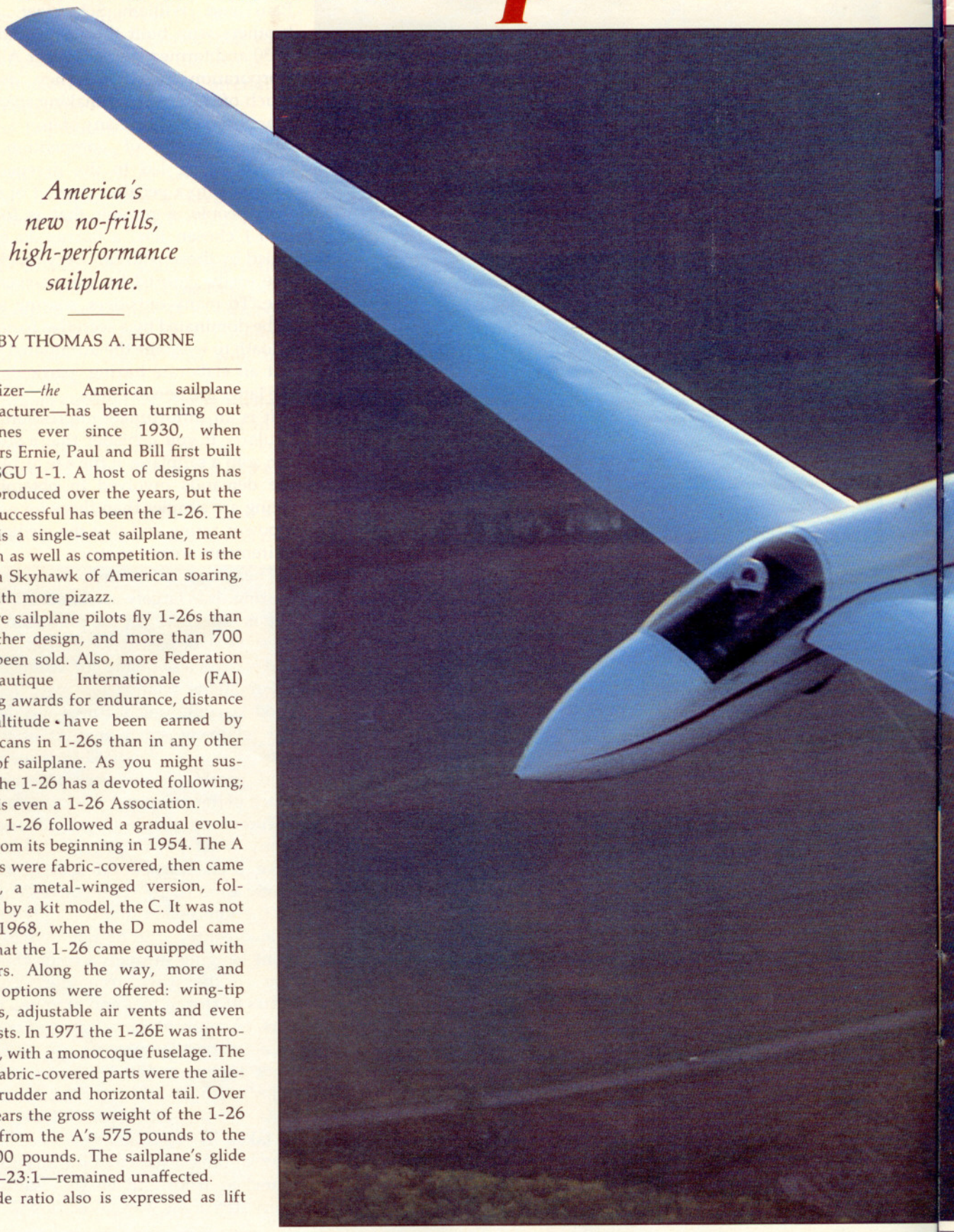
Schweizer Sprite

America's new no-frills, high-performance sailplane.

BY THOMAS A. HORNE



Schweizer—*the* American sailplane manufacturer—has been turning out sailplanes ever since 1930, when brothers Ernie, Paul and Bill first built their SGU 1-1. A host of designs has been produced over the years, but the most successful has been the 1-26. The 1-26 is a single-seat sailplane, meant for fun as well as competition. It is the Cessna Skyhawk of American soaring, but with more pizazz.

More sailplane pilots fly 1-26s than any other design, and more than 700 have been sold. Also, more Federation Aeronautique Internationale (FAI) soaring awards for endurance, distance and altitude have been earned by Americans in 1-26s than in any other type of sailplane. As you might suspect, the 1-26 has a devoted following; there is even a 1-26 Association.

The 1-26 followed a gradual evolution from its beginning in 1954. The A models were fabric-covered, then came the B, a metal-winged version, followed by a kit model, the C. It was not until 1968, when the D model came out, that the 1-26 came equipped with spoilers. Along the way, more and more options were offered: wing-tip wheels, adjustable air vents and even armrests. In 1971 the 1-26E was introduced, with a monocoque fuselage. The only fabric-covered parts were the ailerons, rudder and horizontal tail. Over the years the gross weight of the 1-26 went from the A's 575 pounds to the E's 700 pounds. The sailplane's glide ratio—23:1—remained unaffected.

