE KERN

Inglewood, Calif.

Jonathan Livingston Seagull Vs. The Incredible Aerobatic Crow

Dear Sir:

Shortly after thoroughly enjoying "Jonathan Livingston Seagull" in your February issue, I happened upon what certainly must have been his close cousin while skiing at June Mountain. At the top of the run, I paused briefly and immediately was drawn to the aerial antics of a fairly large, black bird, which appeared to be a crow soaring on the breezes wafting up the slopes. But what was remarkable was his acrobatic display between glides. At peak altitude he would head directly away from the mountain, do an amazingly quick flip onto his back, and swiftly arch into an inside loop back toward my vantage point and thence into the ridge lift once again for the requisite height to repeat his stunt. As I watched, this interesting cycle was repeated approximately six times before Mr. Black Bird seemed to tire of his frolic and winged away.

BEN DORMAN, JR.

Los Angeles, Calif.

★ *Friends and admirers of Jonathan (and there seem to be a whole host of them—including* Sailplane & Gliding, *which is planning to carry the story of our favorite seagull to foreign shores) will be happy to learn that Richard Bach has a sequel in the June* Private Pilot—*Ed.*

Free Offer

Dear Sir:

I have considerable experience in fiberglass and foam plastics and I would like to offer this knowledge free of charge to others who would like to experiment with this excellent medium.

C. M. WILLIAMS

P.O. Box 524
Mulga, Ala.

Anecdotes Needed for Humorous Soaring Anthology

Dear Sir:

For a good many months, Mrs. Marion Poling of La Vale, Maryland, has been in correspondence with E. J. Reeves and myself regarding a collection of humorous incidents and stories about soaring. After giving it serious reflection, E. J. Reeves has offered his counsel for the project, and I've volunteered editorial assistance once the collection is made.

Mrs. Poling is now presenting an opportunity for all of you to record humorous aspects of American soaring. She requests that you write down your favorite, true soaring story and send it to her at:

Box 56, Charles Street
La Vale, Maryland 21502

Grammatical perfection is not required. Contributions may be signed or unsigned, but all contributions become the property of Mrs. Poling. If the response is excellent, I am convinced that this project has

the makings of an addition to the American soaring bookshelf.

Incidentally, all profits realized will go to the International Team Fund.

JOSEPH C. LINCOLN

Scottsdale, Ariz.

"Economy Class" Proposed

Dear Sir:

We need a sailplane, or preferably sailplanes, with at least 1-26 or Cherokee II performance that can be built by one working family man for between $400 to $600 and within six to eight months of concentrated effort (or within a casual year). Such a ship could ultimately be kitted or even manufactured for between $1500 and $2000. The ingredients necessary to bring forth this gem are the creative use of presently available methods and materials (probably a composite of many), an *open-minded* designer or group of designers capable of addressing themselves to the problem, and some encouragement from the soaring community. Then if the whole project were liberally infused with the attitude of "how do we do it?" as opposed to "it can't be done," a good solution would be inevitable.

Along this line, I would like to see a new class for sailplane competition initiated. It could be called the "Sparrow Hawk" class, "Formula 100" class, or would you accept the "Substandard" class? This should not be a one-design class, which stifles creativeness, but a class based on specifications such as with Formula Vee in auto racing. The specs should be tight enough in some respects to prevent the boys with the greater financial resources from taking over, yet loose enough to encourage creativity. This would take much thought, but it is possible. A committee could be set up consisting of members with much soaring experience (so as to take advantage of their acquired knowledge) and of newcomers (with their unbiased, fresh ideas). A set of specifications could begin as follows:

1. A maximum wing area of 100 square feet. This would keep the sailplane down to a size that could be easily built and stored at home. It would help keep construction simpler and would maintain the challenge of getting the mostest from the leastest.

2. A minimum wing loading at gross weight. This would provide an equal chance for the pilot with a large belt size. Ballast could be added.

3. A minimum fuselage frontal area of five square feet. This would prevent a needle-like fuselage suitable only for piloting by a midget or professional jockey.

4. A fixed landing gear.

5. A conventional tail group. For simplicity. But maybe to include tee and vee configurations (in spite of their complexity) for creative flexibility. Possibly no restrictions—to allow for tail-less designs.

6. A cost figure (possibly). This would be difficult but probably feasible.

Again, the specifications should be restrictive on the one hand, but allow freedom on the other.

RONALD D. LATHAM

Norwich, N. Y.

PHILIP WILLS STEPS DOWN

Philip Wills, one of the towering figures on the international soaring scene, is retiring as the Chairman of the British Gliding Association—a post he has held for the past 19 years. (The BGA is roughly the British equivalent of SSA; however, the Association also handles many of the functions that the FAA is responsible for in this country.)

Wills is probably best known in the United States for his successful books on soaring. But in addition to being a gifted writer, he has been a doer as well. He was the second British pilot to earn a Silver badge (1934), the third pilot in the world to win a Gold badge (1938), and the second British pilot to collect all three Diamonds (1969). And in 1952, he was the World Soaring Champion.

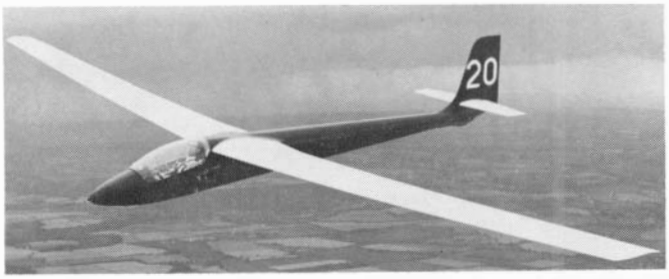
Philip states that he is now looking forward to the prospect of "spending more of my leisure hours in the future actually in a glider and less talking about the organization of the sport." He will be succeeded by Peter Scott, an ornithologist, writer, painter, and broadcaster, who was the 1963 British National Gliding Champion.

POSTER CONTEST

SSA will conduct a contest to design a suitable poster advertising the 1970 World Championships, which will be held at Marfa, Texas. It is hoped that the poster design can also be used as the format for a postage stamp commemorating the event.

The originator of the best design will receive a cash prize of $100, which has been donated by Dale May and John Ryan, the instigators of this contest.

The contest will run until April of next year. Final rules will be published in a future issue of *Soaring*. In the meantime, potential entrants may want to review the October, 1967, and the February, 1968, issues of *Soaring* for examples of stamps from other countries dealing with gliding.



GUIDE FOR INSTRUCTORS

The FAA has issued an Advisory Circular titled "Glider Flight Instructor Written Test Guide." The purpose of this 22-page booklet is:
1. To outline the scope of the basic aeronautical knowledge requirements for a glider flight instructor.
2. To acquaint the applicant with source material that may be used to acquire this basic knowledge.
3. To present a sample test along with the correct answers and explanations.

Copies of the publication (which should be identified as FAA Advisory Circular AC 61-41, Glider Flight Instructor Written Test Guide, dated 11/7/67) may be ordered from:

Department of Transportation
Federal Aviation Administration
Distribution Unit, TAD-484.3
Washington, D.C. 20590

SOUTH AFRICAN NATIONALS

Visitors from Belgium, Germany, Holland, Rhodesia, and the United Kingdom were amongst the 29 pilots who took part in this contest, which was held this time at Tempe Airfield, Bloemfontein, from January 2nd to the 13th.

The best weather conditions occurred in the week before the contest, when a number of world and national records were broken.

Competitors were flying on alternate days, as the majority of gliders had two pilots. Where there was only one pilot, the meeting voted beforehand on which day he would fly—odd or even dates. Tasks were flown on all 12 days so that each group had six days.

Scoring was based on a modified Wallington system with first place receiving 1,000 points, second 950, third 900 points, and so on. Handicaps were allocated on a percentage basis as follows:

BJ-3	100	Phoebus	114
BS-1	102	Austria-S	114
AS-W 12	102	Vasama	116
Cirrus	104	Zugvogel 3B	116
Libelle	107	Zugvogel 3	120
BJ-2	111	Ka.6	120
HP-11	114	Olympia 465	125

Perhaps the most interesting day was January 9th, when a number of pilots got caught near the first turning-point in a storm. Klaus

Keim in the Cirrus was turned upside down and is still wondering how the aircraft righted itself! Hair-raising tales were told of flying at placard speeds with brakes, flaps, and undercarriages down—and still going up at 5 meters per second!

Pat Beatty in the BJ-3 won the contest handsomely in the open as well as the handicapped section, and undoubtedly the BJ-3 is the star performer in South African conditions. Pat and "Bomber" Jackson also took the team prize.

Adrian Martin in the Zugvogel 3B and Graham Anderson in the Ka.6 put up amazing performances, competing against all the "hot" ships except the Diamant.

The final standings:

Open Class		*Pts.*
1. P. Beatty	BJ-3	5850
2. T. Pearson	Cirrus	5300
3. H. Heiriss	AS-W 12	5200
4. A. Martin	Zugvogel 3B	5000
5. T. Biggs	HP-11	4800

Handicapped Class		*Pts.*
1. P. Beatty	BJ-3	5450
2. A. Martin	Zugvogel 3B	5000
3. T. Pearson	Cirrus	4850
3. G. Anderson	Ka.6	4850
3. H. Smet	Libelle	4850

SAILPLANE & GLIDING

CHAPTER REBATES

Each six months, in April and October, the Society sends annual SSA dues rebates to approximately half of its chapters (clubs with 100% SSA memberships). This April, 39 chapters received a total of $2235.17. Another $2460 was paid last October to 41 other chapters. The rebates ($2 per full member and $1 per family member) are given as the main tangible benefit of SSA chapter status. In return, the Society realizes some savings through processing of memberships and through the elimination of individual renewal reminders to chapter members.

If your club is not an SSA chapter and you would like to know all about the benefits, policies, and procedures, write SSA for Item #41, *SSA Chapters.*

NEW TOW-HITCH CRITERIA

A newly published chapter (No. 8) of FAA Advisory Circular 43.13-2, *Acceptable Methods, Techniques, and Practices — Aircraft Alterations,* is entitled "Glider and Banner Tow-Hitch Installations." The new criteria set forth represent a major victory in reducing the strength and direction of load criteria, but the standards do not eliminate the need for static testing or engineering analysis of the attachment points on the towplane structure.

The new guide applies particularly to what are called "field approvals" of hitches that are not certificated, but it will probably also serve as a guide for the acceptance of new supplementary type certificates for other accessories.

New hitches must support a minimum load (now twice the operating weight of the gliders to be towed) in a rearward symmetrical cone of 20 degrees about the longitudinal axis at the attach point to the airframe. The former criteria used a factor of three and a 30-degree cone, valid at the glider end of the tow but inappropriate at the towplane end. A 200-fpm minimum rate of climb is required for the towplane-glider combination at the highest intended altitude on a hot, moist day.

Precautions for engine cooling and suggestions for "climb" propellers are given. Operational requirements and tests for the mechanism are given. Tables of release cable and available towline strengths are given. Typical installations are shown: the Cessna DMCR-approved hitch for tricycle-gear models, the Schweizer kit with STC approval for Piper PA-18's (which can be readily approved for other "Cub-derived" airframes), a type once approved for Boeing-Stearman A-75's, and the Javelin Aircraft STC kit for conventional-gear Cessnas. (The Champion Citabria uses an adaption of the Schweizer-Piper kit, separately STC'd.)

The strength of the airframe attachment points can best be proven by a statement from the manufacturer, when still in production. In the absence of engineering analysis, static-test demonstrations may still prove to be a difficult route for approvals of new one-of-a-kind glider tow hitches.

The new section of the Advisory Circular is the result of the submission of a proposal to the FAA

through SSA's Government Liaison Committee, headed by John D. Ryan. In turn, the FAA Flight Standards Technical Division resubmitted their draft to us based on our proposal. We gave them a detailed criticism of their draft. Then we waited 18 months. Presto (but not very) a substantial improvement, but not everything we thought desirable.

TOM PAGE

OXYGEN TRAINING

Soaring pilots who fly or intend to fly at soaring sites where altitudes over 12,000 feet asl can be reached should take FAA-AF Physiological Training, often listed as "Altitude Indoctrination Course—Passenger." Under a cooperative plan with the Federal Aviation Administration and Air Force Physiological Training Units at 30 AF bases, SSA has developed a new direct application process for the three-year-old safety program.

Eligible soaring pilots should show on their applications that they hold a private glider rating and Silver badge, or hold a glider instructor rating. If below these qualification levels, they must have their glider instructor certify on the application that he will personally supervise flights at a designated site at which oxygen may be required. In addition, the AF Training Units will require each trainee to show an FAA medical certificate (class 3) dated within 12 months of the training date.

First, an interested local group should request application forms from Physiological Operations Section, AC-165, FAA Aeronautical Center, P.O. Box 25082, Oklahoma City, Oklahoma 73125; telephone (405) 686-4837.

Second, a local group leader or individual pilot should telephone the Officer-in-Charge of the Physiological Training Unit at the nearest AF facility (see following list); determine when the next Physiological Training courses will be held and the number of available spaces; and then earmark the necessary spaces tentatively needed on the dates when individuals can attend.

Third, he should send the completed applications from qualified applicants for the specifically earmarked dates at the AF unit to the FAA address given above, with a $5 money order or check attached to each. This fee is *not* refundable. These applications should reach the FAA *at least three weeks before the training date.*

Fourth, approvals for training will be mailed to the individual applicants and should be presented for admittance to the AF base and unit on the scheduled day.

The training sessions at AF units usually require a day and a half. The courses at the FAA Center and at an FAA-approved course at Lockheed, Sunnyvale, California, take one day. The training deals with the physiological factors of flight and the effects of drugs, alcohol, and tobacco, with special emphasis on high altitude. Oxygen equipment is demonstrated in the classroom, and oxygen use is demonstrated by a simulated altitude flight in the pressure chamber.

Over 250 soaring pilots have completed this training during the first three years of the program. Participants recommend the training strongly, and the oxygen safety record of American soaring reflects this endorsement. The SSA Education and Training Board particularly recommends that clubs and commercial operators at sites with high-altitude potential require all pilots using these sites to complete Physiological Training before soar the high sky. Self-taught oxygen discipline is about as good as a home-study course in brain surgery. You'll never find out what you missed.

Physiological Training is available at the following AF bases:

Andrews AFB, Md.
near Washington, D.C.
(202) 981-4654

Bunker Hill AFB, Ind.
near Bunker Hill, Ind.
(317) 689-2211, x 3321

Cannon AFB, N.M.
near Clovis, N.M.
(505) 784-3311, x2583

Carswell AFB, Texas
near Fort Worth, Tex.
(817) 738-3511, x668

Castle AFB, Calif.
near Merced, Calif.
(209) 726-2861

Craig AFB, Ala.
near Selma, Ala.
(205) 874-7431

Eglin AFB, Fla.
near Ft. Walton, Fla.
(904) 882-1228

Ellsworth AFB, S.D.
near Rapid City, S.D.
(605) 399-2554

Fairchild AFB, Wash.
near Spokane, Wash.
(509) 247-5406

George AFB, Calif.
near Victorville, Calif.
(714) 246-8611, x3113

Langley AFB, Va.
near Norfolk, Va.
(703) 764-2514

Laredo AFB, Texas
near Laredo, Tex.
(512) 723-9121, x348

Laughlin AFB, Texas
near Del Rio, Tex.
(214) 748-5616, x741

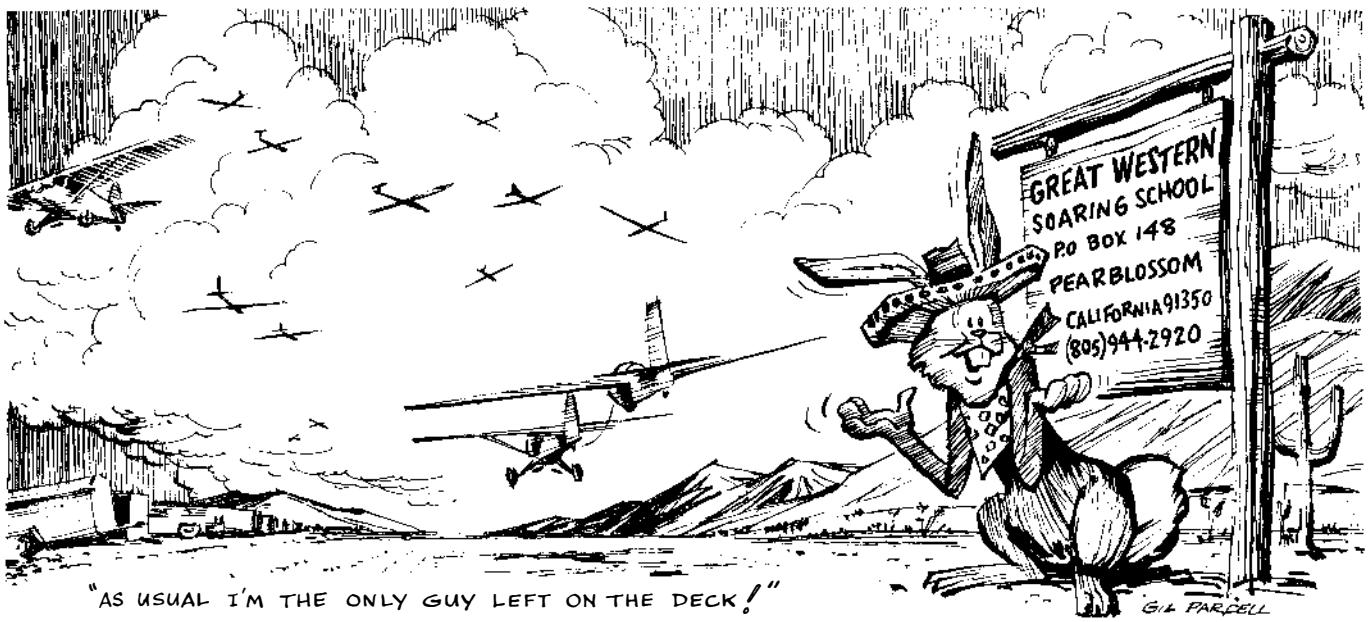
Little Rock AFB, Ark.
near Little Rock, Ark.
(501) 985-1431, x5578

Lowry AFB, Colo.
near Denver, Colo.
(303) 388-5411, x2973

VFR WEATHER MINIMUMS

On March 16th, the VFR weather minimums above 10,000 ft. msl were increased to 5-miles visibility, with 1000-ft vertical and 1-mile horizontal separation from clouds required—the same minimums that have been in effect above 14,500 ft. for some time now. The basic VFR weather minimums are as follows:

Altitude	Flight visibility	Distance from clouds
1,200 feet or less above surface (regardless of msl altitude)—		
Within controlled airspace	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Outside controlled airspace	1 statute mile	Clear of clouds.
More than 1,200 feet above the surface but less than 10,000 feet msl—		
Within controlled airspace	3 statute miles	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Outside controlled airspace	1 statute mile	500 feet below. 1,000 feet above. 2,000 feet horizontal.
More than 1,200 feet above the surface and at or above 10,000 feet msl.	5 statute miles	1,000 feet below. 1,000 feet above. 1 mile horizontal.



Coming Events at a Great Soaring Site

Long Flights Camp (May 20-May 31): Special awards and trophies for all flights over 200 miles. 42 flights averaged 226 miles in 1967.

Marathon Distance Contest (May 20-September 30): Total of all mileage flown in best three flights wins Marathon recognition and prizes. Two classes of competition. Send for rules and information now.