Glide ratio also is expressed as lift

PHOTOGRAPHY BY THE AUTHOR

continued

over drag, or L/D, and is a measure of a sailplane's ability to conserve altitude as it travels horizontally. The 23:1 figure means that for every 23 feet covered horizontally, the sailplane will sink only one foot. Provided, of course, that the pilot maintains the recommended airspeed for the best L/D.

Strangely enough, the 1-26's L/D is the same as that of the heavier 2-33 trainer. The 2-33's larger and longer wings make this so.

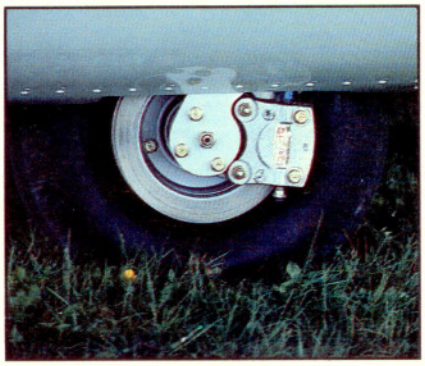
As popular as the 1-26 may be, its production days are over, something that is sure to be lamented by many. In its place, the Schweizers have come out with their latest design—the 1-36, or Sprite. The first were delivered last September, and the company is aiming for a production rate of 50 per year.

"A new sailplane for a new decade," say the brochures, but what they really mean is that the Sprite will perform better at a lower cost than any other comparable sailplane on the market. When held at 46 knots, the Sprite will achieve its best glide ratio of 31:1. This means that the pilot can range over a wider area in his search for lift, enabling him to stay longer and travel farther than he could in a 1-26.

At a base price of $18,750, the Sprite is the least expensive of the Schweizer line. It is probably the least expensive new sailplane in the world, for that matter. When enough Sprites are sold, it is likely that they will form the basis for another one-design-class competition movement. When competition events are limited to one design, it is a pilot's soaring ability that is put on trial, not his capability to buy the fanciest high-performance sailplane. This is what put the challenge in 1-26 competition soaring.

Schweizer SGS 1-36 Sprite
Base price $18,750

Specifications	
Wingspan	46 ft 2 in
Length	20 ft 7 in
Height	4 ft 9 in
Wing area	140.72 sq ft
Wing loading	5.05 lb/sq ft
Aspect ratio	15.15:1
Seats	1
Empty weight	475 lb
Useful load	235 lb
Gross weight	710 lb
Performance	
Best lift/drag (L/D)	31:1 @ 46 kt
Minimum sink	2.25 fps @ 37 kt
Limiting and Recommended Airspeeds	
Stall speed	32 KIAS
Auto/winch tow speed	48 to 52 KIAS
Aero tow speed	52 to 61 KIAS
Va (Design maneuvering)	57 KIAS
Maximum spoiler open speed	105 KIAS
Vne (Never exceed)	105 KIAS



A bare-bones panel is standard on the Sprite: airspeed indicator, altimeter and magnetic compass. For coordinated turns, you can order an inclinometer or install your own yawstring free of charge. Also standard is a choice of either a taildragger or a nose-skid landing gear arrangement. In the taildragger model, the landing gear (a single 5- by 5-inch main wheel with hydraulic disc brake) is mounted in a forward position, and there is a small tailwheel. In the nose-skid model, the wheel is mounted farther aft, there is a skid under the nose and a smaller skid at the tail. The taildragger is recommended for an individually operated Sprite; the nose-skid model is for the rougher use that a club- or group-operated sailplane can encounter.

Many options are available, enabling the owner to expand the sailplane's capabilities, even if it is at the expense of weight. There are battery and radio installations, oxygen systems and

variometers. A variometer is an instrument that detects rising air and presents cockpit information in the form of an audible signal, a rate of climb indication or a rising ball in a calibrated glass tube. A variometer with audio capability runs close to $300, plus an installation charge.

The Sprite's cockpit, while it may look confining from the outside, is really quite well proportioned. Once inside, you settle into a very comfortable seat in a somewhat reclined position. The seat back can be set in one of several positions to allow for a pilot's comfort and size. There is even a headrest, and the length of the rudder cables can be adjusted to accommodate the pilot's legs. It is claimed that a six-foot four-inch pilot can fit comfortably.

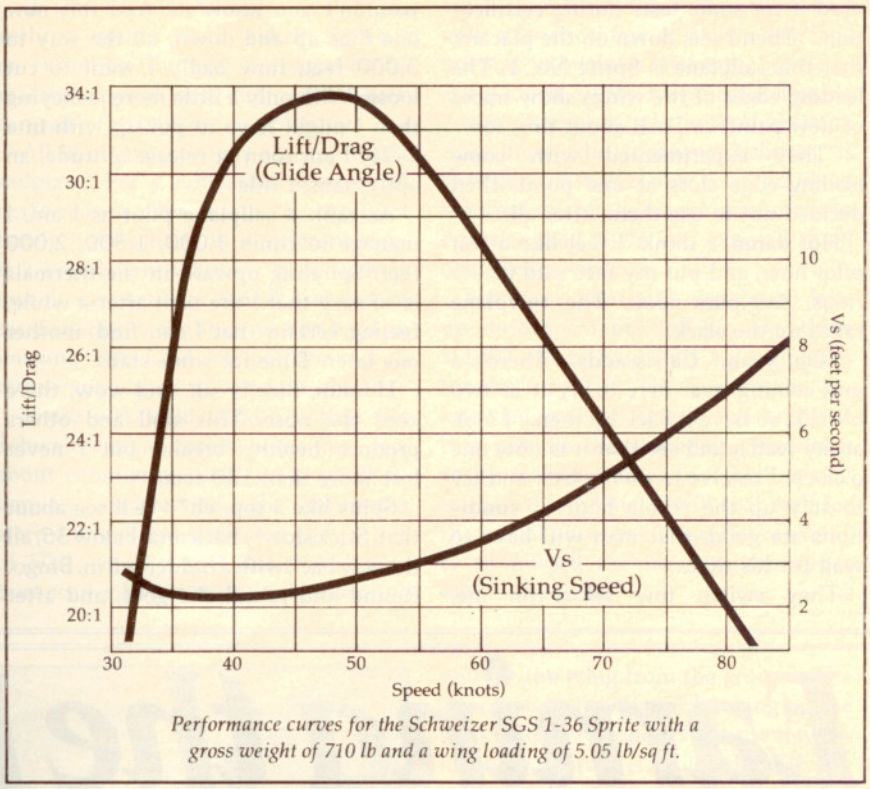
Another noteworthy standard item is the Hooker harness, a high-quality, four-point restraint system with padded shoulder straps. It may not keep your head from hitting the canopy when you burst in and out of thermals, but it—and the high energy absorption design of the cockpit section—will give you maximum protection in case things go awry. The cockpit area is designed to collapse progressively. If you should hit something, the spun-aluminum nose cap will give way first, and from there on the structure provides more and more resistance.

Closing the Sprite's canopy requires some care. There are two locking pins that engage holes in the front and rear, and it is easy to have only one engaged with the latch in the locked position.

The Sprite's controls are more responsive than the 1-26's, so there will be more work on tow. Once you become familiar with the Sprite's handling, though, you do not even notice this greater sensitivity. In fact, you even come to prefer it.

Schweizer has a new, ratchet pitch-trim system that uses a narrow lever in front of the control stick. Squeeze the lever, release, and you have trimmed the sailplane to where you last positioned the stick. This permits virtual hands-off flying should you want it. Still, the stick can be moved in any direction; but if you let go, it will return to its originally trimmed location.

When thermalling, you slow to the Sprite's minimum sink speed of 37 knots. At this speed the Sprite will sink at the rate of 2.25 feet per second (fps). The 1-26's minimum sink speed is 33 knots, at which it will sink 2.6 fps. That turns out to be 135 fpm versus 156 fpm. Not much difference, but every little bit counts. The advantage of the higher speed and lower sink rate is that the pilot is able to work a big, disorganized thermal better. When he goes up, he will go higher; and when he encounters sink, he will scoot through it faster than he would in a 1-26.



Performance curves for the Schweizer SGS 1-36 Sprite with a gross weight of 710 lb and a wing loading of 5.05 lb/sq ft.

Strapped in and tooling along at a mighty 46 knots, it is easy to feel a part of the sailplane. The wings seem to sprout from your shoulders and the visibility is excellent, eliminating any feelings of claustrophobia. Pretty soon you will want to start playing.

Loops, wingovers and spins are approved. The first two maneuvers call for an entry speed of 78 knots, and at that speed it does not take much control movement to get the desired result. For spins, enter with a slow deceleration. The Sprite spins energetically, but do be careful on the pull-out because, as we will see, there probably will be a lot of airspeed in the dive, thanks to the craft's slipperiness. It is a good thing that it is stressed to eight positive Gs and four negative.

Spoilers can be used right up to redline—105 knots—so you can use them to bleed off airspeed or altitude at any point in the normal flight envelope.

In another article in this issue ("Earning the Rating," p. 36), I talked about how I received my glider rating (sound of fanfares). The ink from my solo endorsement was barely dry when Bernie Carris, the examiner-designee, asked if I wanted to fly the Sprite. Up to this time, all that I had heard about it was from the benches where students and pilots idly mouthed what their brains commanded.

"Now *there's* a hot ship."

"They'll never let me in that."

"Heard it spins like a * # @ top."

"Did you see him bounce?"

"Oh, it's a touchy one."

And so on. Why do we listen to things like this? Anyway, my time has come and, fugue-like, I notice my feet walking toward the waiting sailplane. Rumors ringing in my ears, I listen to my checkout. Carris is very blasé. He is gazing off in the distance.

"Well, it's just like the 1-26, really." Then a pause. Just when I think, "That's all?" he says, "It might react a little faster, but, ahh, it's nothing really. You know, 46 for lift over drag, 37 for minimum sink, land at 48 or 52, it doesn't much matter. You won't have any trouble. Go out and do some stalls, get the feel of it. . . ."

By now, I am strapped in. I look down at the panel and see two airspeed indicators, one labeled Forward, the other Aft. How come? I ask.