4th Annual 1-26 Soaring Championships (July 28-August 3): The greatest ever! Real competition to test your pilot skill in superior soaring conditions. Be sure to fly in this one.

Open every day to satisfy your hunger for outstanding soaring conditions. Three towplanes and eight gliders to serve you.

Write or call for your contest reservations and lodging at the Crystalaire Country Club
Deluxe accommodations at reasonable rates.

Offutt AFB, Nebr.
near Omaha, Nebr.
(402) 291-2100, x4883

Otis AFB, Mass.
near Falmouth, Mass.
(617) 968-1000, x5239

MacDill AFB, Fla.
near Tampa, Fla.
(813) 830-3741

McCoy AFB, Fla.
near Orlando, Fla.
(305) 855-3210, x627

Moody AFB, Georgia
near Valdosta, Ga.
(912) 333-4211, x519

Randolph AFB, Texas
near San Antonio, Tex.
(512) 658-5311

Reese AFB, Texas
near Lubbock, Tex.
(806) 885-4511, x256

Shaw AFB, S.C.
near Sumter, S.C.
(803) 775-1111, x7233

Tyndall AFB, Fla.
near Panama City, Fla.
(904) 286-2111, x24247

Vance AFB, Okla.
near Enid, Okla.
(405) 237-2221, x224

Webb AFB, Texas
near Big Springs, Tex.
(915) 267-2511, x2439

Westover AFB, Mass.
near Chicopee Falls, Mass.
(413) 557-1110, x7329

Williams AFB, Ariz.
near Phoenix, Ariz.
(602) 988-2611, x396

Wright-Patterson AFB, Ohio
near Dayton, Ohio
(513) 255-5713

Perrin AFB, Texas
near Dennison, Tex.
(214) 892-2131, x661

Training is also available at the FAA Aeronautical Center, Oklahoma City, (405) 686-4837; and at an FAA-approved altitude chamber facility operated by Lockheed Aircraft Corp. at Sunnyvale, California (the latter by direct application, not through the FAA).

TOM PAGE, Chairman
Oxygen Training Committee

There are some things you can count on, right?

Like nobody is going to set any world records soaring on the East Coast . . . particularly not in the winter . . . and especially not in a ship with an L/D in the 20's, for heavens sakes!

Right?

Wrong.

CONFESSIONS of a PENNSYLVANIA RIDGE RUNNER

BY KARL STRIEDIECK

It appears that the record claimed by Karl Striedieck (shown with his Ka.8) may only be the second world distance mark ever to be established in the eastern United States. The previous one, set in 1934—before Karl was born—by the great Richard du Pont, lasted exactly one month and one day.

I started my flying career on model airplanes, and the support and encouragement I got from Bill Clark, the Nittany Soaring Club's first president, did much to invigorate my interest in aviation. We went to many model-airplane contests and later we joined the Civil Air Patrol, where we did some actual flying (1954). I lived airplanes in those days and spent hours hanging on the fence at Willow Grove Naval Air Station watching the jets.

I got into flying for myself through the Aviation Cadet Program of the USAF. When I was stationed in California in 1960, I rode my motor scooter 185 miles to Oroville one Sunday to get a ride in a TG-3. That was my first glider flight, and I believe the ship belonged to the club in Sacramento. I exited the USAF in 1962 and finished Penn State University in 1965, all the while flying F-102's for the Pennsylvania Air National Guard. I tried flying 707's for Pan Am for a year and a half, but that was too much "setting" so I went back to fighter flying. My total flying time is about 3300 hours, with 1800 of it in the F-102 and 175 in sailplanes.

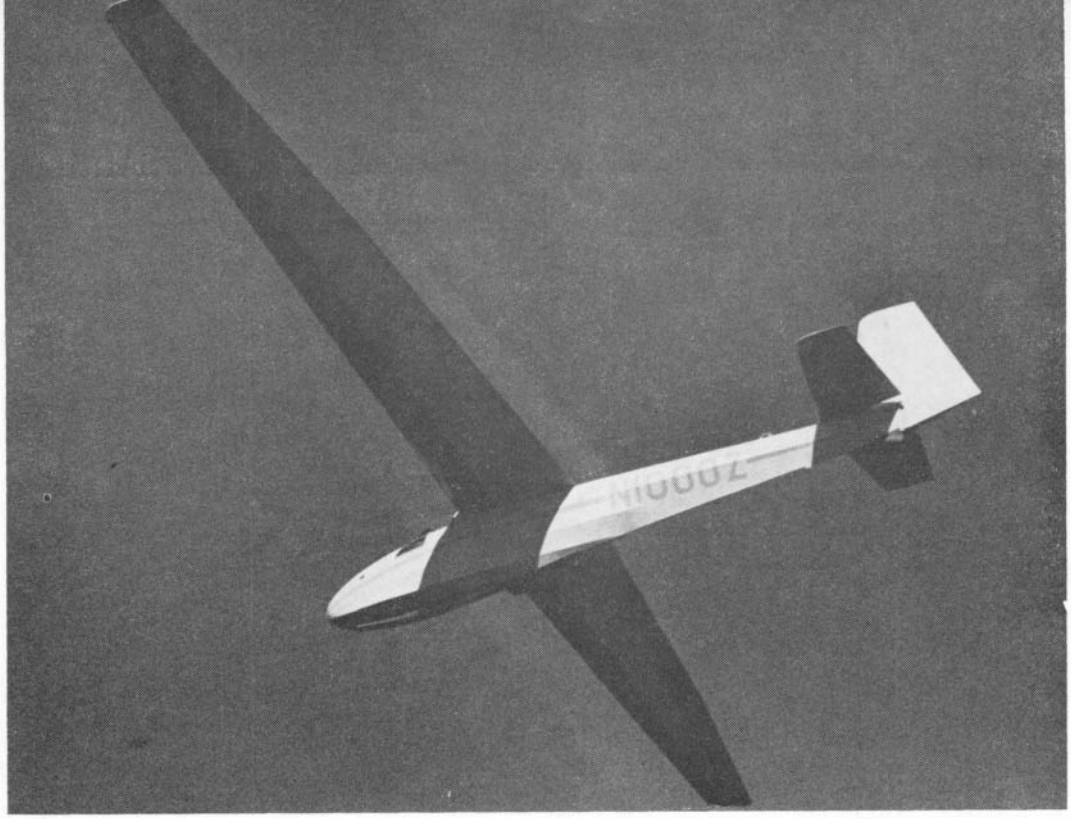
Bill Clark, Pete Kummer, Duane Sprague, and I started the Nittany Soaring Club in 1963 with a 2-22 which we auto-towed. In 1966, I bought my Ka.8 and built a hangar on top of Bald Eagle Ridge near State College, Pa. This field has to be the world's greatest glider field. With northwest winds, I can zoom to Altoona (40 miles) or Williamsport (45 miles). It is possible to get up in the wave from an auto-tow practically at will, and on thermal days a longer rope gets me to thermaling altitude.

One of my pastimes is studying birds of prey. The annual fall migration of hawks down our ridges is something to behold, and I enjoy flying along with them. One of my biggest thrills came on February 4th this year when I spent 30 minutes in close formation with a golden eagle. It was the first eagle I had seen around here in ten years.

I'm married, and my wife Sue has soloed and passed her private glider written. She's a great jeep operator, too!

Probably the experience that started me thinking about flying ridges was a trip to Hawk Mountain Sanctuary in eastern Pennsylvania 16 years ago. The sight of hundreds of hawks sailing effortlessly down the invisible cushion of air captured my fancy, and I longed for a way to join them. This pleasure was realized in 1966, when I bought my Ka.8 and some property from which to launch the bird on top of Bald Eagle Ridge (near State College, Pa.). The possibility of a long ridge flight was obvious the first time we studied the arrangement of the Allegheny ridges in detail. I was considering a straight goal flight, but it was Duane Sprague who first suggested a goal-and-return task. When I looked down from a jet at 45,000 feet one very clear day back in 1964 and saw the whole route laid out, I was convinced that the goal was attainable.

Some research at Penn State's meteorology department showed that the maximum frequency and velocity of northwest winds occur in February, and that the farther from February the less the winds favor a long flight. Then, too, when you are talking about a flight of over 10 hours, there is length of day to consider. Thus, March is about the best month; although with a daybreak launch and luck getting by several obstacles, any month from November through April will do.



The requirements for the proper wind direction and velocity include a good strong low aloft somewhere between Lake Ontario and the Gulf of St. Lawrence and a cold frontal passage at the surface. With this arrangement you can depend on some real blazing (freezing, actually) northwesterlies. I kept a record of the days that blew enough for a day of ridge flying around here this winter and I counted 33 since November 1st. I also kept a record of the winds along my route, and it shows that eight days were satisfactory for the record flight. I'm not much of a meteorologist, but I feel that there must be a long wave trough at the 500-millibar level, with the isobars packed in a northwesterly orientation over the entire course, or there won't be enough velocity or duration to support a 10-hour flight. We get northwesterly winds after most cold-front passages, but if the basic flow aloft isn't northwesterly they don't last long.

Having thus armed myself with this frightening array of data, we made the first attempt last November 13th. Miraculously, this one almost made it, with a noteworthy dash of 60 miles in 40 minutes in a silk-smooth wave near Cumberland. My average speed for the entire 260-mile flight was a very un-Ka.8-ish 64 mph! However, the winds decided to rest on the last 30 miles before the turn, so that was it. In one respect it was just as well that I didn't make it. Through a map reading blunder, we had the wrong town listed on the declaration. Imagine trying to explain that to the records committee.

The next attempt (on November 19th) lasted exactly 15 seconds. As I flew out of the wind shadow on top of the ridge during the tow, I was blown nose-up and out of control with the stick all the way forward. A nose dive back toward the runway produced just enough airspeed to pull out, turn down the runway, and land. The wind roaring through the trees on this day sounded like a hundred freight trains, but we could have made a safe launch with two changes in procedure. First of all, we should have waited for a break in the heavier blasts; and second, I now stay hooked to the jeep longer and swing over to the edge of the ridge a little before releasing.

One of the things I was amazed to learn about flying off the top of this ridge is the presence of this wind shadow or dead air above the runway. The wind can be blasting away at 40 mph just 100 feet to the right, where the mountain drops off; but on the runway and for the first 100 feet up, you are in dead air. This makes for carefree ground handling and easy landings, but the transition from dead air into the ridge blast and vice versa requires some "butter churning" action on the control stick. This must be one of the very few glider strips where you can do touch-and-go's.

But I'm digressing.

We tried again December 23rd, but I couldn't get enough altitude for the Altoona gap, so with no time to spare this time of the year I aborted the mission and flew back to the farm. The tendency toward poorer success continued when on February 10th I took off, back tracked to my start point at Lock Haven, and fell out of the sky there. Whoever heard of landing at the start point! Interspersed among these actual flights were a dozen preparations for flights the next day that were discouraged because of weather, winds, deep snow, etc.

After the Lock Haven failure of February 10th, I moved the start point 10 miles southwest on the ridge. Lock Haven is a little "around the bend" on the ridge, and it was tough even to stay in the air there a couple of times. My new starting point at Eagleville had the advantage of being 10 miles closer to the take-off point, and this reduced the flying time for the whole flight about 40 minutes. In addition, the Eagleville start point is nestled right at the foot of the ridge, and this makes it easier to get into the 90-degree cone to take the picture.

At any rate, the maps looked good for March 3rd. On the 500-MB prog was a deep trough over Lake Ontario and a cold front motoring through on March 2nd. It looked as though the winds might be too northerly, if anything, but we opened the hangar doors and put the observer on standby just in

case. A call to Phillipsburg FSS at 0515 resulted in a "GO" decision, and so Tom Kenly, the world's most understanding observer, was once more scrambled from the sack. After a couple of dry runs to polish her speed-shifting action, Sue attached the rope and yanked me into the air. At 0705, I headed northeast to my start point, taking the photograph at 0735.

The ridge to Altoona is a piece of cake except for one ticklish place at Milesburg, where I circled to get some altitude before crossing the gap. We are renaming this area Professor Dachille Gap in honor of one of our club members who fell prey to its downdrafts last fall. This ridge, Bald Eagle Ridge, is the first line of mountains east of the Allegheny front. It has an average elevation of 1900 feet, and the drop to the valley is about 900 feet.

The sky was clear as far as Tyrone, and then by the time I got to Altoona it became overcast and the visibility rather poor. I worked the lift over the end of Bald Eagle Ridge, trying to get 2000 feet over the ridge in order to penetrate across this first obstacle, a five-mile gap. I set out only 1500 feet above the ridge, but making the next

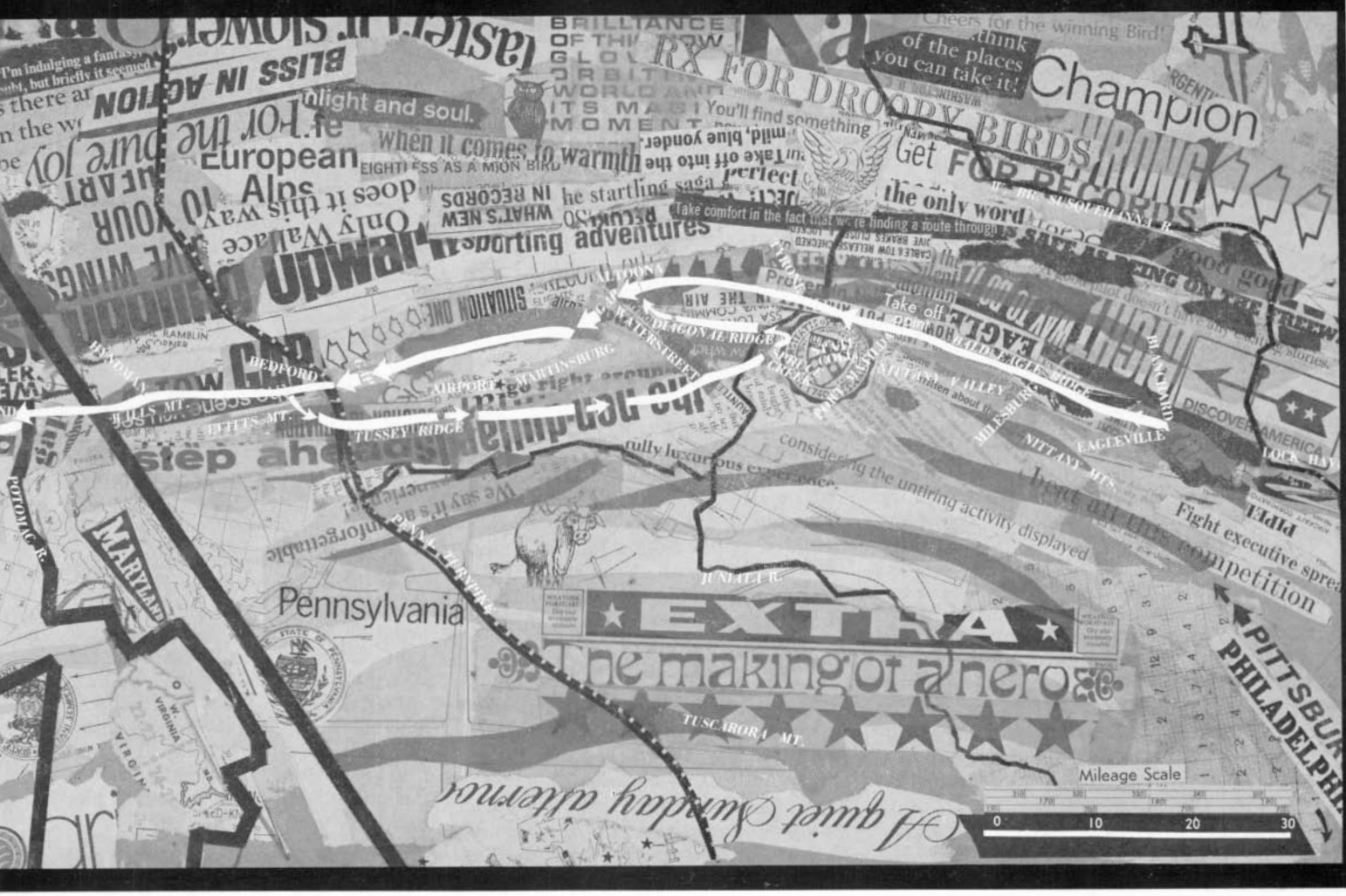
Karl Striedieck's accomplishment deserves mountains of headlines, which is what mapmaker Vickie Clarke has given him to depict the ridges along his course.

ridge was easy, and I drove to the top and blasted down to Bedford at 80 mph.

The Bedford gap is the biggest sweat because it's nine miles to the next ridge. I searched for lift at the end of the ridge and got about 2000 feet over the mountain before nervously stepping out over the valley. I played lift as I hit it, honking back on the stick in rising air, shoving her up to 80 mph when not climbing. I couldn't afford to circle in lift because the 35-mph drift would have put me downwind of the next ridge. By milking my way along, I was able to make one last heart-throbbing dive for the next ridge, passing over the Turnpike with no more than 600 feet. I "hove to" into the wind, and a series of figure-8's got me rapidly to the top of the ridge. A flock of ducks passed as I climbed the mountain.

It was an easy task to get to Cumberland from here, but my bladder was making known its presence, and this produced a crisis. The relief tube had frozen (temperature 0° to 10°F), and there I was holding a funnel full of unwanted liquid. I considered the prospect of balancing it in the rough air until it froze, but abandoned that plan. The dilemma was handled, however ineptly, by transferring the contents of the tube to my jellybean bag and then, with a firm grip on the canopy handle, opening the canopy and dumping the contents overboard. Logistics required three repetitions of this canopy-opening business, and I then and there resolved not to drink water that day.

The first half of the Bedford-Cumberland ridge is a two-barreled affair, and I used the back ridge because it is higher. At 1000 feet, I



roared past the school and hospital on top of the ridge at Cumberland, looking for wave clouds to make the next part of the trip smoother and easier. No wave was to be found, so I dropped back a mile to the next ridge and picked my way on. The mountains below Keyser become somewhat flattened, so I drifted along in the rebound from the Allegheny front and ridge lift and climbed to 6500 feet using smooth wave lift for about 15 minutes. Progress up there was slow, however, so I went back down to the ridge and bounced along.

Turbulence was very rough all day, but the stretch from Cumberland to the turn-point and back was the worst. My camera and water bottle had been flying around earlier, so I had unzippered my flightsuit and put them inside. I didn't use my shoulder harness because it wouldn't stay tight; although, I did use my lap belt, which suffered from the same deficiency. I was constantly crashing against the canopy and once I hit it so hard something in my neck cracked and I saw spots, but apparently nothing broke. I was wearing a furry "troopers" hat with earflaps, and by putting my left "nosewiper" mitten between the canopy and my head the thrashing was alleviated somewhat. Unfortunately, this had the disadvantage of deflecting the cold air coming in the front defroster vent into my face; so finally in the rough periods I leaned my head against the side of the canopy, and the bumps slid my head up and around the canopy instead of hammering it straight down. The wings flapped, of course, but our trip to the Schleicher factory last summer gave me confidence in Mr. Kaiser's bird and I wasn't worried. My tie-down kit came out of its box, but since I had the stakes and hammer rolled up in a big rag, it didn't punch through the fabric. Having no parachute, I wasn't tempted to rationalize a speed above the 80-mph rough-air speed.