"Oh, this is our first Sprite, and we

continued

used it for some tests during certification." Then I see, down on the placard, that this sailplane is Sprite No. 1. The leading edges of the wings show traces of new paint, so I ask about this, too.

"They experimented with some leading-edge slots at one point, then decided not to use them, after all."

Hot damn, I think. I feel like a test pilot now, and put my face into its serious, test-pilot look. The towplane takes up the slack.

"Oh, yeah," Carris adds. "There's a guy coming over here to fly it at two o'clock, so have it back by then." I look at my watch and see that it is now one o'clock. I resolve to do my best and try to stay up the whole hour. If conditions are good, that man will have to wait for his ride.

They switch tow pilots on me, wouldn't you know it? And this new one flies up and down, all the way to 3,000 feet; how badly I want to cut loose. With only a little more jockeying than I might have to put up with in a 1-26, I am soon at release altitude, an aptly named title.

As rank a sailplane pilot as I am, I manage to climb 1,000, 1,500, 2,000 feet. Spiraling upward in the thermals is so easy that I tire of it after a while, feeling certain that I can find another one later. Time for some stalls.

Hmmm, nice break, and wow, there goes the nose. This stall and others produce healthy breaks, but I never lose more than 150 feet.

Spins like a top, eh? We'll see about that. Stick slowly back and, below 35, all the way back with a rudder full in. Bingo. Round and round she goes, and after three times I have had enough. Neutralize rudders and stick forward, but *too much* stick forward, as I now notice I am pointed at the Terminator. And what is that loud rushing sound? Mercy me, the airspeed is 26 knots past redline. The internal scream is silenced and the pull-out begun. I lost 1,500 feet on that one, and now I am looking for that thermal I promised myself.

Now I know what they mean by "scratching for thermals." I get 200 fpm here, 100 there, or sometimes only have enough lift to maintain altitude. When I do sink, though, it is not much.

Eventually, I hit one. This sounds like someone banging on the right wing, so I bank hard to the right and see 1,000 fpm up. This goes on for a while and soon I am back where I started.

More thermals come along, so I de-

Earning the Rating

With a few exceptions, the transition to soaring flight comes easily.

BY THOMAS A. HORNE

That whole week, everything became loose and light. In a lot of ways, it was like passing through a time warp into easier, simpler times.

Warping began as I entered the Commuter Air Swearingen Metro. The copilot struggled to shut the door properly, while the passengers—all 18 of us—laughed openly at each repeated attempt. A dead-heading, Commuter Air pilot was sitting nearby. "We call these things 'Sweatros,' " he smirked.

From Washington National we flew over the rolling ridges and the aging communities of the East Coast Heartland. In circa-1950 airports, grandparents and children embraced; later that night they would watch television together. It is home.

First stop, Wilkes-Barre, Pennsylvania. Then on to Binghamton, New York, where, for the next heartland penetration, the ship became smaller—a Piper Navajo, with the VFR code set in its transponder.

In time I arrive at a log cabin in a glade of evergreen trees. This is Elmira, New York, home of the Schweizer Aircraft Corporation's soaring school. They train a lot of sailplane pilots here, and I am to become one more.

Corky Gill is my instructor. About 60 years old, ex-Thunderbirds chief mechanic and slow and deliberate. This week, dozens of times, he will say, "I don't fool around much with power planes any more," with the same kind of arrogance that many serious sailplane pilots have.

On a chalkboard in a side room, Gill draws a map of the local area, and I am given the briefing given to all power pilots taking the transition course. Gill sketches in all the Initial Points (of entry into the landing pattern) on the blackboard: the Twin Ponds, the Mall, and the Rest Area.

A small pamphlet shows a topographic map of the area surrounding the Chemung County Airport. Concentric rings, labeled with minimum safe gliding altitudes, encircle the field.

"Don't go fooling around Harris Hill any lower than 3,000 feet," Gill says. "Our best lift over drag speed will be 50 mph, if we get lucky and find a thermal we'll slow to 42 and try to spiral up, and when we go to land we'll use 60, with spoilers and slips to control our descent angle."

Our trainer is Schweizer's Model 2-33, the most popular trainer in the United States. Almost 600 have been sold since they first came out in 1967. If you decide to get your glider rating, chances are it will be in a 2-33. It seems to be a 1940s design, but looks are not everything. Besides, the 2-33 is strong. As we were to find out.

Preflight is straightforward, with the advantage of the pilot being able—with a few contortions—to see the wing-spar attach points and the aileron-cables bell crank through a hole in the rear of the cabin.

The pre-takeoff check is even simpler: Set the altimeter, adjust the seat, secure the safety harness, close and latch the canopy, see that the controls are free and correct, set the trim, check the towrope and the release mechanism, and then exercise and check the spoilers. Just before takeoff you want to make sure the spoilers are in the closed and locked position.

A thumbs up to the wing assistant means you are ready. He or she then

cide to go as high as I can. I make it to 8,300 feet. Then I look at the watch: 2:30. I've done it. The man missed his ride. Now I know why you see so many more sailplane pilots waiting on the ground than you do in the air. Time to go back down.

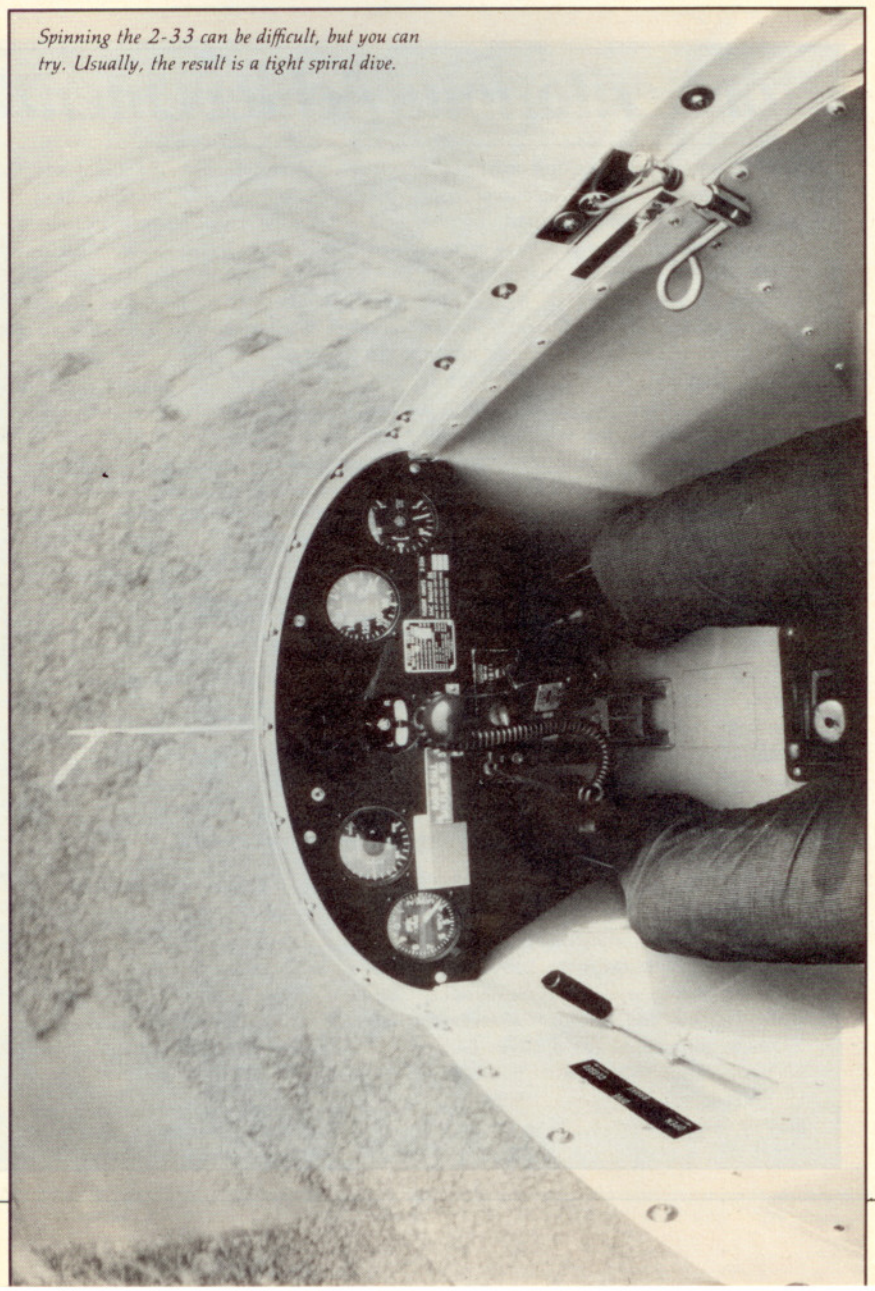
"Elmira Tower, sailplane seven will be landing shortly."

Pattern speed is 57 knots, and you aim for 500 feet agl opposite the point of intended landing. The Sprite is a T-tail, but this makes little difference to the pilot in either the takeoff or landing phase. In the taildragger model, you have to apply a little more back pressure at the flare and touchdown so that the nose does not have a chance to scrape the ground. Make sure the spoilers are deployed when you do this, or you will find yourself bounding back into the air. All sailplanes fly eagerly in ground effect, and the Sprite is no exception. But the concentration on making a good nose-high touchdown can raise the ballooning potential.

All in all the Sprite is an easy-to-fly sailplane. For a substantial increase in performance over the 1-26, the pilot barely knows he is in a different ship. If a brand-new sailplane pilot such as myself can squeeze 8,300 feet out of his first Sprite flight, it is not hard to imagine the kind of performance a more experienced pilot might obtain.

There was mild debate within the Schweizer organization, some time ago, about whether or not to go to an all-fiberglass construction. The Europeans were doing it and achieving glide ratios of 50:1, so why not? But those fancy European jobs are very work-intensive and sell for $50,000. And at that price, only a fanatical few will buy. You cannot stay in business that way, Schweizer reasoned, so the manufacturer made a commitment to stay with aluminum. Aluminum, the company believes, is stronger and better able to stand up to the kind of storage found most often in America: tied down and exposed to all of the elements.