As I passed Mill Gap, I looked down at the field in which I had landed last fall while trying this task. There was Nina and Whit Sheffer's house and about the best hospitality this side of the moon.

I passed the Mountain Grove turn-point at 1230, took a picture, and headed home. This ridge from the turn-point to 30 miles southwest of Keyser is another piece of cake. The ridge goes over 4000 feet in some places, and there is a 1000- to 2000-ft. drop to the valley. This makes for real updrafts when you have 30 to 40 knots of wind blowing from a right angle. The peak of the ridge along here is different from the ridges farther north, in that it has a vertical outcropping or cliff at the top, and this makes the air flow almost vertical when you are down next to it. In a case like this, you have no crab angle at all since there is no horizontal component to the wind. Most of the time, though, there is a horizontal flow, but your crab angle is noticeably less than when you are panicking across a gap where no vertical displacement exists.

The scenery down in this part of the country is really beautiful, and the sky had been practically clear since Keyser. There were scattered cu's and lennies around, but not organized along my route enough to make it worthwhile to dilly dally around trying to get up in the wave.

Arriving on schedule in Cumberland at 1500, I easily penetrated the mile forward (into the wind) to the Cumberland-Bedford ridge. Now I knew I had a good chance. But then the sky got snow showery

again, and for a few panicky moments I was sure I was on the wrong ridge because I didn't recognize anything. Soon, however, Hyndman appeared to calm my anxiety, and I continued on. I had earlier decided not to risk the Bedford and Altoona gaps again unless the weather and lift would permit departure a good 4000 feet above ridge altitude. This was out of the question, so I decided to take the "scenic route" up Tussey Ridge, thus bypassing these two obstacles. This is twice as long, and there is a formidable upwind penetration, but it is still safer. Tussey Ridge is the next ridge downwind of my route (and getting to another ridge *downwind* is a snap). I just circled in a boomer about eight times and there I was. I knew I would have to pay for this, though. Then up past Blair County Airport at Martinsburg and over US 22 at Waterstreet and I was in friendly territory now, or perhaps I should say familiar territory since there still lay before me the upwind transition to the diagonal ridge connecting to Bald Eagle Ridge.

I went along Tussey a little beyond my diagonal link and "hove to" above Spruce Creek. The idea was to work a street out over the valley to a point at least even with this next ridge, and preferably upwind a ways. Six times I sallied forth over the valley, but encountered horrendous sink a mile out and had to retreat to the sanctuary of the ridge lift. Finally I got abeam of that beautiful ridge with about 3000 feet of altitude above the valley and decided this was it. I pushed up to a hundred and crabbed for the ridge. It was another race between the valley and the ridge lift. I looked nervously for a landing field. But the Ka.8 was not to be denied this close to victory, and we hit ridge lift with 300 feet to spare. A nicely located gap or groove in this steep mountain gave a jolly good ride to the top.

I wasn't sure how I could get over the point where the two ridges meet at Altoona, but I went up to find out. I was surprised that there was good lift so close to the down side of Bald Eagle, but I wasn't complaining about it! I worked up to 800 feet close to where the two ridges meet, then pushed ahead and over Bald Eagle. I had it in the bag.

I passed the pulp mill at Tyrone that I had smelled an hour earlier while trying to get across to the diagonal ridge and reflected on how long it had taken me to get even with that point again. Now I could see the ore pits at Port Matilda and maybe even the white top of the jeep at my strip. The good wife must be anxious for me, since I hadn't been heard from since this morning. As I drew closer, it was indeed the jeep, and I rocked and porpoised my bird as a happy greeting to my faithful partner.

Near Milesburg I spotted a circling hawk and deviated enough to identify him (a dark-phase rough-legged hawk) and say hello. From 20 miles out I could see the dam at Blanchard and my landing area. When the lift would support it, I held 80 mph—ridge-top altitude at anything less than 80-mph lift. I was doing 80 now and had a tail component. Boy, this is easier than driving a 707, I thought!

It was clear Canadian air, and the sun was low behind me. A

hovering red-tailed hawk slid by, and I wished him good hunting and safety from man's thoughtless destruction. Soon I was swinging out beyond my start point and away from the ridge lift that had sustained me so generously. Gentle turns brought me down to final approach, and at 1753 I rolled to a stop. I wasn't sure if I could still walk but who cares! It was a real adventure.

POSTSCRIPT

To keep warm during the flight, I wore the following clothing:

1. One pair of cotton "waffle weave" thermal underwear.
2. One pair of quilted thermal underwear.
3. An Air Force type K-2B winter flyingsuit.
4. Three pairs of thick wool socks.
5. One pair of felt mukluk liners.
6. One pair of mukluks.
7. One pair of glove liners.
8. One pair of "nosewiper" mittens.
9. An Army style pile-cap with furry earflaps.

Everything was okay until Bedford, where my right foot insisted on getting cold. I walked the rudders, tensed my muscles intermittently, wiggled my toes, and tried to massage blood down my leg. Eventually, my toes started to tingle, and I thought, holy cow, frostbite! But they just warmed up and stayed warm from then on, and I was cozy the whole flight.

Incidentally, the distance listed on my application for a world-record out-and-return flight is 476.6 miles, but I actually covered about 535 miles over the ground and I must have flown through something like 700 miles of air.

THE 1-26 ASSOCIATION FOR 1968

The 1-26 Association is planning an exciting year, culminating in the West with the 4th Annual North American 1-26 Soaring Championships at Crystalaire Airport in Pearblossom, California, from July 28th to August 3rd—and in the East with the 1968 1-26 Regatta at Harris Hill near Elmira, New York, from August 31st to September 2nd.

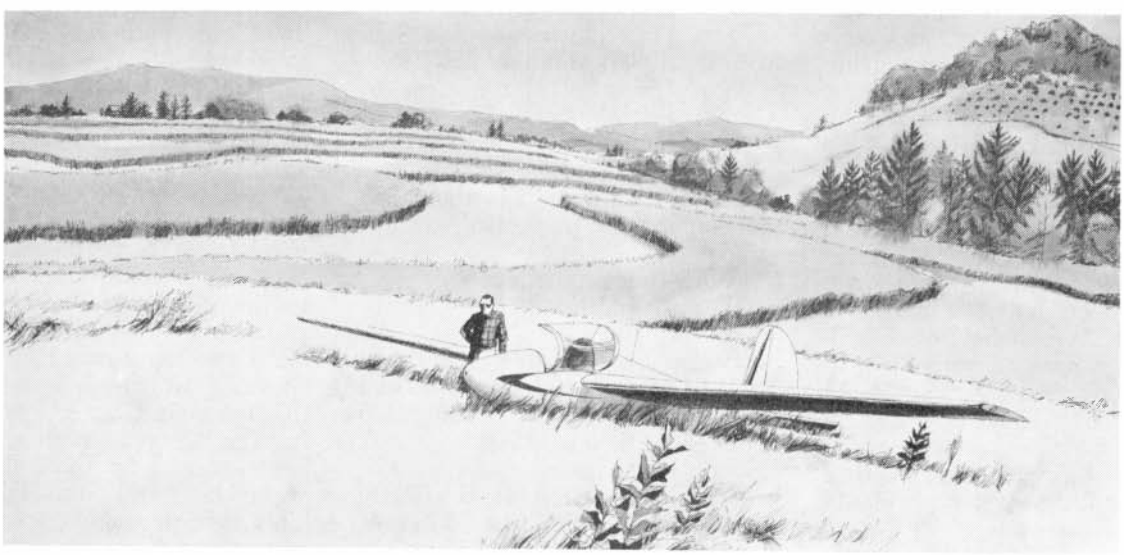
For information concerning accommodations and other matters relating to the 1-26 Nationals at Crystalaire, contact Fred Robinson, Box 148, Pearblossom, California 93553; or phone (805) 944-2920.

The Labor Day regatta, sponsored by the Harris Hill Soaring Corporation, will include a family soaring encampment at Harris Hill during the week preceding the meet. This noncompetitive encampment will provide an excellent opportunity for relatively unseasoned 1-26 pilots to gain both local soaring and cross-country experience and to learn from more experienced pilots, who will also be attending. Harris Hill comes close to being an ideal vacation site—with a full array of recreational (including camping) facilities and cultural points of interest close at hand for the whole family.

The 1-26 Association, itself, was formed in the early 1960's to foster one-design sailplane competition. By requiring all contestants to fly the popular Schweizer 1-26, performance variations among the competing sailplanes are eliminated so that each pilot can be judged solely on his flying ability and skill.

The Association is a highly unique, small, happy family that emphasizes fun, friendship, safety, and sportsmanship. It also puts out a newsletter. Any person interested in 1-26 activities is eligible for membership, even though he or she may not even be a glider pilot. Each member has one vote in the affairs of the Association. Dues are $2.00 per calendar year and are payable to the treasurer, Mrs. Jean Harrison, 636 North Central Avenue, Campbell, California 95008. The Association is anxious to extend a warm hand of welcome to anyone who desires to join its ranks.

Further information about this rapidly growing organization can be obtained from its president, Mr. Marion Cruce, 400 N.W. 20th St., Oklahoma City, Oklahoma 73103; or from its secretary, Mrs. Joann Hartley, 4216 Ann Court, Bay City, Michigan 48706.



Drawing by WAYNE STETTLER

THE FURTHER ADVENTURES OF JOE LINCOLN AND CIBOLA

the long wait .....

BY GORDON WALTERS

The unfortunate thing about prevailing, seasonal winds is that there is no guarantee that they'll prevail when you want them to.

In the spring of 1966, Phoenician pilot Joe Lincoln planned a number of record-breaking flights from northern Arizona on the strength of the prevailing westerlies. He was well set up. He had a 2-32, a ship with good performance in strong conditions. He had his heart set on a record that had remained unbroken for 20 years—the American two-place distance mark. He had a course all mapped out—Prescott to Santa Fe, New Mexico (365 miles). He had a passenger for the back seat —his 15-year-old son John. He even had a vagrant Englander named George Locke organized as permanent crew.

All systems were, in fact, *GO.*

Except for the weather. Time and again, he took off from Prescott, battled his way into easterly headwinds of varying intensity, only to be forced to the ground short of the goal. Once, an excellent flight of 260 miles was made into a 15-mph headwind. But it wasn't good enough for the record.

Then his luck changed — or looked as though it had. On the morning of 21 May 1966, there was a nice, steady westerly, fresh from the Sierras. Convection was forecast to be good and would remain that way well beyond Santa Fe. There appeared to be little likelihood of big cu-nim development to upset matters, and crewman Locke started licking his lips as he thought of one long retrieve along Route 66, which might end with a T-bone steak celebration in Santa Fe.

At first, the flight went very well. Locke maintained radio contact as far as Jerome and thought that with a bit of luck he would stay in touch all the way. Unfortunately, this was not quite to be the case. The road along Oak Creek Canyon was a twisty, narrow lane which reminded him of England. It was impossible to overtake, especially with a trailer, and since it was a Saturday the road was stuffed with rubbernecking trippers. By the time he got to Flagstaff, the sailplane was well out of range. Locke telephoned back to Prescott, but there was no news of the pilot having either landed or having contacted any of the flight-service stations along the route, as agreed beforehand.

As weather conditions looked too good for Lincoln to have been shot down, Locke decided to bore on towards New Mexico at Route 66's redline speed. He made another call at Lupton, on the New Mexico border. Zuni Flight Service Station was nearby so, to save money, he telephoned there.

"Have you any news of a Schweizer sailplane, number 2767Z?"

"Sure thing. He reported to Grants a while back. He was at 13,000 feet and headed for Santa Fe."

Excellent. Grants was about 265 miles along the track. Only a hundred to go.

"What time did he report?"

"Twenty-one hundred and thirty hours."

Twenty-one hundred and thirty . . . 21:30 . . . 9:30 p.m. Locke looked at his watch. It said 4:30 p.m. Surely New Mexico wasn't five or more hours ahead of Arizona? Locke sighed. He'd already had troubles with the different time zones and "railroad times" in the U.S.

He said, "9:30 p.m., huh? That means it should be dark."

"Sorry, fella. We use G.M.T. here. He passed overhead at 3:30 local time."

Greenwich Mean Time. It should have made Locke feel at home. Instead, it made him feel farther from home than ever. But it was good news. If Lincoln kept up his present rate of progress, he would be landing at Santa Fe around half past five.

He drove off towards Grants, the smell of that T-bone in his nostrils.

* * *

Thirteen thousand feet above sea level sounds a lot for a sailplane. But the terrain in New Mexico has a fair amount of altitude of its own, and Lincoln's height over Grants translated into approximately 7000 feet above the ground. Almost immediately after reporting to Grants, the 2-32 ran into some heavy sink. Lincoln thought of hanging back, of finding some lift in the Grants area. But he had made such good time, and conditions ahead looked so good that he decided to force his way through the downcurrents. He piled on the airspeed until he was flying at more than 120 mph, the wind roaring over his wings like a mountain lion. But the sink persisted, making the altimeter unwind faster than the second hand of a clock going backwards. The southwestern United States is famed both for its prodigious thermals and its monumental downcurrents. By the time he escaped the sink hole, Lincoln was low. Flying at a very conservative speed, he began scratching about for any bit of lift he could find. There were hints that something was brewing somewhere. The air was choppy. It felt as though he was riding over

That's "Soaring" Not "Sewing"

BY JANIE OESCH

I've heard girl talk that the men in soaring resent the female glider guider. I have an idea that the only discrimination today is in the minds of the female pilots, themselves. After all, the men have given us our very own records—state, national, and even world.

A lot of the records have not been established yet, but it's not that there is a shortage of women in soaring—it's just that the women aren't in the cockpit. Really, girls, it's not hard to fly a sailplane. Any of you who can wheel a big station wagon plus a long glider trailer through that south gate at the Black Forest Glider Port would be great pushing a little ol' glider through the wide-open sky. You've already had lots of experience fastening seat belts and shoulder harnesses, fixing barographs, adjusting parachutes, hooking up towlines and running wings. Cross-country navigation would be a cinch after all those miles you've followed *him* around the country. And radio talk would be no problem; it's just like talking on the telephone.

Now, all that's left for you to do is climb out of that retrieve car and into the sailplane.

Your girl friends may think you hard to talk with once your vocabulary contains words foreign to most girl talk—for instance, a *winch* is not the other woman; a *tow* is not what gets you out of a snowbank, nor is it an integral part of one's foot; *retrieve* is not what you teach your dog to do; *sink* isn't where you pile the dirty dishes; and *spoilers* are not somebody else's kids.

Invariably you'll say, "I went soaring today."

Your friends will, of course, think that you said "sewing" and will ask, "What pattern?"

Ruth Wild (left) and Janie Oesch.

Then you will say, "My usual; I ended up short and really had to stretch it." They will mutter something about these new miracle fabrics are great and then change the subject.

Nonetheless, any effort put forth in soaring will be repaid over and over again when you have the privilege of setting new records, as I did in my altitude flights with Anne Burns (a world, feminine, multiplace mark of 31,231 feet, in which I was the passenger) and with Ruth Wild (two U.S. national records, in which I was the pilot). Many feminine state records are just waiting for you land-logged females to take to the air.

★ JAMES E. YATES ★ Flies 681 Miles! ★

The soaring world was shaken on Monday, April 15, 1968, when James E. Yates III of Chula Vista, California, made a 681-mile flight from California to Texas, for which he is claiming a new world distance record. The flight, if approved by the Federation Aeronautique Internationale, will break the biggest and most prestigious soaring mark of all: the 647.17 miles recorded by Al Parker in a Sisu 1A that now rests in the air museum of the Smithsonian Institution.

Yates' flight was made in a Schweizer 2-32, an American, all-metal, high-performance, multi-place design, which he flew solo and without special ballast to improve performance. The starting point for the flight was the Diamond C Soaring Ranch, a few miles north of Boulevard, Calif., which is about 50 miles east of San Diego, near the Mexican border. The flight ended at the Culberson County Airport, three miles east of Van Horn, Texas, some 110 miles southeast of El Paso. The elapsed time for the trip was very close to ten hours, giving the 32-year-old Yates an average ground speed of 68 mph.

Anticipating good weather for this date, preparations were made the night before for an early start. Take-off was shortly after 7:00 a.m. (by airplane tow). Release was made a few miles east of the airport, about 1000 feet above 4647-ft. Mt. Tule, where a weak upcurrent from a standing mountain wave was encountered. The wave was dying but permitted a long, slow climb to 19,800 feet. From that altitude a downwind glide to the east was commenced, which carried the pilot across the Imperial Valley to beyond Yuma, Arizona. The lower air was quite unstable and was producing dry thermals by the time he descended to 7000 feet beyond Yuma and Gila Bend. From there on, thermal upcurrents were used for the rest of the flight. Steady tailwinds of about 15 knots prevailed throughout the day.

Cumulus clouds developed later in Arizona (with bases at 9500 feet above sea level) near Mt. Lemmon, just north of Tucson. The bases gradually raised, and the clouds were close enough together that he was often able to fly straight without circling, slowing up in the lift under the clouds to gain back the altitude lost while cruising at 120 mph between them. Some of the thermals he did stop to circle in pegged his 1000-fpm rate-of-climb indicator. His ground speed for the 120 miles between Mt. Lemmon and Lordsburg, N. M., averaged 95 mph.

Some overcast east of Lordsburg near Deming weakened the lift to the point where Yates turned back almost to Lordsburg before heading south toward the border to get by the overcast. Cloud streets to the east were subsequently reached, enabling him to make good progress again to the north end of the Franklin Mountains north of El Paso. With good altitude in hand at El Paso (which he had declared as a goal for a new 580-mile, world, goal record attempt), he decided to overfly it. Lift became weaker after that, and he got lower as he progressed, working choppy thermals and zero sink. He was quite low over the highway between Sierra Blanca and Van Horn, Texas, but hung on to weak lift, letting the wind drift him over the hills west of Van Horn, which he cleared by 200 feet. Some zero sink over the town enabled him to reach the airport three miles east, where he landed about 5:20 p.m., PST, some 15 minutes before sunset.

So ended the second flight in soaring history to exceed 600 miles, the first being Parker's current record flight made on July 31, 1964, from Odessa, Texas, to Kimball, Nebraska.

Yates is a contract computer programmer by profession and the manager of the soaring schools operated by the Otay Aircraft Corporation at Chula Vista and Boulevard. A Gold-badge holder, this flight will give him his distance Diamond to go along with his previously-earned goal Diamond.