For every pilot who decides to take up serious competition soaring, there are 20 others who only fly sailplanes for the fun of it. The Sprite is an acknowledgment of this. It is a sailplane that permits the student to transition easily from a trainer to a higher performance sailplane, it will soar well for the casual pilot, and it has the capability to reward the more serious types with a Diamond. □



Spinning the 2-33 can be difficult, but you can try. Usually, the result is a tight spiral dive.

THOMAS A. HORNE

will lift the wing from the ground. The towplane inches forward, taking up the slack in the towrope. When the tow pilot wags his rudder he is asking if you are ready to go. You wag back, meaning you are.

The tow is the most aggravating part of learning how to fly a sailplane. My first attempt is pretty sad. When a gust of wind sends us weathercocking, I react. But there is a lag in the response. The ailerons are not very effective at the beginning of the ground run. Or maybe we do not have enough airspeed yet, I don't know. The wing tip whangs the ground hard, and we bound into the air, crabbed and cocked. I am not used to the actions of the control stick and carelessly let the ship settle back to the ground, the towplane already airborne. Another bang as the ship's tire hits the earth sideways. From behind I hear Gill let out a pained groan.

Flying on tow is precision flying, but you will get the knack after just a few tries. My problems on the ground run are quickly identified and resolved. I had the mistaken idea that the sailplane should be held on the ground until the towplane became airborne. You can—and should—lift off before the towplane does. And small control movements are the rule; gross stick movements are out. You make an input, then take it out almost immediately.

On the climbout you gently "walk" the rudders for lateral movement behind the towplane. Normally, you fly in the "high-tow" position, behind the towplane. You know you are in the high-tow

continued

position when the top of the towplane's rudder is lined up with the towplane's greenhouse—the pilot's overhead window. On your third or fourth flight, you practice tow transitions, going from high tow to low tow as you fly a box behind the towplane. You are in low tow when the towplane's elevators and wings are lined up.

When you receive your tow training, your instructor will warn you against allowing any slack in the towrope. This happens when you get careless in a turn or let the sailplane build up too much speed. Then the rope can bow.

Canopy distortion can make you think you have slack in the rope when you really do not. But there is no mistaking a really big bow. These can be dangerous. If the bow is big enough and you are off to the side, the rope can come back around the wing and snare it, with disastrous consequences.

Unless you are careful about slowing down when you take up the slack, the rope can jerk taut. The stress can cause it to break, another bad situation.

It is a relief to pull that big, red knob and be rid of that towplane. Pull—*Bang!*—and you are released. The world becomes quieter as you bank hard to the right and the towplane banks and dives to the left.

Stall and spin practice comes early in the curriculum. The 2-33 stalls at about 29 knots with two occupants, but you hardly notice it. Buffeting is mild, there is no stall-warning system, and you really have to pull the stick back quite abruptly for a decent break. Likewise, achieving a good spin in a 2-33 can be difficult, unless the front-seat occupant is lightweight. More often than not, you will get a spiral dive instead of a spin. Because of its docile stall and spin characteristics, some criticize the 2-33 as being an unrealistic introduction to the kind of stall behavior a pilot will discover in a higher-performance, single-seat sailplane.

On my first instructional flight, we were fortunate. The hills south of the airport were generating ridge lift. When wind strikes any hill or mountain, there will be rising air. You hear some experienced soaring pilots put down ridge lift. "Ah, it's too easy," they say. "You can stay up all day when conditions are like this." But I did not care. It was beginner's joy as I made my figure eights upwind of the hill. Sometimes the needle hit 1,000 fpm, and we made up for—and even surpassed—the altitude lost during the stall work.

After release, everything you do is to improve your situation.

Though dual flights are instructional in nature, this is easy to forget. Licensed pilots generally do not need too much attention from the instructor, and at 5,000 feet agl (above ground level) and 39 knots, there is plenty of time to look around and get the feel of the sailplane. When there is not much talking from the rear, you start to relax and find things out for yourself.

For one, you learn that airspeed control and coordination, while always important, are critical to efficient sailplane flying. You must do everything you can to preserve your hard-won altitude. Slipping, skidding and not adhering to the proper airspeed are good ways to squander your altitude. It will be time to land soon enough.

When we reach 2,500 feet agl, I am told to call Elmira tower and tell them we will be "landing shortly."

Not "15 southeast, level 5,000 with X-ray, squawking 1200." Not "marker inbound, say your current conditions." Just a casual "landing shortly." To which the tower always replies, "Report entering downwind, cleared to land." Sailplanes have the right of way over all other traffic, except balloons.

Power pilots are accustomed to progressively slowing down in preparation for landing. In a sailplane it is the other way around. Just a while ago we were traveling at 43 knots, 39 knots in the ridge lift. For landing we ease the stick forward to 52 knots. Because of fric-

For Meritorious Achievement

There is an informal pecking order within the society of sailplane pilots. Your ranking is determined, in part, by the various soaring badges you have earned.

The lowest rungs on the ladder are represented by the A-B-C Badge Program developed by the Soaring Society of America (SSA) for U.S. glider pilots. The requirements for these badges are as follows: A badge—a solo flight; B badge—a flight during which the pilot soars for at least five minutes above the tow-release altitude or remains aloft for 30 minutes after releasing from 2,000 feet above ground level (agl); C badge—a flight during which the pilot soars for at least 30 minutes above the tow-release altitude or remains aloft for one hour after releasing from 2,000 feet.