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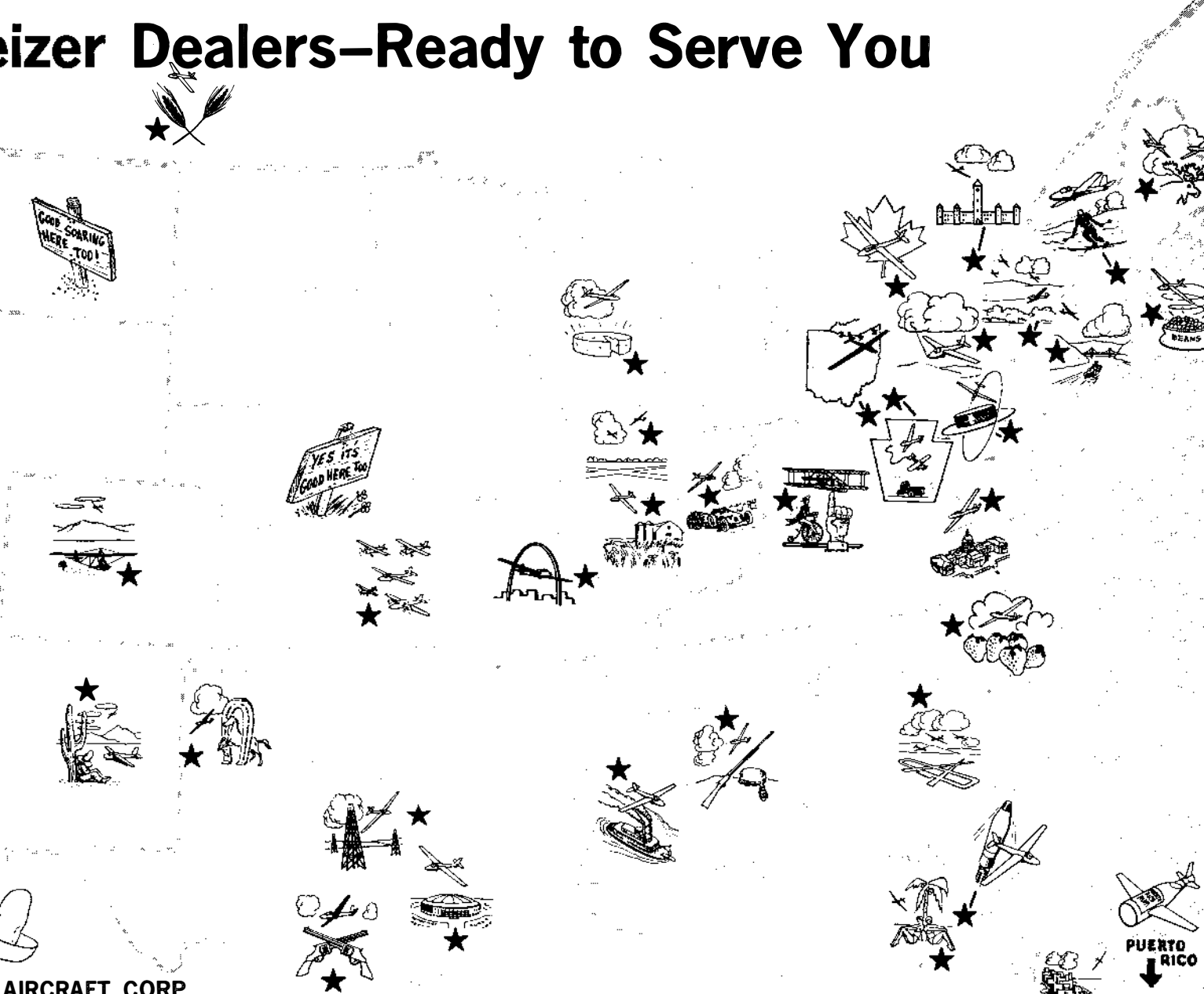

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Wurtsboro (Arpt) N.Y. 12790
Ph: 914 888-2791

Hudson Valley Aircraft
Randall Fld., Middletown, N.Y.
Ph: 914 DI 3-8883

Kutztown Aviation Service
Kutztown (Arpt), Pa. 19530
Ph: 215 683-3821

Capital Area Soaring School
Godfrey Fld., Leesburg, Va. 22075
Ph: 301 277-1480

Strawberry Hill Soaring Center
Advance, No. Car. 27006
Ph: 919 998-4504

Bermuda High Soaring School
Box 134, Chester (Arpt), S.C. 29706
Ph: 803 385-6061

DeLand Aviation Service, Inc.
DeLand (Mun. Arpt), Fla. 32720
Ph: 904 734-5491

Lenox Flight School
Rt. 1, Box 170, Mulberry, Fla. 33860
Ph: 425-1352

Kendall Flying School
Tamiami Arpt., Miami, Fla.
Ph: Canal 1-3841

Valley Sailplanes
RR #1, Manotick, Ont., Can.
Ph: 613 692-3622

Pioneer Soaring Center
RR 2, Tottenham, Ontario
Ph: 416 936-4367

Northern Ohio Soaring
Jefferson (Arpt), Ohio 44047
Ph: 216 576-4896

Torp Aero Service, Inc.
Monroe Cty Arpt. Bloomington, Ind. 47401
Ph: 812 825-2392

Thermal G. Ranch Gliderport
Waterford, Penn. 16441
Ph: Erie 866-1131

Soaring Society of Dayton
Box 581, Dayton, Ohio 45419
Ph: 513 299-1943

West Bend Flying Service
Box 409, West Bend (Arpt), Wis.
Ph: 414-334-5603

Mainline Aviation
Joliet (Arpt), Ill. 60435
Ph: 815 725-1635

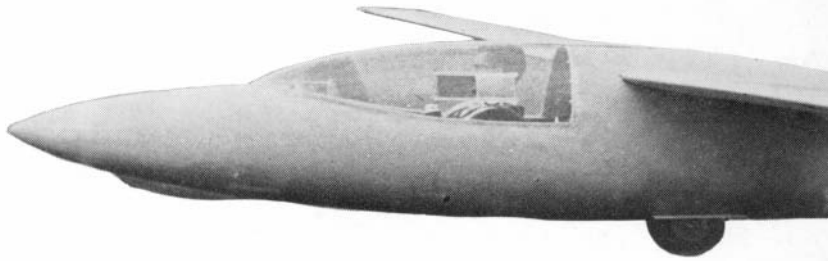
S. O. A. R., Box 18
Savoy, Ill. 61874
Ph: 217 822-5420

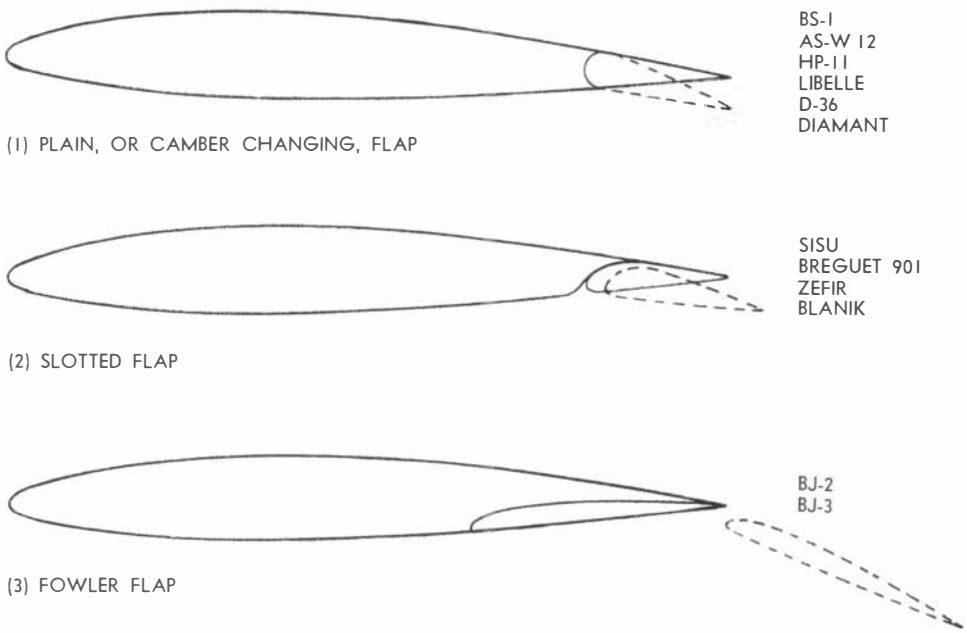
Jonathan Flying Service
Magnusson Field, Athens
Ala. 35611 Ph: 205 232-8800

Emrich Flying Service
Greenwood (Mun. Arpt), Miss.
Ph: 453-5811

Sugarbush — Puerto Rico
c/o Aero Clud de Planeadoves
702 Cactus St., Rio Piedras P.R. 00924

Schweizer Aircraft Corp.
15 Airport Road, Elmira, N.Y. 14902
Ph: 607 739-3821





Even prior to World War II, there were conflicting opinions concerning the value of lift-augmenting devices for improving the cross-country performance of sailplanes. Today the battle still rages.

With the advent of the Fowler (or extensible*) flap in the mid 1930's it was felt by some progressive designers that such a mechanism might prove as beneficial to sailplanes as it had to commercial transports.*

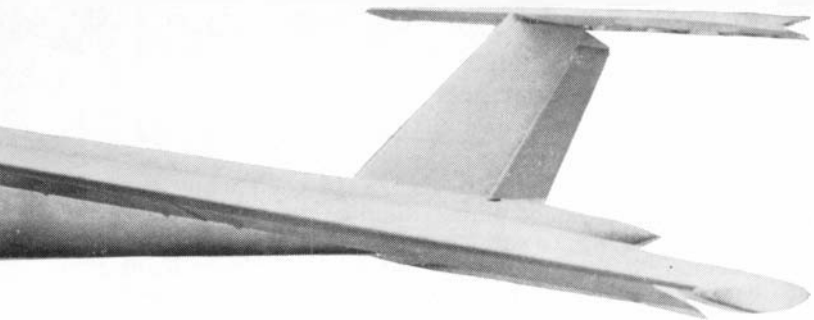
Many sailplane designers, however, are convinced that one should build a wing as simply and as cleanly as possible (no flap at all), sticking to a moderate wing loading—which experience in this country has shown to be about 5 lbs. per sq. ft. (Wing loading is found by dividing an aircraft's weight by the surface area of its wing. Generally, the higher the wing loading—in other words, the more pounds each square foot of wing has to lift and carry—the higher the speed at which each pertinent performance characteristic of the sailplane occurs, including the speeds for maximum L/D, minimum sink, and stalling.)

Still other designers are adherents of camber-changing flaps, and it does appear that small, plain flaps—when carefully designed—have the potential for providing small lift increments (that is, they increase the lift coefficient*) with acceptable drag penalties; while slotted flaps allow larger size and deflection, but still with an acceptable drag increase (any increase in lift is always accompanied by some increased drag). The main idea in either case is to permit tamer performance in the form of slower, tighter circles while thermaling (allowing the sailplane to remain in the better part of the lift); although, it is conceivable that a sailplane's minimum sink might be marginally improved. Such flaps, of course, are also used to control the angle and rate of descent while approaching to land.*

The variable-geometry sailplane is a sidetrack from the mainstream of development. It attempts to increase inter-thermal speeds by using a high wing loading while cruising in a straight line (flap retracted). Yet at the same time it seeks to be able to thermal efficiently by deploying its extensible flap to increase its usable lift coefficient and to increase its wing area *(thus reducing its wing loading).*

The big questions are whether the extension of such a flap will increase both the profile drag and the induced drag to a point that raises the sinking speed prohibitively and whether the weight of the flap system will cancel too much of the lift augmentation.

The following article summarizes two giant strides along the variable-geometry line of endeavor and may stand as an historic turning point in sailplane development. BRUCE H. CARMICHAEL



The Case for Variable Geometry

BJ-2 plus BJ-3

BY PAT BEATTY AND FRITZ JOHL

The BJ-2 was designed and built especially to exploit Fowler-type flaps, which vary the *area* of the wing as well as its camber and which have a slot for boundary-layer control.

Fritz Johl started serious design work on the machine in 1954, and the BJ-2 first flew in December of 1960. The ship is of fairly conventional, wooden construction and has a Fowler-type flap of 25% chord, extending over 30 ft. of the span. This increases the wing area from 125 sq. ft. to 144 sq. ft. and decreases the wing loading from 7.2 lbs. per sq. ft. (clean) to 6.2 lbs. per sq. ft. (flap extended).

Flying clean at 7.2 lbs. per sq. ft., the machine has very good high-speed performance; while in the normal climb configuration with 20 degrees of flap it has a stall speed of about 33 knots and is thermaled normally between 40 and 45 knots. For our strong South African conditions, this has proven excellent, and the BJ-2 was able to dominate South African gliding for five years, winning three national championships in a row and setting a number of world speed records.

Furthermore, the ship has demonstrated that it is both strong and serviceable, and it has probably been flown faster in rough conditions than any other sailplane. Boet Dommisse often flew it at 160 knots indicated *in rough air* (way above its Velocity Never Exceed speed).

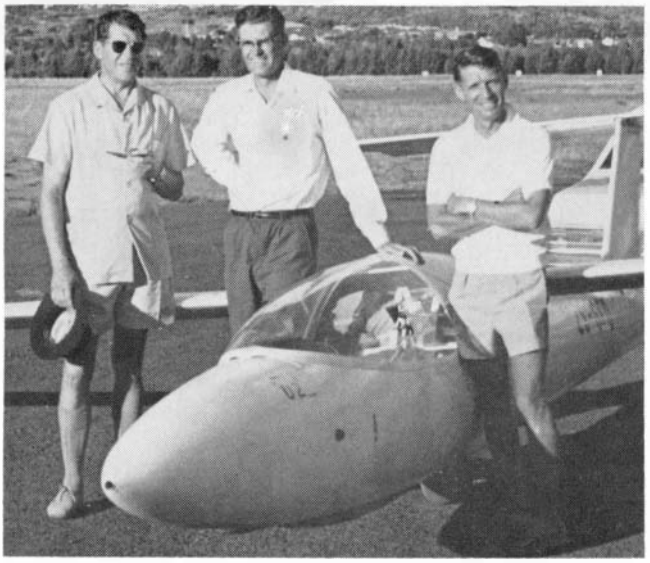
The BJ-2 has often been referred to as a specialized racing machine and a "lead sled" specially constructed for South African conditions. True, it was built for South African weather and would obviously have been designed with a lower wing loading for use in weaker European-type conditions, but the ship is not by any means a specialized racing machine. With flaps out, it is in fact most docile and even comparatively slow, normally being thermaled at lesser speeds than the Austrias, Darts, etc.

The BJ-3 was naturally an attempt to go quite a lot further in the quest for higher inter-thermal speeds at better glide angles, while at the same time we hoped to improve on the BJ-2's climb performance.

To achieve better high-speed performance, the wing thickness was decreased from the 18% of the BJ-2 to 12%. The fuselage cross section was reduced by putting the pilot in a semi-reclining position and running all controls along the cockpit side. And the BJ-2's retractable wheel-and-skid unit was scrapped in favor of a conventional fully-retractable wheel.

To improve the low-speed performance, the flaps were increased in span and area; they are now 36.5%

Both of the above photographs show the BJ-3 (notice in the smaller photo that the flap is down). All the drawings for this article, including the ones on the lefthand page were executed by Lynn Christensen.

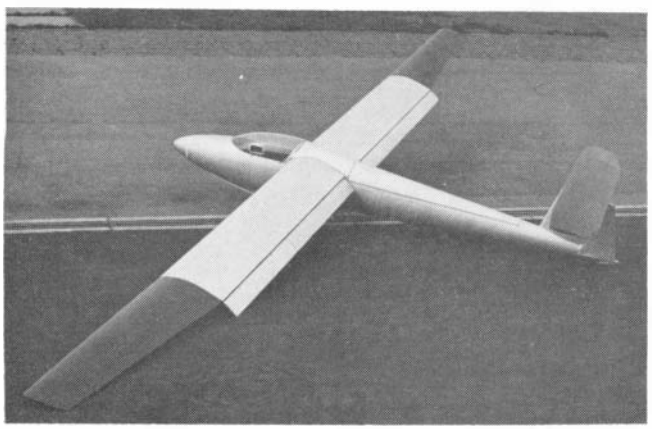


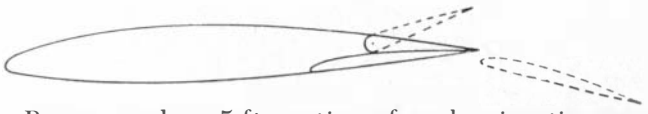
Gathered around the BJ-3 in a rare meeting are (left to right): Fritz Johl (designer), Pat Beatty (designer/builder), and Maurice "Bomber" Jackson. On December 28, 1967, Jackson flew the BJ-3 around a 500-km. triangle at a speed of 135 kph (83.7 mph), which—when homologated by the FAI—will replace American Elemer Katinszky's world record of 121.4 kph (75.4 mph), set in a Libelle last summer at Twentynine Palms, Calif. Data reduction from the barogram of the record-breaking flight shows that Jackson achieved an average inter-thermal speed of 152 mph! After Jackson's brilliant flight, Beatty then used the BJ-3 to win the South African National Gliding Championships in a convincing manner, during which he posted a 500-km. triangle at nearly 125 kph (also above Katinszky's recognized standard). Frustrated competitors in the championships dubbed the ship "U2" (note the lettering inked on the nose by an anonymous jokester). (For more details concerning the contest, turn to page 6.) As an added footnote, B. G. Pautz of South Africa reports that the BJ-3 has external airfoil ailerons which droop in sympathy with the flaps to give virtual full-span lift augmentation in the low-speed configuration and that Beatty and Johl plan to produce a new fuselage offering reduced drag (preliminary drawings have been started and are slugged "BJ-3½"). It appears that matters are not going to get any easier for the competition.

chord and extend 42 ft. along the BJ-3's 56-ft. span (so that the flap area of the BJ-2 was exactly doubled).

The other major design change was the fitting of dive brakes. Originally, the BJ-2 was fitted with fuselage dive brakes which proved inadequate and were discarded in favor of two cruciform tail chutes. After a very great deal of design work, it was found possible to employ conventional dive brakes on the BJ-3. Two units per wing panel are fitted so that the lengths of the covering plates are only 2 ft. But the total dive-brake area is 8 sq. ft., which has proven very effective.

The BJ-2 with its flaps extended; the movement is designed so that the first 80% of travel gives only an increase in area, while the last 20% changes the flap angle to a maximum of 30 degrees.





Because only a 5-ft. section of each wing tip was left for a conventional aileron, an inboard aileron —like an upper-surface split flap—was built over the outer 5 ft. of the flap, the control linkage being so arranged that the aileron only moves upward and not downward at all (highly differential). This also means that this aileron is locked in the neutral position and thus does not need mass balancing.

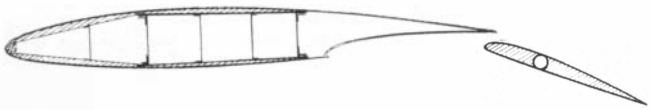
The main object of employing variable geometry to such an extent is, of course, to improve performance either at the low-speed end or at the high-speed end or both. In the case of the BJ-3, as it is flying at present, the clean loading is 8.1 lbs. per sq. ft. and this drops to 6.1 lbs. per sq. ft. with the flaps out. This may seem high to persons thinking in terms of unflapped sailplanes or even of ships with plain flaps, but it must be remembered that a maximum lift coefficient of over 2 can easily be obtained with a very large Fowler flap, and as a result the BJ-3 has a stalling speed of only 33 knots with 20 degrees of flap. Therefore, the normal speeds for thermaling and landing are lower than those of many high-performance machines.

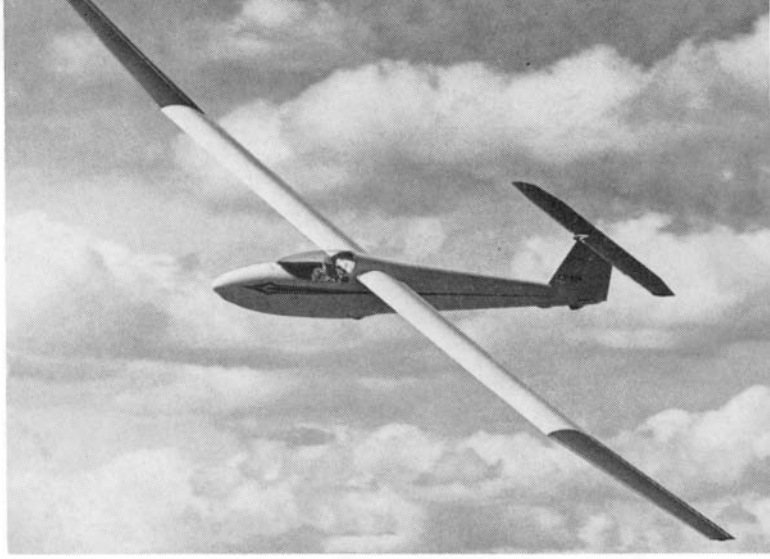
Apart from the performance aspect of things, there are two very important advantages enjoyed by the variable-geometry machine that are not so obvious:

1. A higher maneuvering (rough-air) speed results from the higher wing loading of the VG sailplane and from the fact that the normal (clean) wing section is a no-compromise minimum-drag-at-high-speed section that is incapable of developing high lifts in the clean configuration. If, for instance, one assumes an acceptable rough-air limit or maneuver speed to be 2.5 times the normal stall speed (giving a maximum g-loading of 6.25 before a gust-induced stall), the BJ-3 (stalling at nearly 45 knots clean) would have a safe speed of 112 knots, where the normal machine (which usually stalls around 32 knots) would be limited to 80 knots. This is an important point not only from a safety angle but from the point of view of the pilot's comfort and peace of mind.

2. Less finicky design and construction work and a more rugged final structure result from the increased weight that is necessary if the VG machine is to achieve high L/D at high speed. Typically, the VG sailplane would have at least a 2-lbs. per sq. ft. greater wing loading than its unflapped contemporary, which means that 250 to 300 lbs. are available for extra structural weight, ballast, or disposable load.

In regard to the BJ-3 wing, the use of a 12% section results in a root thickness of under 4 inches (3.96, to be exact), and the 56-ft. span gives a cantilever ratio in excess of 84:1—which is believed to be the highest ever successfully used on an airplane. This naturally resulted in some new thinking on the structural side and practically ruled out the use of fiberglass because of its low elastic modulus. In fact, the wing was designed to a flexural limit rather than to a strength limit. This means that a great deal of material is redundant from the point of view of strength, but this fact could be used to advantage by employing lower-strength (cheaper) alloys which have the same Young's modulus.





The BJ-2 in flight.

The accompanying drawing shows the type of structure used, and it can be seen that it is basically very simple, having been fabricated without the use of complicated bending equipment or any kind of assembly jig. The whole structure is made from 2024 T3 Alclad sheet, with angle extrusions of a similar material. The varying bending loads along the span were taken care of by laminating sheets of aluminum (using an epoxy-resin adhesive) so that the plate thickness of the spar as such varies from ⅜ of an inch at the root to 1/32 of an inch at the tip, with a constant width of 10 inches.

The profile shape (using the NACA 66_1-212 airfoil section) was attained by bonding high-density polystyrene foam to the structure with an epoxy resin and then machining it to an accurate profile with a specially made sanding roller. The final covering was made with 6-oz. glass cloth. Since the whole profile was machined, it is extremely accurate (as accurate as the guide for the machining jig), and the finish is good and buckle-free. The leading edge has been toughened to take care of possible hail damage, and the only snag would seem to be that the surface is not hard enough to take a man's full weight on the elbows.

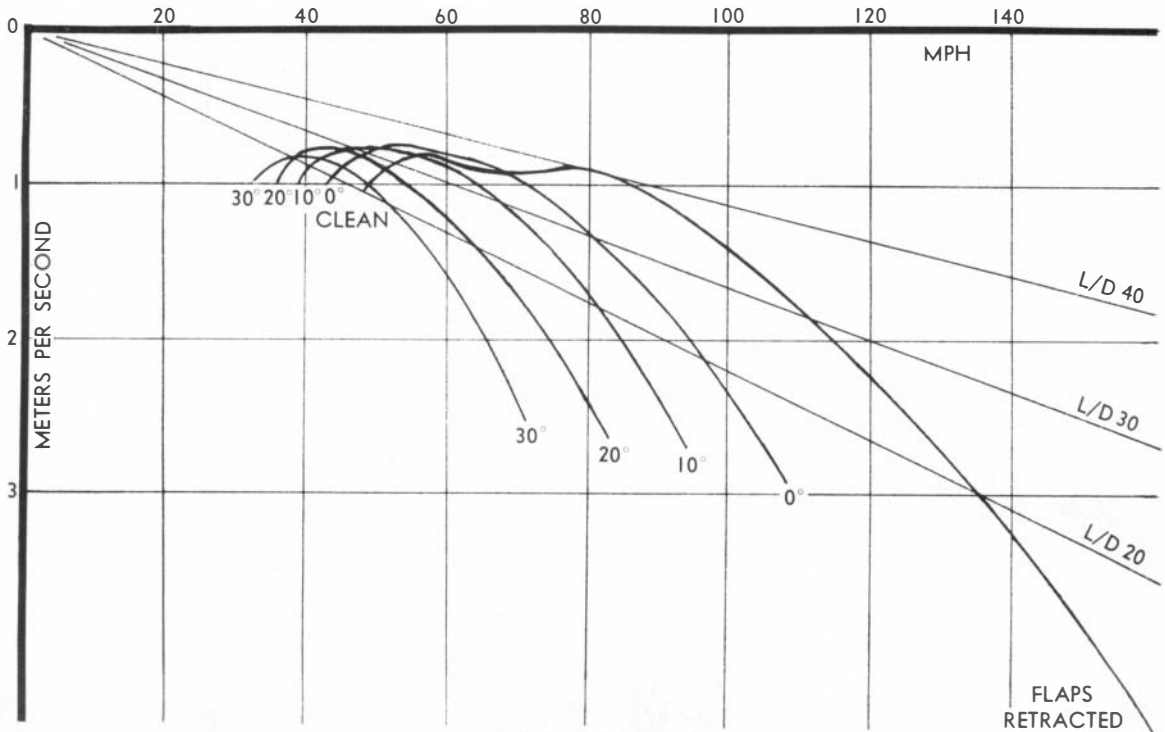
The flaps have a steel tube spar of 1-inch diameter .040-inch X4130, which takes the bending and torsion loads and to which the operating arms and rollers are welded. This tube was cleaned and spirally wrapped with fiberglass tape bonded to the metal. To this tape, the leading- and trailing-edge sections, premachined from high-density polystyrene foam, were bonded; and the whole outer surface was covered with 4-oz. glass cloth. The flap has a 12-inch chord and is built in four 10-ft. lengths. It is moved in and out by a torque tube operating eight racks to which the flap is attached. (Details of the flap operating system will not be gone into, for though both systems have proven satisfactory—different systems were used on the BJ-2 and BJ-3—neither is considered to be in any way a final answer, although a very great deal of thought and design effort were necessary in both cases.)

The large cavity formed in the underside of the wing with the flap extended caused some disappointment in relation to the BJ-3's sinking speed. A modification was made to fair this opening over when the flap is out, and the circling performance has been greatly improved as a result.

The rest of the structure is very mixed. The rear fuselage and fin are of a conventional metal design, while the front fuselage (forward of the leading edge of the wing) is fiberglass. The tail plane, elevator, and ailerons are all-wood. And the upper-surface ailerons have a steel tube spar, wooden ribs, and a fiberglass covering.

This may seem a terrible mixture, but each material has advantages under particular conditions. Thus, the front fuselage was built of fiberglass because this made it easy to get the double curvature and smooth profile desired; and the metal in the rear half makes the stiffest structure, one that is easily fabricated and that can be reliably stress analyzed. The joining of the metal and fiberglass was done with conventional 3/16-inch aircraft rivets, using very conservative bearing loads and rivet spacing; and the whole lot was riveted and epoxy bonded at the same time. Particularly for one-off jobs, wooden structures would still seem to have advantages in the ease and simplicity of fabrication. And by using epoxy-resin adhesives and paints, these structures can

Performance of the BJ-3 at various flap settings.



be made waterproof and with a finish that is comparable to that of fiberglass structures.

But just as there are some advantages to the VG sailplanes that are not obvious at first glance, so are there disadvantages as well. Where the extra weight of the VG machine is of benefit structurally, the sheer physical heaviness of the components presents a ground handling problem. The wing panels of the BJ-3 each weigh very close to 300 lbs. Consequently, it has been found essential to use the trailer as a rigging tool in order to support the weight of the wings during rigging and derigging. This system works pretty well in practice, and the BJ-3 needs only a two-man crew, providing the trailer can be taken to the sailplane.

From the pilot's point of view, finding and centering lift in a VG ship is undoubtedly more difficult than with an unflapped machine (or even one with plain flaps). Apart from the difficulties caused by intercepting thermals at higher speeds, the transition from clean to climb configuration takes some physical effort (six strokes of a lever on the BJ-3), and this is inclined to upset one's flying just when it should be most accurate and precise. There is also a slight trim change, accompanied by a considerable attitude change; and for some reason that is not yet clearly understood, the variometer readings seem to be unreliable for about ten seconds after transition. We tend to fly the BJ-3 pretty much as a two-speed airplane: 40 to 45 knots while climbing, and 75 knots upward while gliding.

We believe that the performance curves reproduced with this article are reasonably accurate. Though they are 90% theoretical, a few points on the high-speed end have been fairly well confirmed during flights with the BJ-3. It can be seen—particularly with 20 and 30 degrees of flap—that the curves have rather sharp peaks and that performance falls off rather quickly with increased speeds. It thus seems necessary to control the airspeed very accurately while climbing. Incidentally, the flaps are structurally safe out to the ends of the performance curves, and the hump in the clean-configuration curve is associated with the lift-coefficient range for the maximum laminar flow for this particular airfoil.

With the flaps out, the VG sailplane still loses more height recentering lift and searching for lift than the conventional machine does. Our experience is that the VG ship climbs particularly well in strong, rough thermals, but that it is at a disadvantage when the lift is weak and broken and when constant maneuvering is necessary to achieve a maximum climb. The high inertia about the longitudinal axis probably accounts for some of this. [For a more detailed account of flying the BJ-3, read Pat Beatty's article in the April, 1967, *Soaring*, describing his world speed-record flight for the 300-km. triangle.—Ed.]

As a final comment, we are rather surprised that we have been able to design, build, and fly a second-generation VG sailplane without anyone else climbing on the bandwagon. Performance-wise, we feel that—at least in strong conditions—the BJ-3 will have the same small-but-definite advantage over the BS-1's, AS-W 12's, etc. as the BJ-2 had over the Austria S. Looking at all the new self-styled super sailplanes from various different countries, one has the feeling that these models have gone about as far as they can go, whereas the development of the VG sailplane has only just started.

Regional Ramblings

3 The **Genessee Valley Soaring Club** is the latest group to form in Region 3; most of the members come from the Rochester area, and they plan to fly at Brockport Airport. Also, a new commercial soaring operation has been started by **George Van der Mark** near Ithaca, N.Y. It's called **Skyhook Lodge,** and a mountain-top strip has just been completed. **Paul Schweizer** says that the plans for the 35th National Soaring Championships at Harris Hill are well underway. Ten 150-hp Super Cubs are assured of being on hand—six of them courtesy of Piper Aircraft. This will be the first Nationals in which all the towplanes are the same type and model. But mostly Region 3 is still talking about Karl Striedieck's great flight—which shows what can be done when you take a really good look at your own local conditions (instead of dreaming about Marfa and South Africa).

7 On March 30th and 31st, the **Illini Soaring Club** put on its annual safe-and-sane "Spring in the Air" non-show for the general public. Shown below is the club's weather-briefing blackboard, constructed by **Wil Schuemann:**

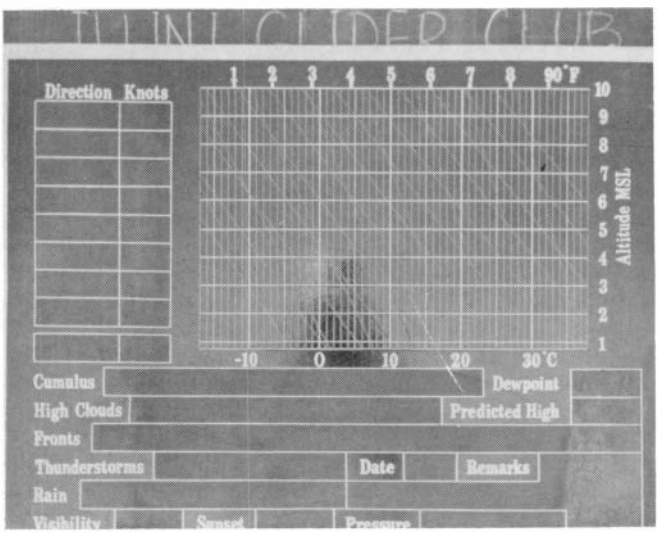


Photo courtesy TOM PAGE

8 **The Boeing Gliding Club** is so pleased with the performance and handling of their new AS-K 13 that they have ordered a second one. **Jack Olson's** biplane glider with the inverted V-tail that was mentioned here last month is still only a model. Called the Gnat, it has a weird beauty all its own; and with its peanut-butter sandwich construction and retractable yaw string, can wealthy backers be far behind? We need more courage like this in soaring.

9 **Ed Minghelli** is planning another "records camp" at Cedar City, Utah, from June 15th to June 30th. The U.S. Weather Bureau will set up a temporary station in conjunction with the flight-service station at the Cedar City airport and will have a meteorologist available at the field to issue forecasts

during this period. There will be three towplanes on hand. Ample motels (for reservations contact **Art Wells** c/o Cedar City Municipal Airport) and camping grounds are available, with the town right next to the airport. And **Frank Kelsey** (AMF 63, Municipal Airport, Salt Lake City) will bring down a 2-32 for anyone who desires to take cross-country dual instruction. Since it appears that Minghelli has lost his world, multiplace, goal-and-return record to **Klaus E. Keim** (flying a Kranich 3 in South Africa on Dec. 29th), both Ed and the big Prue (otherwise known as "the aluminum overcast") will be out to regain their laurels. For more details on the camp, write either Frank or Ed (38714 Sumac Avenue, Palmdale, Calif.). **Roswell, N.M.,** wants next year's Nationals. At the forthcoming Region 9 Contest (June 16-20 at the Roswell Industrial Air Park, formerly Walker AFB), the town expects to prove that it has both the facilities and the weather. There will be *hangars* for all sailplanes and towplanes, repair and recreational facilities, and housing *on* the Air Park (in the dorms of Eastern New Mexico University, room and board $4.50 per day). This looks like a good chance for Westerners to sharpen up their flying *before* the Nationals. Incidentally, anyone willing to help run or work the contest should get in touch with **Hank Godman.** The **Albuquerque Soaring Club's** annual wave camp (Mar. 2-10 at Mountainair, N.M.) was considered a success despite the fact that the weather only cooperated for one day of actual wave soaring. **Ted Nagy,** who is leaving for a year of jet flying in Vietnam, reached 23,400 feet, but **John Wheatly** was high man at 26,000 feet.

Safety Cartoon

Gene Planchak, who does our monthly safety cartoon, has requested that members send cartoon ideas to him c/o SSA.

11 **Mike Stephens** has forwarded the following information concerning the aviation physiology training (described on pages 8 & 9) offered by **Lockheed** at Sunnyvale. Lectures are offered at 7:30 p.m. on Wednesday nights, with laboratory sessions on Thursday evenings. Low-pressure chamber (LPC) runs are scheduled at 9:00 a.m., 1:30 p.m., and 4:30 p.m. each Saturday. There is also a one-day course (lecture, lab, and LPC), and other training and refresher training schedules will be implemented as warranted. A current FAA Class III medical certificate dated within the last year (or its equivalent) is required for LPC runs, and a short physical examination will be given immediately before the runs take place. The complete training costs $30 ($10 for the lecture and lab; $20 for the LPC run). For scheduling write: Aviation Physiology Training, Org. 55/60, Bldg. 151, Lockheed Missiles & Space Co., Sunnyvale, Calif. 94088. Or call: (408) 742-3903 or 742-3668. And speaking of oxygen, when **Hod Taylor** took his SH-1 to 42,800 feet at Colorado Springs a few months back he had to leave the wave while still climbing at 300 fpm because of mask trouble. So he landed, retowed, and got back up to 40,000 feet. **Carl Herold** has rounded up some interesting statistics that seem to indicate that on the average **Sky Sailing Airport** at Fremont is just as busy (in terms of total traffic movements) as San Francisco International. And the only "tower" at Sky Sailing is **Les Arnold** waving his flags. Region 11 has a new seven-member club called the **Cirrus Soaring Club.** In this case, "Cirrus" is more than the club's name; it's also the club's sailplane. We figure a Cirrus should make a nice "club ship" for the members to knock around in.

12 **Fred** and **Georgia Robinson,** who run **Great Western Soaring School,** had occasion to drop by the Society's office several weeks ago. In the course of their visit, one of them casually mentioned that if there was any SSA staff member who had never flown in a sailplane, they would be happy to give that person a free ride. The Robinsons must have been slightly aghast to discover that their offer took in everyone but the editor and the Executive Director. As a result, a week later there was a "Gone Soaring" sign on the SSA front door, while a half a dozen staff members, from **Vickie Clarke** to 60-year-old **Thelma Parker,** were having the time of their lives over Crystalaire—in addition to gaining new insight and enthusiasm for their work. Thanks, Fred and Georgia!

13 (Which is anywhere the other Regions aren't.) In **Canada** last year, the number of active sailplanes (129), the number of hours flown (8561), and the number of cross-country miles achieved (27,275) were all slightly below the all-time highs of the preceding year; however, the total number of flights advanced from 19,205 to 22,256. The Winnipeg area had the strongest growth during 1967. Interesting statistic: the average time per flight for club ships was 16½ minutes, while the average flight for privately-owned sailplanes worked out to 54 minutes. **Dave Webb** and **Charlie Yeates** are taking delivery of a BS-1b and a Cirrus, respectively, in Germany. The two ships will be flown in the World Championships in Poland this summer and then shipped back to Canada. **Peter Riedel,** the great German pioneer of soaring now with Pan Am, reports seeing wave clouds over Hong Kong.

Edited by KEN BRADFORD

SAFETY CORNER

". . . the airspeed was building up, and the more I pulled back on the stick the more the 'g' force increased . . . then I came out the bottom of that still-building cu-nim in a steep, left, descending spiral . . . could have sworn I was climbing to the right!"

That's the beginning of an excellent article submitted by Lt. Col. James M. George, and we present it here—with our thanks for his efforts in setting it down for our education.

THUNDERSTORM

If you're planning to enter the weather arena next summer to battle the thunderstorm, you'd better have your seconds ready with the towel, for the odds are stacked against you. Perhaps you've talked with sailplane pilots who have flown unscathed in cu-nim in quest of a Diamond, or you may even have done it yourself. I have. It can be done, and a few successful (or lucky!) penetrations might cause you to wonder if thunderstorm hazards aren't grossly overrated. They aren't.