The Federation Aeronautique Internationale (FAI) is the Paris-based organization responsible for certifying all official world aviation and space records. Additionally, FAI has established an international badge program. These awards can be earned by the glider pilots of any FAI member-nation, and, essentially, the badges pick up where SSA's badge program leaves off. FAI requirements are appreciably more difficult than SSA's and require applicants to prove their feats by using approved barographs, sealed cameras and volunteer observers.

The requirements for a silver badge are a single flight of at least five hours, an altitude gain in soaring flight of at least 1,000 meters (3,281 feet) and a cross-country, straight-line flight of at least 50 kilometers (27 nautical miles).

Gold badge requirements include a single flight of at least five hours, an altitude gain in soaring flight of at least 3,000 meters (9,842 feet) and a cross-country flight of at least 300 kilometers (162 nautical miles).

FAI also awards prestigious diamond badges. One is awarded for a nonstop, cross-country flight of at least 500 kilometers (270 nautical miles). Another is awarded for a nonstop, cross-country flight of at least 300 kilometers (162 nautical miles) over a triangular or out-and-return course. And one is for an altitude gain in soaring flight of at least 5,000 meters (16,404 feet).

Triple-diamond holders form an especially exclusive and elite group. Only 2,000 pilots in the world ever have distinguished themselves with triple-diamond badges.

Those who have a particular propensity (and the necessary bladder capacity) for long-range soaring are awarded a special FAI diploma after completing a nonstop, cross-country flight of at least 1,000 kilometers (540 nautical miles).

In the late 1940s, Robert Symons, a wave- (mountain-) soaring pioneer devised a unique series of awards called lennie pins for those who rise to truly great heights. (Lennie is soaring jargon for lenticular cloud.) A one-lennie pin is awarded to those who attain an altitude of 25,000 to 35,000 feet while soaring

tion with the surface, wind velocity diminishes the more you descend for your touchdown. At 150 feet agl you may have a 26 knot headwind; at 50 feet the wind could drop to only 10 mph. To compensate for this wind gradient effect, you need extra airspeed to protect against a wind-shear-induced stall close to the ground.

Holding 52 knots in the pattern, look over at the vertical velocity indicator (VVI) and then pop open the spoilers. Instantly you hear the whoosh of the disturbed airflow and see a 1,000-fpm descent rate. Close the spoilers and see the VVI return to its normal 400-fpm descent rate. The spoilers—and slipping—are the key to the proper approach profile. Remember that there will be no go-arounds.

The spoilers must be played throughout the approach, but the judgment needed to achieve the proper, steep angle of descent comes easily to most power pilots. I am cautioned to stay high. A too-high situation can be corrected quickly by slipping with spoilers extended; but if you are too low, well old boy, it's just poor form.

The flare does not take much aft stick pressure at all. Gill says that many power pilots flare too high then drop the glider in. The flare, I am told, should come at about five feet or so above the surface. With the spoilers deployed, you will have no trouble bleeding off airspeed, and, after a while, spot landings become routine.

If you want to dramatically shorten your ground roll, you can do what I did the first time. Pulling all the way back on the spoiler control engages the wheel's disc brake. When you land with the brake on, you do not "roll" very far; take my word for it. The deceleration is impressive, and those four-point, glider safety harnesses (every airplane should be made to have them) came in handy. I was afraid I might have damaged the glider; but instead I was told that the practice of landing with the brake on is acceptable under certain conditions. It does not do those brake pads any good, though.

There were four dual flights the first day and three more the next. On the last one, Gill pulled the tow release at 250 feet agl, simulating a low-altitude rope break. Even at that low altitude, a 180-degree turn to a downwind landing is still possible.

The next three flights that day were solo. For the most part, they were uneventful, except that I did gain 1,000 feet above release altitude one time, and, occasionally, I wound up laughing and talking to myself. The transformation from power- to sailplane-mentality had been so fast, and yet so casual, that it somehow was laughable to be engineless and not worried.

Just about the time I was starting to get attached to the 2-33, they put me into the Model 1-26, a much sleeker single-seater. Now we're getting somewhere, I thought. The 1-26 looked fast, and the thought of just one seat conjured up a Ferrari-dream I once had.

The preflight briefing for my first 1-26 flight consisted of the recitation of a few cardinal airspeeds and warnings about the responsiveness of the controls. But for all practical purposes, the 1-26 behaves much like a 2-33. It was, after all, designed for an easy transition to higher-performance soaring. On tow, your workload goes up because the extra responsiveness keeps you jockeying when you fly at the towplane's 57 knots. But the 1-26's thermal, best lift/drag and landing speeds are only a few miles an hour faster than the 2-33's. Even so, I did not feel that the controls were all that touchy. There is always a lag between the time you make an input and the time something happens.

Stall a 1-26, though, and you will discover a big difference between it and a 2-33. At the stall, there will be an unmistakable break, and a wing always will drop. The 1-26 also will spin quite readily. Once you have started spinning, you must remember that, because the 1-26 is sleek, it will build up plenty of airspeed very fast, if too much forward stick is applied to break the stall. Then you are in the unenviable position of being aimed straight down,

SOARING SOCIETY OF AMERICA

Along the top row, from left to right, are the A, B, C, silver, gold and triple-diamond badges. The "N" means that the pilot is an American. Lennie pins are arranged along the bottom row.

in a mountain wave. A flight between 35,000 and 40,000 feet earns a two-lennie pin, and a climb above 40,000 feet warrants a three-lennie pin.

Those with a competitive nature may want to break a state, national or world sailplane record. But unless intensely motivated and extraordinarily experienced, pilots should shy away from assaulting world records. After all, how many pilots are capable of soaring above 46,267 feet mean sea level, the altitude that was attained in 1961 by Paul Bikle, piloting a Schweizer SGS-123E sailplane. This lofty mark is well above the maximum-authorized altitude of any Boeing jetliner.

Other impressive world marks are Hans Werner Grosse's nonstop, straight-line flight of 788.8 nautical miles and Klass Goudriann's average speed of 94.5 knots around a 100-kilometer (53.4 nautical miles), triangular course.

Those desirous of hurdling less forbidding obstacles might set their sights on one of the 80 different records listed for each of the 50 states. Although many of these state records represent remarkable achievements, many others have yet to be established and pose much less of a challenge. For example, not one soaring record has been set in either Alaska (which, admittedly, is not a popular soaring site) or South Dakota.

For whatever reasons, neither SSA nor FAI have yet to recognize equality of the sexes formally. Each has a separate listing for women's records.

A complete summary of all soaring records is published in SSA's current membership handbook. It is available from the society by sending $5 to Post Office Box 66071, Los Angeles, California 90066.

—Barry Schiff

continued

This is a glider...

NASA

One way to be given the cold shoulder is to walk up to the proud owner of a 20-meter Schleicher AS-W 17 and say, "Gee, what a beautiful glider." Such a remark has the same insulting effect as referring to a Stradivarius as a fiddle.

Technically speaking, all fixed-wing, powerless aircraft belong in the glider category; but soaring purists reserve this generic term for aircraft that usually are not expected to gain altitude in free flight and that have glide ratios (or lift-to-drag ratios) of less than 20:1. A glider designed to gain altitude after tow release is called a sailplane. In other words, gliders glide and sailplanes soar.

The term sailplane seems to have originated from the German, *segelflugzeug*, and was introduced in the United States during the late 1920s by pioneer designer Holly Bowlus.

Since virtually all modern gliders have glide ratios better than 20:1, it is appropriate to refer to all of them as sailplanes. Those with glide ratios exceeding 30:1 are called high-performance sailplanes. A design topping 40:1 is a very high-performance sailplane, and those rarities exceeding 50:1 are known as extremely high-performance sailplanes.

The Schleicher sailplane mentioned earlier has a glide ratio of 48.5:1 and can glide 7.98 nautical miles in still air from a pattern altitude of only 1,000 feet. It definitely is not a glider. —*Barry Schiff*

...and this is a sailplane.

The photo above shows a very sophisticated glider, NASA's Columbia, *a ship with a 4.2:1 glide ratio. At the right is the German-made Schleicher ASW-17, a sailplane with a 48.5:1 glide ratio*

with the airspeed past redline, and facing a very careful pull-out.

The biggest difference between the two models, however, is the performance characteristics. On the third day, the wind died down, and temperatures began to rise into the 80s by early afternoon. Now the terrain was giving rise to thermals—rising columns of heated air. Wheeling over plowed fields, shopping malls and an auto junk yard, I was able to make an altitude gain of 2,300 feet. While this altitude gain is not even worth mentioning to an old hand, I was more than satisfied and managed to stay aloft for all of 45 minutes on one flight.

Before I knew it, I had completed all the requirements for the rating. I had had eight instructional flights totaling two-and-a-half hours, 13 solo flights (you only need 10, according to the Federal Aviation Regulations) for a total of five-and-a-half hours, two checkrides and a flight test. In just four lazy days and eight hours I had my rating in hand.

For those without any prior aeronautical experience, more time is required. The raw neophyte must complete 70 solo flights or fly for seven hours solo. Twenty of the 70 flights must include 360-degree turns.

Very easy, I hear you say. Well, perhaps. But the skills learned are quite meaningful. With no power available to mask your blunders, you suddenly gain a heightened awareness of the value of altitude and the importance of meticulous airspeed control.

Most of all, soaring gives you a unity with the elements and brings out those real-pilot virtures with which all of us think we are born. The wind, the terrain, the weather and the local idiosyncrasies assume grander proportions. The sailplane pilot is someone who is part of these elements, not someone who blasts through them.

Just before I left, they handed me a tiny glassine envelope. Inside was a small, blue button with what looked like three sea gulls on it. It was my "C" badge. Without even knowing it, one of my flights was long enough to qualify me for this little award. It reminded me of Boy Scouts, merit badges and a long-lost innocent sense of belonging.

There is not much to do at night in Elmira. Back in the Holiday Inn, I watched an old *Munsters* rerun and ate popcorn. Every once in a while, I would look over at the badge. □