There are two important features of these cloud factories: drafts and gusts. Updrafts and downdrafts extend from the bottom to the top of the cloud and may have a horizontal extent of four to eight miles. Updrafts of 50 ft./sec. (3000 ft./min.) are not unusual. The maximum vertical speeds of both the updrafts and downdrafts appear near 26,000 feet. Superimposed upon these drafts are gusts extending from 30 to 300 feet in the vertical. While the drafts produce a systematic displacement of the sailplane—in extreme cases as much as 6000 feet either up or down—the gusts cause that violent pitching, rolling, and yawing so discomforting to those of us who have been sucked into a giant, growing cloud.

The resulting turbulence can be found at any altitude, although usually the maximum frequency of the higher-velocity gusts appears near the freezing level. This means that, on the average, the most severe turbulence lies normally between 10,000 and 18,000 feet. But—and there are always but's when it comes to thunderstorms—gust velocities often show an increase up to within 5000 to 10,000 feet of the top of the cloud. For this reason severe turbulence may be distributed over a considerable portion of the cloud. It is important to point out that the most severe turbulence coincides with areas of heavy precipitation, though this is contrary to what was once thought. Staying out of the heaviest rainfall areas will, therefore, reduce the turbulence to some extent.

All your troubles won't end there, however. As you've been taught, clear icing is supposed to give you more trouble than rime and is found most frequently in cumuliform clouds. This is true—only, here's another one of those but's—but without underestimating the danger of thunderstorm ice, it can be said that it is not a particularly serious threat, *normally*. The reason? You're not normally subjected to icing conditions long enough. Icing does exist, though; a "Thunderstorm Project" sailplane (for the USAF) that was spiraling upward within a thunderstorm iced so badly that the pilot lost all use of his elevators. In this case, the sailplane had been subjected to an icing situation for approximately 12 minutes. [Duke Mancuso, who flew his sailplane IFR in conjunction with the work that won him the Tuntland Award in 1959, recommends that the pilot keep moving the controls to keep them from freezing in one position—or, as Duke puts it, "It helps to tremble a lot."—Ed.]

Now, you have heard a lot about thunderstorm hail. Power pilots have encountered hail as high as 31,000 feet, but as a general rule hail is usually found in the middle of the storm or, to put it another way, in the vicinity of the freezing level. Yet another but creeps in here, for hail *may* be found at all levels and even outside the thunderstorm cloud, itself. Occasionally it is tossed out the side of the storm cloud, but it may also be borne aloft by strong upcurrents and then spewed out of the anvil top to fall through the clear air. Obviously, you can't ignore the threat of hail when you circumnavigate a grumbling thundercloud. Hail damage to sailplanes is common and costly to repair, even though serious structural damage would be rare. Along with hail, there is the possibility of being struck by lightning. Although at one time it was thought that the chances were slim of lightning in cloud striking or doing much damage, recent evidence in Europe has shown that this was an overoptimistic view.

Lastly, caution in landing around or under a thunderstorm should be adhered to. Gusty surface winds caused by the thunderstorm's downrush can completely ruin the best laid plans for a perfect approach and landing.

This all adds up to one fact: any pilot attempting cu-nim flights must know the risks involved and must make a reasoned decision as to whether they are acceptable on each particular occasion. The potential danger of thunderstorms has been proven beyond a doubt. Take the advice of one who has been there: *never enter them by choice!*

MILES COVERDALE

CALENDAR

Items listed in bold-face type are sanctioned by SSA.

May 6, Spring Fling, Harvey Young Airport, Tulsa, Okla., by Tulsa Skyhawks Soaring Club.

May 11-12, 1st Oregon Spring Soaring Meet, Corvallis, Ore., Municipal Airport. (Contact K. Wheatley, 10425 SE Walnut Dr., Portland, Ore. 97266).

May 18-19, So. Calif. Competition Club (S3C) Workshop, El Mirage Field, Adelanto, Calif.

May 18-20, Annual Western Canada Soaring Contest, Innisfail, Alberta (Box 293, Edmonton, Alta.).

May 25-26, OCSA Family Soaring Contest, Skylark Field, Elsinore, Calif.

May 29-June 2, New England Regional Soaring Championships, Sugarbush-Warren, Vt., Airport.

May 30-June 2, Richland Soaring Contest, Richland, Wash.

May 30-June 2, Texas Soaring Assn. Memorial Day Handicap, TSA Gliderport, Grand Prairie, Texas.

May 30-June 2, Memorial Day Soaring Meet, Scottsbluff, Neb.

May 30-June 3, 7th Annual Wisconsin State Soaring Championship, Aero Park Airport, Menomonee Falls, Wis. (contact F. Flood, 5810 S. Honey Creek, Milwaukee, Wis. 53221).

May 30-June 3, Region 6 Soaring Championships and Wright Memorial Glider Meet, Richmond, Ind., Municipal Airport.

June 1-2, 4th Annual Nittany Soaring Club Fly-In, State College Air Depot, State College, Pa. (write 719 S. Garner Street).

June 1-2, 1st Annual Sky Sailors Spring Regatta, Strawberry Hill Airport, Advance, N.C. (contact P. Barber, 2615 Glenhaven Lane, Winston-Salem, N.C. 27106).

June 1-2, Aug. 17-18, 1st Annual El Mirage Soaring Regatta (competition for novices), El Mirage Field, Adelanto, Calif. (contact T. Melsheimer, 22610 S. Western Ave., Torrance, Calif. 90501).

June 6-22, OSTIV Trophy Competition (for best standard-class design), Leszno, Poland.

June 8-9, Connecticut Air Fair '68 (includes sailplanes), Hartford EAA Chapter, Johnnycake Airport, Burlington, Conn. (203) 267-4665.

June 9-23, World Soaring Championships, Leszno, Poland. Practice period: June 2-8.

June 12-22, OSTIV Congress (committee meetings and presentation of technical papers), Leszno, Poland.

June 14-16, Region 7 Soaring Championships (1st half), Lawrenceville-Vincennes Mun. Airport, Lawrenceville, Ill.

June 15-16, 6th Annual Fersommeling, Soaring Dutchmen, Kutztown, Pa., Airport.

June 15-16, Boulder Invitational Soaring Meet, Boulder, Colo. (contact A. Herr, 2900 Tulane, Fort Collins, Colo. 80521).

June 16-20, Region 9 Soaring Championships, Roswell Industrial Air Park (Walker AFB), Roswell, N.M.

June 28-July 7, Soaring Camp, Fancher Field, Wenatchee, Wash.

July 2-12, 35th Annual U.S. National Soaring Championships, Harris Hill, Elmira, N.Y.

July 4, Invitational Soaring Meet, Alpine Gliderport, Yucaipa, Calif.

July 4, Informal Soaring Meet, New Castle, Va., Airport (BRSS, 131 West Kirk, Roanoke, Va. 24011).

July 4-7, North Park Soaring Expedition, Walden, Colo. (Hwy. 230, SW of Laramie, Wyo.).

July 17-27, Soaring Camp, Presidio County Airport, Marfa, Texas.

July 20-25, Region 10 Soaring Championships, Presidio County Airport, Marfa, Texas.

July 20-21, 27-28, 1st Annual BG-12 Contest, El Mirage Field, Adelanto, Calif.

July 23-Aug. 1, 1968 Canadian National Soaring Championships, Rockton, Ont., Gliderport, 7 mi. SE of Galt on Hwy. 8.

July 28-Aug. 2, Sun Valley Alpine Soaring Championships, SSA Region 8 Contest, Sun Valley (Hailey Airport), Idaho.

July 28-Aug. 3, 4th Annual North American 1-26 Soaring Championships, Crystalaire Airport, Pearblossom, Calif.

Early Aug., B. C. Centennial Trophy Competition, Hope, B. C., Airport.

Aug. 10-11, Soaring Camp, Buena Vista, Colo.

Aug. 17-18, Aug. 31-Sept. 2, Region 11 Soaring Championships, Truckee, Calif., Airport.

Aug. 24-Sept. 2, PGC Open House, PGC Gliderport, Perkasie, Pa.

Aug. 24-25, Aug. 31-Sept. 2, Southern California Regional Soaring Championships, California City, Calif.

Aug. 28-Sept. 1 (tentative), 1968 Mid-Atlantic Regional Soaring Championships, PGC Gliderport, Perkasie, Pa.

Aug. 31-Sept. 2, Region 7 Soaring Championships (2nd half), Highland-Winet Airport, Highland, Ill.

Aug. 31-Sept. 2, 14th Annual NESA Labor Day Soaring Contest, Hiller Airport, South Barre, Mass.

Aug. 31-Sept. 2, 1968 1-26 Regatta, Harris Hill, Elmira, N.Y. (There will also be a "family soaring encampment" the week preceding the Regatta.)

Aug. 31-Sept. 2, Black Forest Labor Day Soaring Contest, Black Forest Glider Port, Colorado Springs, Colo.

Sept. 2, Informal Soaring Meet, New Castle, Va., Airport (BRSS, 131 W. Kirk, Roanoke, Va. 24011).

Oct. (dates to be announced), Mt. Washington (N.H.) Wave Soaring Encampment. Contact Allan MacNicol, 46 Leewood Rd., Wellesley Hills, Mass. 02181, for required preregistration.

Sponsors of other events are requested to submit details so they may be included in the Calendar of Events of future issues.

INTERNATIONAL F.A.I. BADGES FOR SOARING

Earned in the United States
Approvals for Applications Received During the Month of March, 1968

DIAMOND BADGES

84. Dean H. Fleming (Intl. #588)

GOLD BADGES

383. Frederic K. Graef
384. Dean H. Fleming
385. Gren Seibels

SILVER BADGES

1372. Jeffrey H. Merian
1373. Hugh M. Bivens
1374. Warren W. Yenney, Jr.
1375. James E. Piper
1376. Roy E. Pomel
1377. Harrison L. Fisher

ALTITUDE DIAMONDS

16,404-ft. gain

Colorado Springs, Colo.:
Alexander D. Bache, Jr.; 1-26
Francis E. Brandon, Jr.; 2-25
Duane W. Clawson; 1-26
Peter K. W. Dang; 1-26
Dean H. Fleming; 1-26
Walter E. Garrard; 1-26
Robert W. Johnson; 1-26
Carl R. Keil; 1-26
Melbourne Kimsey; 2-25
William F. H. Page; 1-26
Richard R. Price; 2-25
Kenneth R. Smith; 1-26
Michael L. Stearns; 1-26
Jack B. Webb; 1-26
Elsewhere:
Gren Seibels; Ka.6CR; Morganton, N. C.

GOAL DIAMONDS

186.4 miles
Gren Seibels; Ka.6CR; Chester. S. C.
Karl Striedieck; Ka.8B; Port Matilda, Pa.

DISTANCE DIAMONDS

310.7 miles
Karl Striedieck; Ka.8B; Port Matilda, Pa.

GOLD ALTITUDE LEGS

9842-ft. gain

Colorado Springs, Colo.:
Alexander D. Bache; 1-26
Paul K. Bauman; 1-26
Francis E. Brandon, Jr.; 2-25
Duane W. Clawson; 1-26
Peter K. W. Dang; 1-26
George E. Elsea; 1-26
Dean H. Fleming; 1-26
Walter E. Garrard; 1-26
John D. Goodlette; 1-26
Frederic K. Graef; 1-26
Robert Hierstedt; 1-23H
Robert W. Johnson; 1-26
Carl R. Keil; 2-25
Melbourne Kimsey; 2-25
Roger L. Mell; 1-26
William F. H. Page; 1-26
Richard R. Price; 2-25
William F. Reuland; 1-26
Wallace B. Sawyer, Jr.; 1-26
Kenneth R. Smith; 1-26
Michael L. Stearns; 1-26
Wynne Thomas; 1-26
(certified to Canada)
Jack B. Webb; 1-26
Elsewhere:
Galt S. Bowen; 1-26; Mountainair, N. M.
Thomas H. Brandes; Libelle; Mountainair, N. M.
George A. Cole; 1-26; Marion, N. C.
Morris A. Kline; Ka.6E; Marion, N. C.
Roy E. Pomel; 1-26; Morganton, N. C.
Gren Seibels; Ka.6CR; Morganton, N. C.
Richard E. Stewart; 1-23D; Warren, Vt.

SSA Seeks Assistant Executive Director

SSA is now looking for an Assistant Executive Director, a person capable of shouldering general responsibility but one who also has the particular ability necessary to communicate effectively with both soaring enthusiasts and the general public. As a result, the position requires someone who is already knowledgeable about soaring, preferably an active sailplane pilot who can speak and write from experience. Ability to write well, spell and punctuate correctly, and present a good impression over the telephone are of the utmost importance. Typing skills, while highly desirable, are not a requirement. However, versatility is certainly mandatory because there are a variety of tasks that must be performed and supervised.

Several months or more may be taken to select the most qualified applicant from among those who apply. Those persons interested in the position (performed at the Society's headquarters in Santa Monica, California) should write to Lloyd Licher, SSA Executive Director, outlining their qualifications and giving details concerning their personal situation which might have a bearing on their possible selection.

The long-term prospects for growth with the Society appear fully as promising as those for soaring, itself.

GOLD DISTANCE LEGS

186.4 miles
Gren Seibels; Ka.6CR; Chester, S. C.

SILVER BADGE LEGS

Dur: 5 hrs. Alt: 3281 ft. Dist: 31.1 mi.
Alexander D. Bache; Alt; 1-26
Paul K. Bauman; Alt; 1-26
Hugh M. Bivens; Dist; 1-23H
Albert F. Boehm; Alt; Ka.6CR
Francis E. Brandon; Alt; 2-25
Duane W. Clawson; Alt; 1-26
Thomas W. Collier, Jr.; Alt; 1-26
Daniel S. Dickinson III; Alt; 1-26
Richard K. Duston; Alt; 1-26
George E. Elsea; Alt; 1-26
Harrison L. Fisher; Dist; 1-26
Guy E. Foster, Jr.; Alt; 1-26
Walter E. Garrard; Alt; 1-26
Robert Hjertstedt; Alt; 1-23H
James F. Jenita, Jr.; Alt; 2-33
Gerald E. Johns; Alt; 1-23G
Robert W. Johnson; Alt; 1-26
Carl R. Keil; Alt/Dur; 2-25
Melbourne Kimsey; Alt; 2-25
Siegfried Knoll; Alt/Dur; 1-26
Roger L. Mell; Alt; 1-26
Jeffrey H. Merian; Dist; 1-26
William F. H. Page; Alt; 1-26
James E. Piper; Dist; Ka.6CR
Roy E. Pomel; Dur; 1-26
Richard R. Price; Alt; 2-25
William F. Reuland; Alt; 1-26
William D. Ruttan; Alt; 1-26
Wallace B. Sawyer, Jr.; Alt; 1-26
William R. Schulz; Dur; 1-26
Harry R. Schuppner, Jr.; Alt; 1-26
Kenneth R. Smith; Alt; 1-26
Michael L. Stearns; Alt; 1-26
Richard E. Stewart; Alt; 1-23D
Richard F. Thomas; Alt/Dur; 2-32
Hugh Townley; Alt; 2-33
Warren W. Yenney, Jr.; Dist; Ka.6CR

INTERNATIONAL F.A.I. BADGES FOR SOARING

Earned in Canada
Approvals for Applications Received During the Month of March, 1968

GOLD BADGES

59. Wynne Thomas

SILVER BADGES

210. Leonard G. Parker

C BADGES

767. Derek Duckham
768. Frank Pellerin
769. Geoff Taylor

GOLD ALTITUDE LEGS

E. Cymbal; 1-23H; Colorado Springs, Colo.

SSA TRAINING PROGRAM

C BADGES

Includes 30-minute flight

3801. Danny Dickinson IV
3802. Raymond D. Graham
3803. Willis F. Powers
3804. Darrel E. Watson
3805. William P. Weightman
3806. Carl A. Ekdahl
3807. Glenn N. Jones
3808. Francis E. Brandon, Jr.
3809. Lorne E. Chambers
3810. Allen R. Dyer
3811. Robert M. Gentry
3812. William R. King
3813. Craig L. Maudlin
3814. Bruce A. Miller
3815. Harry R. Schuppner, Jr.
3816. Margaret I. Smith
3817. Paul K. Bauman
3818. Carl G. Baily
3819. Paul T. Hadley

B BADGES

5-minute flight

David E. Imhoff
Maurice B. Kasen
Michael L. M. Jordan
William Prescott, Jr.
William H. Ward, Jr.

U.S. TEAM FUND TOPS $10,000 MARK

Additional persons and organizations who have made contributions of $5.00 or more to SSA for the purpose of sending the U.S. Soaring Team to the 1968 World Championships (as of March 31, 1968) are as follows:

Lawrence C. Alden
Antelope Valley Soaring Club
George C. Avent
Gregory W. Banak
Patricia Barber
Walter F. Briggs
John M. Brittingham
Leo P. Buckley, Jr.
Mr. and Mrs. F. P. Bundy
Capt. William A. Carnegia, USAF
H. Marshall Claybourn
George E. Coder, Jr.
Lt. Col. Howard R. Ebersole
Freedom's Soaring Thunderbirds
John W. Furrow, Jr.
David J. Garling
Iroquois Soaring Association
H. Wermuth Jensen
Michael Lee McAdams Jordan
Kansas Soaring Association
Edward F. Knight Family Foundation
Hardy M. Ledet
Glen Lovell
Elizabeth and Carleton M. Mears, Jr.
Edward Meidel
Michiana Soaring Society, Inc.
Ludomil W. Morski
Eugene C. Moysen
Leonard A. Niemi
North Bay Soaring Association
Nutmeg Soaring Association, Inc.
Tom Page
J. T. Perry, Jr.
Leonard J. Peterson
Stanley R. Reas
Richard B. Robinson
Gerry O. Siblev
Willmar K. Sick
W. R. Skinner
"Friends from Space General"
El Monte, California
Harry C. Steele
Malcolm D. Stevenson
Richard L. Wood
Allen D. Young

Breakdown of monies contributed to the 1968 Team Fund through March 31st:

$	507.07	from previous Team Fund
	135.29	interest
	307.00	from six companies (av. $51.16 ea.)
	45.00	from three schools (av. $15.00 ea.)
	1703.29	from 28 clubs (av. $60.83 ea.)
	5502.44	from 466 individuals (av. $11.80 ea.)
	2150.12	from 13 individuals (av. $165.47 ea.)
$10,350.21		Total in Fund

WAVE FLIGHTS

Colorado Springs, Colo. (Elev. 7200 ft.)

Feb. 24; Wynne Thomas; 12,700′ to 26,800′ (14,100′); 2-32; to earn Gold alt. and complete Gold badge. (Certified to Canada).

March 13; Alexander D. Bache; 13,400′ to 30,000′ (16,600′); 1-26; 1:35 hr.; to earn Silver, Gold, and Dia. alt.

March 13; Francis E. Brandon, Jr.; 12,500′ to 30,000′ (17,500′); 2-25; 1:44 hr.; to earn Silver, Gold, and Dia. alt.

March 13; Duane W. Clawson; 13,000′ to 26,500′ (13,500′); 1-26; 35 min.; to earn Silver and Gold alt.

March 13; George E. Elsea; 14,100′ to 30,100′ (16,000′); 1-26; 1:40 hr.; to earn Silver and Gold alt.

March 13; Dean H. Fleming; 11,700′ to 28,700′ (17,000′); 1-26; 1:15 hr.; to earn Dia. alt. and complete Dia. badge.

March 13; Robert W. Johnson; 12,000′ to 32,400′ (20,400′); 1-26; 1:35 hr.; to earn Silver, Gold, and Dia. alt.

March 16; Paul K. Bauman; 13,000′ to 28,600′ (15,600′); 1-26; 1:10 hr.; to earn Silver and Gold alt.

March 16; John D. Goodlette; 13,600′ to 24,000′ (10,400′); 1-26; 1:40 hr.; to earn Gold alt.

March 16; Carl R. Keil; 13,800′ to 32,200′ (18,400′); 1-26; 1:35 hr.; to earn Dia. alt.

March 16; William F. H. Page; 12,300′ to 30,000′ (17,800′); 1-26; 1:35 hr.; to earn Silver, Gold, and Dia. alt.

March 16; William B. Reuland; 13,700′ to 26,000′ (12,300′); 1-26; 1:01 hr.; to earn Silver and Gold alt.

March 16; Kenneth R. Smith; 14,000′ to 32,500′ (18,500′); 1-26; 2:15 hr.; to earn Silver, Gold, and Dia. alt.

March 16; Jack B. Webb; 12,300′ to 31,500′ (19,200′); 1-26; 1:45 hr.; to earn Silver, Gold, and Dia. alt.

March 17; Wallace B. Sawyer; 14,000′ to 23,900′ (9900′); 1-26; 2:00 hr.; to earn Silver and Gold alt.

March 25; Richard R. Price; 14,000′ to 30,800′ (16,800′); 2-25; 1:48 hr.; to earn Silver, Gold, and Dia. alt.

March 26; Carl G. Baily; 13,200′ to 32,000′ (18,800′); 2-25; 1:20 hr.; to earn Silver, Gold, and Dia. alt.

March 26; Denton E. Brome; 11,200′ to 29,200′ (18,000′); 1-26; 2 hr.; to earn Gold and Dia. alt.

March 26; Duane W. Clawson; 13,800′ to 31,000′ (17,200′); 1-26; 1 hr.; to earn Dia. alt.

March 26; Peter K. W. Dang; 14,000′ to 30,500′ (16,500′); 1-26; 1:15 hr.; to earn Gold and Dia. alt.

March 26; Melbourne Kimsey; 12,750′ to 32,000′ (19,250′); 2-25; 2:05 hr.; to earn Silver, Gold, and Dia. alt.

March 26; Howard M. Parris; 11,500′ to 31,600′ (20,100′); HP-11; 2:30 hr.; to earn Dia. alt.

March 26; Michael L. Stearn; 13,000′ to 30,000′ (17,000′); 1-26; 1:50 hr.; to earn Silver, Gold, and Dia. alt.

March 26; James R. Walker; 11,700′ to 36,800′ (25,100′); 1-26; 6:10 hr.; to earn Silver dur., Gold dist., and Dia. alt.; and to complete Silver and Gold badges.

March 26; Raymond A. Young, Jr.; 13,400′ to 25,900′ (12,500′); 1-26; 3 hr.; to earn Gold alt.

Elsewhere

Oct. 28, 1967; Richard E. Stewart; Warren, Vt.; airport, 1470′; 5000′ to 15,200′ (10,200′); 1-23; 2:20 hr.; to earn Silver and Gold alt.

Feb. 18; Wilfred Schuemann; Cumberland, Md.; airport, 800′; 4600′ to 21,300′ (16,700′); Libelle; 4:20 hr.; to claim Dia. alt. and completion of Dia. badge (disallowed because of barograph malfunction).

April 6; Alfred O. Herr; Longmont, Colo.; airport, 5047′; 11,700′ to 21,000′ (9300′); Ka.6CR; 8:10 hr.; to earn Dia. dist. and complete Dia. badge.

March 3; Roy E. Pomel; Morganton, N. C.; airport, 1300′; 9516′ to 20,932′ (11,416′); 1-26; 1:22 hr.; to earn Gold alt.

RECORDS APPROVED

Maryland; Singleplace Open & Sr. alt., Sr. alt. gain; 18,904′/14,104′; David Haber; 1-23H-15; Oct. 21; Frederick.

Pennsylvania; Singleplace Open O&R; 476.60 mi.; Karl Striedieck; Ka.8B; March 3; Port Matilda.

LONG SOARING FLIGHTS

FLIGHTS BETWEEN 300-400 MILES

March 25; James E. Yates III; 308 mi.; from Boulevard, Calif., to Tucson, Ariz.; 1-23G; 5:31 hr.; try for Dia. dist., Calif. state dist. record, and world dist. to goal (El Paso) record.

March 30; E. Fontaine LaRue; 323 mi.; from Colorado Springs, Colo., to Red Cloud, Neb.; Skylark 4; 6:35 hr.; to earn Dia. dist. and complete Dia. badge.

April 3; Fred Robinson; 312 mi.; from Pearblossom, Calif., to Luke AFB Aux. #6 (near Phoenix, Ariz.); HP-11; 6:30 hr.; to show Bob Wayt it could be done.

April 3; Bob Wayt; 319 mi.; from Pearblossom, Calif., to Luke AFB, Ariz.; Diamant 15; try for Dia. dist.

April 6; Alfred O. Herr; 328 mi.; from 23 mi. SW of Longmont, Colo., to Heartwell, Neb.; Ka.6CR; 8:10 hr.; to earn Dia. dist. and complete Dia. badge.

FLIGHTS BETWEEN 200-300 MILES

March 24; Alfred Herr; 232 mi.; from 15 mi. west of Boulder, Colo., to Bonny Dam, Colo., to Anton, Colo.; Ka.6CR; try for Dia. dist.

March 26; James R. Walker; 205.4 mi.; from Colorado Springs, Colo., to Oberlin, Kansas; 1-26; 6:10 hr.; to earn Silver dur., Gold dist., and Dia. goal; and to complete Silver and Gold badges.

March 30; Thomas G. Beltz; 230 mi.; from Lehighton, Pa., to Asylum, N.Y., and return; 1-26; 6:30 hr.; to claim Gold dist. and Dia. goal.

March 30; Carl R. Keil; 232 mi.; from Colorado Springs, Colo., to Studley, Kansas; 1-26; 5:29 hr.; to earn Silver and Gold dist.; and to complete Silver and Gold badges.

April 2; James E. Yates III; 287 mi.; from Boulevard, Calif., to Red Rock, Ariz.; 2-32; 4:56 hr.; try for Dia. dist., Calif. state dist. record, and world dist. to goal record (to El Paso).

THE SAILPLANE FLEET

NEW SAILPLANES

Otay Aircraft, Inc.; Chula Vista, Cal.; 2-32 (N5729S); 1-26 (N5734S); 1-26 (N5735S); 2-33 (N2462W); 2-33 (N4298W).

Capital Area Soaring School; Leesburg, Va.; 2-33 (N2440W).

Steve Silverman, John Hearn, and **Jim Loveless;** Baltimore, Md.; Phoebus C (N739V).

Bud (H.M.) Wright, Jr.; Los Angeles, Cal.; 2-32 (N5723S); leased to Great Western Soaring School.

Les Arnold Enterprises; Fremont, Cal.; 2-33 (N3481W); 2-33 (N2494W).

James Marske; Costa Mesa, Cal.; Pioneer I (N7910); flying-wing original design.

John Heiser; Kingston, N.Y.; Cherokee II (N340Y).

Tucson (Ariz.) Soaring Club; 2-33 (N5727S).

Stanley W. Smith; Newark, Del.; Phoebus C (N7381).

John D. Ryan; Phoenix, Ariz.; Phoebus C (N1211T).

Martin Teguns; Dallas, Texas; Phoebus C (N7712).

H. Travis Bailey; Rockport, Texas; Phoebus A.

Sport Aviation, Inc.; Wooster, Ohio; RF-4 (N7719).

Minnesota Soaring Club; Stanton, Minn.; AS-K 13 (N3313).

Sioux Soaring Club; Grand Forks, N.D.; L. Spatz III (N9241).

Rocky Mountain Wave Flights; Santa Fe, N.M.; 2-33 (N5711S).

Paul Farr; San Pedro, Cal.; Tern (N1723).

Kutztown (Penn.) Aviation Service, Inc.; 2-33 (N5739S).

Phil Paul; Lancaster, Cal.; RF-4D (N1771).

Thermal Research, Inc.; South Miami, Fla.; AS-K 13 (N1618).

Blue Ridge Soaring Society; Roanoke, Va.; 2-33 (N2454W).

West Bend (Wis.) Flying Service; 2-33 (N5730S).

Harris Hill Soaring Corp.; Elmira, N.Y.; 2-22 (N2417W); 2-33 (N2400W).

Soar Aspen (Colo.) Assn.; RW-3 (N1277).

Great Western Soaring School; Pearblossom, Cal.; 2-33 (N5728S).

Gleb Derujinsky, Jr.; New York, N.Y.; Cirrus (N1194).

GLERC Soaring Assn.; Marietta, Ga.; 2-33 (N5712S).

Gary Flight Corp.; Hondo, Texas; 2-33 (N2495W).

Max Peterson; Newhall, Cal.; Medena (N93167); one of a kind, completed some time ago but not reported previously.

Robert Poling, D.D.S.; Cumberland, Md.; SHK (N7722R).

Lowell Yund, M.D., Wyomissing, Penn.; Libelle (N635X).

Robert Salvo; Woburn, Mass.; Libelle (N1275).

Paul Crowell; Miami, Fla.; Libelle (N1263).

Roger Frank; Caldwell, Idaho; Libelle (N301J).

Ben W. Greene; Elizabethtown, N.C.; Libelle (N174NE).

James Smiley; Kew Gardens, N.Y.; Libelle (N9501).

SAILPLANES CHANGED HANDS

Soaring Society of Boulder (Colo.); 2-33 (N2447W); from Wave Flights, Inc.

Cedar Rapids (Iowa) Soaring Society; 1-26 (N2755R); from Freedom's Soaring Thunderbirds.

SOSA Gliding Club; Rockton, Ont.; 2-22E (was N2745Z); from St. Louis Soaring School.

Ted Teach; Springfield, Ohio; 1-26 (N126D); from Robert Pfleiger.

Orbiter Soaring Assn.; Berkeley, Cal.; TG-3A (N69064); from George Brun.

Otay Aircraft, Inc.; Chula Vista, Cal.; 1-26 (N9867E); from Holiday Soaring School.

Hugh Bivens; Albuquerque, N.M.; 1-23H (N2720Z); from Willard Wiley.

Bob Caley; Columbus, Ohio; 1-19 (N91883) from Charles Kelly.

Jack King; Brown Deer, Wis.; 1-19 (N91809); from Jeff Molid.

John McGonigle; McMurray, Penn.; Ka.6CR (N6188); from Allegany Aircraft Co.

Phillip Glass; Hermosa Beach, Cal.; BG-12A; from Vic Shobridge (was CF-RBN).

Victor Valley College Soaring Club; Victorville, Cal.; Nelson BB-1 (N34919); from Clark Fowler.

Lompoc (Cal.) Soaring Club; 2-22E (N2778Z); from W. T. Bredehoft.

Dr. J. Muxworthy, Jr.; Odessa, Texas; Sisu 1A (N1110T); from John D. Ryan.

James Stamper; Newport Beach, Cal.; 1-23H (N10381); from Bob Semans.

Adrian (Mich.) Soaring Club; 1-23D (N27P); from Loris Charchian.

Orange County Soaring Assn.; Elsinore, Cal.; LP-46 (N178J); from Laister Sailplane Products Co.

J. E. Carrera; Oakland, Cal.; Arrow (N176J); from James Freese.

Knoxville (Tenn.) Soaring Club; Ka.7 (N9820B); from The Vultures.

Central California Soaring Club; Porterville, Cal.; 2-22 (N91832); from Richland Flying Service.

Michigan State University Soaring Club; East Lansing, Mich.; 2-22E (N-2729Z); from Strawberry Hill Soaring Center.

Blue Ridge Soaring Society; Roanoke, Va.; 1-23D (N91865); from Strawberry Hill Soaring Center.

D. C. Aero Supply; Washington, N.C.; 2-33 (N2451W); from Strawberry Hill Soaring Center.

Air Cadet League of Canada; 2-22E (was N9907J); from Strawberry Hill Soaring Center.

29 Palms Soaring Club; 29 Palms, Cal.; 1-26 (N3883A); from O. D. North.

Tidewater Soaring Society; South Norfolk, Va.; 1-26 (N680U); from Joseph Mathias.

Orange County Soaring Assn.; Elsinore, Cal.; 1-26 (N8681R); from T. G. Hayes.

Allan MacNicol; Wellesley Hills, Mass.; 1-21 (N91856); from Stanley W. Smith; this ship used by two previous owners (Smith and Comey) to win Nationals.

Charlevoix (Mich.) Soaring Club; TG-2 (N47904); from Ed Byars.

Warren E. Eaton Soaring Society of Norwich, N.Y., Inc.; TG-2 (N54300); from Joe Perrucci.

Frederick Davis; Portage, Mich.; Ka.8B (N335Y); from Miles Coverdale.

El Paso (Texas) Soaring Society; HP-11; from John Firth (was Canadian CF-URF).

Don Ott; Los Alamos, N. M.; L.Spatz-55 (N7147); from Charles Rockwell.

Joe Harrington and partner; Des Moines, Iowa; Cherokee II (N9575V); from Roy LeCrone.

SAILPLANES UNDER CONSTRUCTION

Ralph Knight, Wayne Newcomb, Henry Ebbett, and **Karl Kurbjun;** Salem, Va.; Cherokee II.

C. M. Williams; Mulga, Ala.; original two-place, auxiliary powered, fiberglass.

Richard Rasmussen and **Fred Lorona;** Whittier, Cal.; Tern.

Al Weymouth and **Dick Edmiston;** Fresno, Cal.; Oldershaw 0-2-4 (two-place); est. compl. 4/69.

J. Richard Coleman; Los Angeles, Cal.; HP-14; just started.

Charles E. Donnelly; Los Angeles, Cal.; LP-49; est. compl. 9/68.

Classified Advertising

The rate for classified advertising is 20¢ per word (or per group of characters). A fee of $8.00 (which includes the cost of engraving) is charged for each photograph (subsequent insertions of the same illustration—$5.00). The closing date for accepting ads is the 10th of the month preceding publication. Send ad, photo (color or b&w), and check (payable to SSA) to:

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SOARING Magazine
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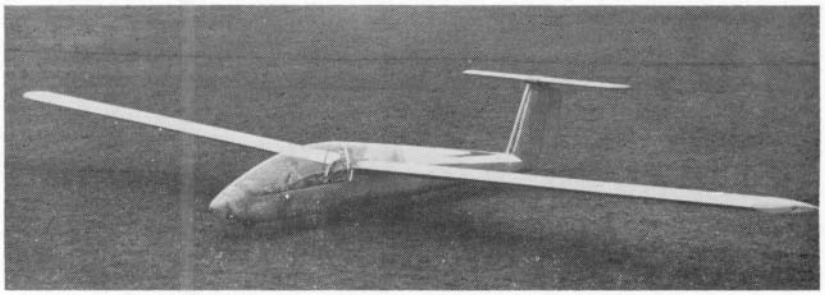


T.53, The new, all-metal, high-performance two-place sailplane from Slingsby. L/D 30, min. sink 2.5 f.p.s., max. gross wt. 1200 lbs., 17-meter span, Wortmann airfoil, both flaps and dive brakes, fully aerobatic. U.S. ATC in process

Western Soaring

Jerry Morris
(408-266-1107)

1234 Washoe Dr.
San Jose, Calif. 95120

SLINGSBY DEALER, WEST OF THE MISSISSIPPI

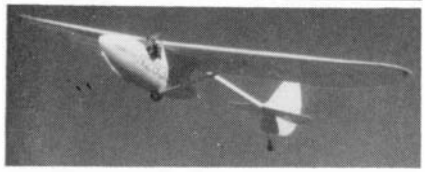
SAILPLANES FOR SALE

GRUNAU 2B, covered trailer, instruments, parachute, towrope, open and enclosed canopy, good condition. $950, or best offer. H. Berg, 1745 Normandy, Windsor, Ont., Canada.

MG-23SL WITH TRAILER and instruments, constant-flow oxygen system, built-in antenna. Has U.S. ATC, T.T. 100 hours, many outstanding features not found in any other sailplane. Sliding canopy, folding tail, adjustable trim tab, quick assembly, easily removable panel, and large storage space. Outstanding handling characteristics and climbing performance, 33:1. Priced to sell at $4500, complete as shown. Bob Klemmedson, 77 El Gavilan, Orinda, Calif. (415) 254-4013.

MUST SELL SUPERIOR competition machine. The SBG-12 (max L/D approx. 38:1), including trailer and instruments, $4000. May be seen at El Mirage Field. K.A. Stockbarger, 4069 Winona Ave., San Diego, Calif. 92105. (714) 283-3868, eves.

LK-10A. Wings, tail recovered 1965. Fuselage ready for recover. Schweizer trailer, instruments. Make offer. Gray, Painted Post, N.Y. Phone: (607) 962-5924.

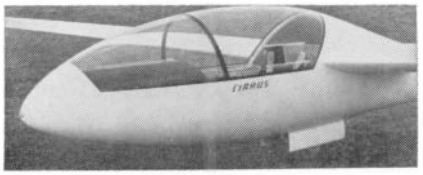


SWEET BABY BOWLUS. This ship holds the world loop record set by D. Stevens. Its light wing loading and optional sport open cockpit make this sailplane a fantastic Fun Ship. Has flown 250 miles X-country. Completely faired-in wing root and tail group give 1-26 equivalent performance with closed cockpit. Upholstered cockpit, white enamel finish with aqua trim. Would like to share this ship with working, licensed, sailplane pilot. Will sell outright for $2200, with chute, trailer, and supplies. Contact Dave Leedy, 1919 Sherry Lane, Santa Ana, Calif. Phone: (714) 543-8803.

REINHOLD STUHR'S beautiful BS-1 is in Los Angeles, ready for immediate delivery. 18-meter span, retractable gear, camber-changing flaps, jettisonable tail-chute. This is a sister ship to Roehm's holder of the 300-km. world record at 85.9 mph. $9000 includes factory-built enclosed trailer and full instrumentation. Buyer pays U.S. import duty. Graham Thomson Ltd., 3200 Airport Ave., Santa Monica, Calif. 90405. (213) 398-4714.

Ka.6CR/PE, 1964, with enclosed trailer. $4500, without instruments. James Struthers, 2601 Sunset Blvd., Minneapolis, Minn. 55416.

Ka.8B, FACTORY BUILT, excellent condition, closed metal trailer, no instruments. $4200 Canadian, total; or $3875 U.S. P. Trounce, 55 Eastbourne Ave., Beaconsfield, P.Q., Canada. (514) 695-1650.



SCHEMPP-HIRTH SAILPLANES: Deliveries to the U.S. of the record-winning Cirrus have commenced, and orders for mid 1969 delivery positions are now being accepted. Also, a few SHK's are still available for 1968 delivery for those who cannot wait until 1969. Parts are in stock for Austria and SHK sailplanes, so let us know your needs. Motorless Flight Enterprises, 125 Farmstead Lane, Glastonbury, Conn. 06033; or 841 Seale Ave., Palo Alto, Calif. 94303.

SHK, LOW TIME, many extras. With super deluxe enclosed trailer. Reduced, $6400. Robert K. Poling, D.D.S., 115 S. Centre St., Cumberland, Md. 21502. (301) 722-6130 or 722-0105.

WON'T SOMEBODY PLEASE BUY poor old Coder's Austria?

AUSTRIA SH-1. Excellent closed trailer, Bayside, instruments, oxygen, and parachute. Excellent condition, ready to go. $7450. Lanier Frantz, Box 1004, Salem, Va. 24153.

SCHWEIZER 1-23H-15, N9860E, Serial #69, new Sept. 1965. Altimeter; Winter 0-150 ASI; 2 variometers: Winter ± 200 fpm, Winter ± 100 fpm, T.E.; compass; clock; electric T&B; air temperature; diluter-demand oxygen (22 cu.ft. with fast-filler valve); custom cushions; and homemade trailer. Original list, $6977. Available immediately, $5800. Sailplane at Plumb Island Airport, Mass. Al Speckman, (617) 465-9214; 39 Toppans Lane, Newburyport, Mass. 01950.

FACTORY BUILT 1-26, S/N 104. F/G nose, floorboard, stick boot, matching vinyl-covered airfoam seats, arm rests, and side pockets. Two extra air vents, clear aft canopy, metal deck, retrofit wing-tip wheels, swivel tail wheel, standard Schweizer instruments. $2995. Bernie Golden, 506 7th Ave., Ashbury Park, N.J.

1-26A, #203, EXCELLENT. With trailer and tip wheels, $3000. Bill Wiley, 215 Wessex Hills Dr., Coraopolis, Pa. 15108. (412) 264-8757.

SSA POLICY ON ADVERTISEMENTS FOR SAILPLANES

It shall be the responsibility of the advertiser to speak up for the ATC status of any sailplane offered for sale in *Soaring*. If any advertisement does not specifically state "U.S. ATC," the reader shall be free to unhesitatingly infer that the particular sailplane in question has not been awarded government approval and that therefore it may only be licenseable in the Experimental Category under F.A.R. 21. Prospective buyers are urged to check into this matter closely before making any purchase.

NEW MODEL 1-26D. $350-$450 under delivered cost. The new 1-26D features balanced dive brakes, all-metal cockpit and nose section, increased gross weight, and lower fuselage profile. This ship includes tip wheels, metal turtledeck, fin fairing, air vent, wheel cover, airspeed indicator, floor and stick boot, and swept tail. $4490. Ship available August 5, and will deliver Texas to Calif., south of Denver. Radio and additional instruments installed free; trailer available. Southwest Soaring Enterprises, Inc., P.O. Box 175, Rockwall, Texas 75087. (214) 722-4474; 722-8819.

FACTORY BUILT 1-26, #263, loaded and ready to fly. F/G nose, floorboards, boot, clear aft canopy, PZL vario with T.E., Moore electric audio with T.E., turn and bank, elapsed-time clock, altimeter, airspeed, G-meter, Cook compass, oxygen, Replogle barograph, trailer, parachute. $3900. With Mentor TR-10XA and VOA-6 Omni, plus Brittain turn coordinator, $4600. Edward Hays, R.D. #1, Frankfort, N.Y. (315) 894-2365.

1-26A, #30. Instruments, trailer, always hangared. $3050. Mac Snyder, 19365 Melinda Circle, Saratoga, Calif. 95070. (415) 253-8734.

SCHWEIZER 1-26 with instruments and trailer. $2950. Ted Dahmus, 3101 Willow, Granite City, Ill. (618) TR 7-4520.

DIAMANT 15-m (Libelle wings), oxygen mounts, Bayside installation kit, antenna, structure thermometer, spare-parts kit, flaps, dive brakes, retractable gear, 39:1 L/D, ATC'd. Ordering hotter ship. Thunderbird Soaring, 1037 Thunderbird, Cincinnati, Ohio 45231.

1967 DIAMANT. Serial #10, 50 hours, oxygen system, accelerometer, 8-day clock, 2 airspeeds, altimeter, Hornig electric, also Moore electric variometers with audios, 2 PZL, total energy variometers, 90-channel Bayside, 3-channel ground unit. Also Bayside omni, new parachute, Cook and B-13 compass. All-metal covered custom trailer. All instruments new since June. Original cost over $13,000. Sell at $9,000, immediate delivery, (713) JAckson 9-4105, days, HO 4-1390, evenings, Houston, Texas.

L.SPATZ, EXCELLENT CONDITION. Always individually owned, with only 58 flights. 29:1, ATC, licensed until October. Outstanding all-metal covered trailer. $3750. Allan MacNicol, (617) 235-8467.

KIRBY GULL, enclosed trailer, tool box, full panel, Switlik chute. See *Soaring*, May '64. Make offer. Tom Smith, Deansboro Rd., Clinton, N.Y.

M-100S AVAILABLE, partnership dissolving. Excellent performance, with instruments and trailer. $3850. Wm. Finnegan, 6-B Wasp Circle, China Lake, Calif. (714) 375-1411, Ext. 74172.

CHEROKEE II WITH INSTRUMENTS, oxygen, and trailer. New dacron fabric ('66-'67). Good equipment and performance for $2500. Ray Proenneke, 3569-D Norton Ave., Lynwood, Calif. 90262. (213) 639-3556.

CHEROKEE II, superb condition, constructed by A&P mechanic. Ceconite cover, bubble canopy, instruments, excellent custom trailer. For details and recent color photo, write: Richard Hlavenka, 3627 E. Hazelwood, Phoenix, Ariz. 85018.

CHEROKEE II, built by a cabinet maker. Ceconite, plywood leading edges. Basic instruments, open trailer, quick and easy assembly and disassembly. Provides endless fun for only $2500 complete. Why pay more for no more L/D in medium-performance class? Jack McCosh, 520 Virginia Ave., Santa Ana, Calif. 92706. (714) 543-1610.

PRUE SS, N7773C. High performance at low cost. Completely equipped for long-distance and high-altitude record soaring. McNay, 13672 Yellowstone, Santa Ana, Calif. 92705.

PHOEBUS. All three versions of the Bolkow Phoebus still available on short delivery schedules. Why wait when you can have your own fiberglass ship for flying this season? A, standard class, 36.7 L/D; B, same with retractable gear, 38.4 L/D; C, 17-meter span, retractable gear, 42.3 L/D. FAA ATC covers A and B versions; German ATC issued for C, with FAA in process. Excellent dive brakes, ample cockpit space for the tall or large pilot. Open, cloth-covered, or metal trailers also available. RAINCO handles everything including factory inspection by our agent, crating or trailer, delivery to German port, shipping to U.S. port of your choice, unloading, customs duty, dock charges, insurance—no paperwork, letters to Europe, insurance claims, etc. to worry about. Write now for our 32-page illustrated brochure and price list. RAINCO, Box 16006, Phoenix, Ariz. 85011. (602) 264-5397.

SISU, only 15 hours since being completely rebuilt by Neimi. 40:1 L/D. $7900 includes trailer; $8900 includes radio and all instruments. Wylie H. Mullen, Jr., M.D., 1003 Black Road, Joliet, Ill. 60435. (815) 722-5204.

BREGUET FAUVETTE, covered trailer, instruments, oxygen. See May, 1964, or February, 1965, *Soaring* for photo and specifications. $3750. Rose Marie Lichter, 12536 Woodbine St., Los Angeles. 90066.

SOLD, as *Soaring* goes to press:

HP-9 WITH EXCELLENT aluminum trailer, large-capacity diluter-demand oxygen system, wing covers, spare hardware, wheel, tires, tubes, and tie-downs. This ship has an L/D of 40 at 62.5 mph, and 20 at 99 mph, with a minimum sink of 2.11 fps at 47 mph (by flight test), comparing favorably with the newest designs. Rugged Schreder metal construction. Straightforward handling and stall-spin characteristics—my son flew it at 15. Excellent dive brakes; Fowler-type flaps increase wing area for climbing. REALLY MUST SELL SOON, because I am going overseas early June. Complete instruments, Peravia, Bayside, and chute also available. Lt. Col. Bob Litle, Box 109, USAWC, Carlisle Barracks, Pa. 17013. Phone: (717) 245-3973.

HP-11, EXCELLENT condition, enclosed trailer. RHI-7, high-performance two-seater; has HP-14 wings and L/D 38:1. Never damaged, enclosed trailer. Also set of HP-14 wings. No reasonable offer refused. Henry Preiss, 3151 Turner Rd., Windsor, Ont., Canada.

HP-11A, PERFECT CONDITION, professional metal work, one year old. 125 hours T.T. With covered trailer, $6500. Walter R. Talalas, 498 Koerber Ave., Akron, Ohio 44314. (216) 753-6708.

HP-14. Bayside 990, instruments, oxygen, and Gehrlein trailer. Phone (212) 879-2248, eves; CO 7-6100, person, days. Bill Clarke.

SKYLARK 3F, covered trailer, instruments, oxygen, barograph, etc. W. Mayow Gilson, 4368 Tiffton Dr., Saginaw, Mich. 48603.

SKYLARK 4, excellent condition, with covered trailer; with or without instruments, oxygen. Will sell completely or will consider partner for Vancouver or Montreal area. Details: Jonah, 8 Brock S, Montreal W; or Maskell, 245 Remembrance, Rosemere, P.Q.

DART 17R DEMONSTRATOR, complete with enclosed metal trailer, instruments and oxygen. $7000. Radio extra. Western Soaring, 1234 Washoe Dr., San Jose, Calif. 95120.

SPRING SALE all sold out except:
SHK
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MAKE US AN OFFER
Have 1-26A, #160, with trailer and fresh license. Buy this trade-in for only $3195. Regency Standby I with eight crystals, nicads, charger, etc., $175. WE NEED USED SAILPLANES: Call or write for our offer. Have you seen the new Schweizer 1-34? We get the first one in the East and have several on order. Also have 1-26D's (new fuselage and dive brakes) and 2-33A's (new balance rudder) on order and in stock. Bayside radios and Winter instruments in stock. Plan on visiting Strawberry Hill this season. Open every day. Located 11 miles southwest of Winston-Salem off 140 on NC 801. Thermal soaring all the time; wave soaring sometimes. "The Friendly Airport." Strawberry Hill Soaring Center, Inc., Box 98, Advance, N.C. 27006. (919) 998-4504, day or night.

TWO-PLACE FOR SALE

SCHWEIZER 2-32, S/N 15. With trailer, dual oxygen (38.4 cu. ft.), electric T&B, horizon, variometer, many extras. A beautiful machine. $10,000. H. A. Light, 214 Lackawanna Ave., Newark, N.J. 07103. Bus. hrs., (201) 621-9144.

2-22E, Ceconite, basic instruments, with trailer. $3500. Write or call: W.L. Mroz, 871 Governors Ave., Dover, Del. 19901. (302) 674-3555.

SCHWEIZER 2-22, excellent condition, $3200. O.D. Landrum, Howard County Airport, Big Spring, Texas. (915) 263-3111; or (915) 267-8893.

2-22C. All fabric (Ceconite) new within last two years. Tip wheels fitted, new canopy glass, never pranged. A fine example of the breed. Being sold because of replacement by a superior bird. With instruments and trailer, $2999. John Rieley, 1401 E. Harrison, #304, Seattle, Wash. 98102. (206) 325-1038.

SCHWEIZER 2-22E, NEW. Test-flight time only. Built by Slingsby Aircraft of England. 2-33 enclosure. $4195. Clarence See Ltd., 730 Cold Springs Rd., Baldwinsville, N.Y. 13027. (315) NE 5-6681.

TG-2, TRAILER, good condition and performance, T&B, PZL. $3000. Bahner, 284 Suffolk St., Holyoke, Mass. 01040.

TG-3A, LICENSED, good fabric, front-seat instruments, trailer. Highest signed bid over $1000. Mid-Western Soaring, 3422 Longwood, Kansas City, Kansas 66014.

WANTED

USED TWO-PLACE sailplane, good to excellent condition, ready to fly. G.E. Rivers, 620 McCully St., Honolulu, Hawaii 96814.

WANTED: HIGH-PERFORMANCE sailplane. Two-place Schweizer 2-33 or equivalent. Lancaster Soaring Society, R.D. 4, Box 427A, Lancaster, Pa. (717) 394-9037.

THREE CHEAPSKATES would like a sound 1-19 or 1-20. Send details to T. S. Momiyama, 2445 Lyttonsville Rd., Silver Spring, Md. 20910.

NEED TWO-PLACE NOW. Will consider anything, but very interested in modified or standard LK. Capt. Ray Creel, 4392 ASG, Vandenberg AFB, Calif.

WANTED: January and Februarv. 1967, issues (one each), *Soaring* Magazine. Richard Cassell, 10911 Weyburn Ave., #207, L.A., Calif.

SPACE WANTED. Starting BG-12B in about six months. Require space to build ship. Would need building or area at least 30 x 20 ft. Call Mr. McDorman, (213) 397-6924, after 2 p.m. and before 6 p.m.

MISCELLANEOUS

WHO CAN TOW A WINCH from North Carolina to Aspen soon? Gliders of Aspen (Box 175), Colo. 81611.

SOARING MERCHANDISE: SSA lapel buttons, 75¢; SSA decals, 3-in. 25¢, 5-in. 45¢, 10-in. $1.50; sew-on emblems (SSA, $1.00; C badge, Silver badge or Gold badge, 85¢); glider-pilot log books, $1.25; sailplane log books, $1.25; barograph seals, 5¢ ea. (min. order is 10); aircraft safety pins, 10¢ ea. (min. order is 10); post cards (B&W photo of 2-32 or color photo of HP-14 or Foka), 10¢ ea. (min. order is 3); SSA Zippo cigarette lighters, $4.50; 7" x 7" SSA glass tray, $2.60; Diamond crown pieces for Gold badges (spinel stones), 1 stone $4.00 2—$6.60, 3—$9.25; coordinates for 9 Wortmann airfoils (see p. 16 of 1-64 *Soaring*), 25¢; binders to hold 12 issues of *Soaring*, $2.50; binders to hold all 10 chapters of the American Soaring Handbook, $3.00; SSA tie clip, $1.75; SSA cuff links, $4.90/set; SSA key ring, $2.50; sailplane checklist/flight-data card, 65¢; 16" x 20" Ektachrome, glossy, color enlargement of HP-14 photo, $15 plus shipping, add $3 for 20" x 24" white, hardboard mounting, 50¢ for matte spray. Californians add 5% tax. Order from SSA, Box 66071, Los Angeles, Calif. 90066.

TUTELOW CREEK CAMPING AREA, Athens, Pa., 15 miles from Harris Hill, 3 miles from Blue Swan Airport (sailplane, towplane, and instruction available). Showers, flush toilets, swimming, and fishing.

SAILPLANE REPAIR SERVICE, custom building and home-builder supplies. Sailplane Associates, Inc., 1023 Kirkwall Rd., Azusa, Calif. (213) 334-6918.

AMAZING BREAKTHROUGH! Thermal Systems has developed a new method for finding air thermals for use in any glider. This system consists of sensors (installed on each wing tip) that are protected from the sun's radiation by special shields. Our remote indicator located in the cockpit indicates which wing is passing through the warmer air (thermal). Called the "Thermal Seek," this system comes in kit form, complete with indicator, wire, and break-apart connections for folding or removing wings. For further information write: Thermal Systems, P.O. Box 7405, San Diego, Calif. 92107.

RADIO-CONTROL scale-model sailplane kits by Graupner of Germany; Schleicher Ka.10, 79″ span, $20; Foka, 102″ span, $33. These superb kits have molded fuselages and plexiglass canopies. Many others to choose from. Write for free illustrated leaflet. Graham Thomson Ltd., 3200 Airport Ave., Santa Monica, Calif. 90405.

GEHRLEIN AIRCRAFT CO. Winches, auto tow pulley, trailers, trophies, jewelry, gifts. THERMAL G RANCH GLIDERPORT—R.D. #4, Hamot Road, Waterford, Pa. 16441.

VISITING HAWAII? Silver "C" duration flight, $35 plus tow. 1-26, 2-22, auto tows, and aero tows. Write: Skysurfing, 45-245 Pahikaua Place, Kaneohe, Hawaii. 96744.

L-19's BUILT from new and used parts. Two-place ships rigged as towplanes with paper work complete. Control tower visibility. Tows loaded 2-22 2000 ft. in 4½ minutes. Price, $11,200. Ector Aircraft Company, 414 East Hillmont Rd., Odessa, Texas 79760.

DELUXE TRAILER FOR 1-26, new, all-metal enclosed, $1000. Crossfell vario, used, $100. Mentor transceiver, all accessories, used, $400. Gonset transceiver for car, 123.3, excellent, used, $250. Electric T&B, Gauting, used, $75. Hamilton, 2435 Woodruff Lane, Arcadia, Calif. (213) 447-5584.

L-5 STINSON, 190 hp. T.T.A. 2150, T.T.E. 325 SMOH; 50-amp, 12-volt generator. Full panel, vacuum pump, and eyebrow lights. Rotating beacon, VHT-3 radio, tow hitch, spare 800-hr. engine and prop. $2500. Simon Gilad, 66 Root St., New Hartford, N.Y. (315) 735-3643.

AUTO-TOW HITCHES, waterproof sailplane covers. See previous ads in April '68 *Soaring*.

SAILPLANE MODEL KITS. Free illustrated literature. Award Miniatures, Box 127, Federal Way, Washington 98002.

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25 MILES FROM SAN FRANCISCO

We specialize in flight training, and our certified instructors are ready to help you, so visit Sky Sailing when you are in the Bay Area.

COVERED TRAILER for two-place sailplane, $400. Lilienthal Soaring Club, 10733 Braddock, Culver City, Calif. 90230. 839-3759.

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Student, Private, and Commercial pilots. Glider Instructors. Glider ratings for power pilots. Examiner on the field. Schweizer equipped, glider rentals and tow services. Lodges. Complete service. Open all year, 7 days a week. See our other ad this issue.
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Box 148, Pearblossom, Calif. 93553
Phone (805) 944-2920 (Any time)

PUT A LITTLE SKY in your life. H. S. "Tommy" Thompson. C.F.I. (714) 494-0154. Box 1103, Laguna Beach, Calif. Weekdays OK.

VISIT PERRIS in the springtime — and more than your spirit may soar. Sailplane Enterprises, Perris Valley Airport, Perris, Calif.

SOARING-SKIING SUMMER CAMP, ages 14 through 18. Three-week sessions, $600; up to glider private pilot. Gliders of Aspen (Box 175), Colo. 81611.

SOAR YEAR ROUND. Send $.25 for information on Briegleb School and BG-12B high-performance sailplane plans and materials. Sailplane Corporation of America, El Mirage Field, Adelanto, California.

COURSES — Complete beginners & power pilots. SUPPLIES — Books, instruments, tow equipment. SALES — Schweizer dealer for Southern Calif. SERVICE — Repairs, wood or metal recovering. Holiday Soaring School, Tehachapi Airport, Tehachapi, Calif. TA 2-3736.

RADIO

BEI. NEW-USED-DEMONSTRATORS. 990, used, $475; 990-5, demo, $600; 990-5, new $695. (Dash 5 = 5 watts + NICADS.) Marine Associates, 311 Main St., Worcester, Mass. (617) 753-1462.

DYNAIR 360-CHANNEL 5-WATT portable factory demonstrator. List price $1109; our special price for this most potent of all portables, only $799 with full warranty. Graham Thomson Ltd., 3200 Airport Ave., Santa Monica, Calif. 90405. (213) 398-4714.

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Many factors are responsible for the popularity of the 2-33. Perhaps the most important one is its versatility. While the 2-33 was originally developed to meet the demand for a good all-around club and instructional sailplane, it has proven to be ideally suited for many different phases of soaring.

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