News from the President
George Applebay

We’d like to thank all those who attended our Fall Benefit Dinner, including those who provided extra donations to help keep the doors open. We especially thank our speaker, Gordon Boettger, who donated his time and transportation to provide us with a wonderful exposition of his long wave flights. We hope he has inspired some of our local pilots to explore the limits.
A special award was presented during the dinner party to Anna Coffer, docent extraordinaire!

This month we showcase the museum’s Schreder HP-18 high performance sailplane. Dick was a good friend and many mourned his passing from the scene. The museum also has his unfinished HP-20, Dick’s last design. His high-speed life is recounted in an amusing book, “10,000 Feet and Climbing,” written by his daughter, Karen Schreder Barbera.

We also include an article we requested from Jim Hoffer on the researching and building of the Stamer-Lippisch Sitzgleiter. We think you will enjoy reading this account.

**Directions to the Museum**

Approximately 35 miles east of Albuquerque on Interstate 40, take Exit 197 onto Old Highway 66 in Moriarty, NM. The museum is the big building on your left.

**HP-18 N897EN**

**Glider History**

This beautiful sailplane was built by Konrad Nierich of Arizona and donated to the museum in 2005. The HP-18 kit (serial number 5) and trailer kit were purchased from Dick Schreder in 1975. Construction time was 2000 hrs in 2 years including the trailer. First flight occurred August 1977. Konrad’s professional background included 10 years as a journeyman toolmaker in Germany, and 28 years as a mechanical engineer with the US defense industry. Prior to tackling the HP-18, he built two boats and flew RC model sailplanes of his own designs and construction for 13 years. As a result, this glider exhibits outstanding workmanship. A photo of this glider (prior to addition of winglets) appears in *Jane’s World Sailplanes and Motorgliders* [Andrew Coates, Flying Books, Ziff-Davis Publishing Company, 1978].

**Richard Schreder, Designer**

Richard E. Schreder (9/25/1915-8/2/2002) was a successful designer and outstanding contest pilot, who designed, built and flew the HP-8 to win the US National Championships in 1958 and 1960. He was also responsible for the innovative HP-10, the HP-11, which placed third in the 1962 World Championships, and the well-known HP-14, and the 15 m HP-18 and HP-18A. The HP-18 was one of the most-successful homebuilts in terms of the number built. Many badge legs were flown in this aircraft. See photo later in this issue from the March 1976 cover of *Soaring Magazine*, and read the article in that issue, “Building the HP-18, Part 1, by Dick Schreder.

Dick Johnson said, "I personally believe that Dick’s gentlemanly flying, brilliant ideas, and low cost kit production for the U.S. gliding movement were, for twenty some years, the single most significant contribution to the American sport of soaring.”

**Construction**

The HP-18 was sold in kit form for home or club assembly. It is an all-metal aircraft with machined aluminium spars and precut hard foam ribs spaced at 10 cm intervals that are bonded to the aluminum skin. The fuselage was supplied as a pre-formed Kevlar pod, aluminium body, and V-tail. A two-piece flush canopy covers the cockpit. The cantilever shoulder-set wings feature camber-changing flaps and ailerons running the length of
the trailing edge. A retractable landing wheel with brake and a steerable tailwheel comprise the landing gear. The control stick is side mounted with attached brake handle and trim tab.

**Nierich Modifications**
The tail wheel is Konrad’s own design (He jokes, “Expensive German gliders wished they had!”)

1. it fully retracts,
2. has suspension,
3. has a wide tire,
4. is steerable (with rudder).
5. has spring loaded overload cam to remove steering feature and be full swivel (in a ground loop or rough landing),
6. a small pull wire in the tailcone pulled out and locked will make the tailwheel full swivel. Pull-wire unlocked and tailweel aligned with v tail will make system full steering.

The original 2-part canopy was replaced with one clear and one tinted one piece front hinged canopy (good optics) and one lever interchange. A cockpit controlled pin will hold canopy open 6” min to full open. Canopy is in flight ejectable.

A camera mount was added to the left winglet.

**Flying the HP-18**
Konrad suggests that the winglets should be used all the time for much better roll control, thermaling, L/D, and being in the groove!

Filling of water ballast is simple. Close the dump valve (located inside the left side behind the pilot). The wing tip is lifted, the plug is removed from the wing tip, and water is filled from a water hose or equivalent. Water will overflow when spar is full. Partial filling is not recommended. The HP-18 climbs well with a full load. The center of gravity with water is hardly changed.

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As a model sailplane nut, it has always been the building, rather than the flying, that has kept me in the hobby for 60+ years. As my wife can attest, I can spend countless hours in the hobby room working on a project and never get bored with it. Probably every model builder eventually asks himself, “what’s it like to build a real (i.e., a full-size) airplane. Many full-size pilots are lured into this trap as well, spurred on by the quest to “do-it–all-yourself.”

Another obsession that plagues me is the history and early development of gliders and sailplanes that occurred principally in Germany between the two World Wars. Thus, finding myself at a technical conference in Würtzburg, Germany many years ago, I rented a car for the week-end and drove to the German Sailplane Museum on the Wasserkuppe near Fulda. One of the many display items that caught my interest was a small booklet written by Hans Jacobs titled “Werkstatt Praxis für den Bau von Gleit- und Segelflugzeugen,” or, “Workshop Practices for Building Gliders and Sailplanes.” It was an old copy from ~1932 but because it was behind glass, I couldn’t examine it. But then, there it was, a how-to-do-it book written just for the fledgling German glider enthusiasts.

For years I tried in vain to find a copy of this book and finally, in 2000, I wrote the German Sailplane Museum to ask for help. My letter was kindly answered by Peter Selinger, a noted author and historian of the German glider movement. With Peter’s help, I obtained a newly printed copy of the book, a 1955 re-issue of the original by Jacobs and a new co-author, Herbert Lück. The ‘pamphlet’ was now 354 fine-print pages of technical German! Ach!

In ~2004, my wife had surgery to replace an ailing knee and had to undergo many lengthy re-hab sessions. My Jacobs book and a thick German technical dictionary accompanied me to all of her sessions and I was able to read most of the manuscript while she was being treated. The book really did treat all the aspects of building a glider, from the ribs, spars, fuselage, empennage, covering, rigging, and final assembly. Then I thought I knew enough to proceed to build a vintage glider. But which one?

I had also begun to collect all that I could about Dr. Alexander Lippisch, the “professor” mastermind of the German glider movement on the Wasserkuppe. I obtained his memoirs (in German) from the Iowa State University Library. I found a series of booklets written by Lippisch and his associate Fritz Stamer on model gliders in the early 1920s. The Los Alamos Public Library Interlibrary Loan Department obtained a number of these pamphlets for me to copy. The Library also found a reference to a series of pamphlets entitled “Flugzeugbau und Luftfahrt”, (Aircraft Construction and Aviation) by the same publisher, C. J. E. Volckmann and Sons, Berlin-Charlottenburg. Two of these pamphlets were entitled “Gleitflug und Gleitflugzeuge” (Gliding and Gliders), Parts I and Part II. Part I was obtained on loan from the Seattle Public Library and covered the history and principles of gliding flight, general design and construction, aerodynamic and strength calculations, and a short “how-to-fly” chapter. Part II was much harder to find, but was finally located at the U. S. Air Force Academy Cadet Library. It was entitled “Bauanweisungen und Bauzeichnungen” (Building Instructions and Building Drawings), referenced to contain 8 illustrations and 5 “Tafeln” (tables). But when it arrived at the Los Alamos Library, it was found to contain not 5 tables, but 5 exquisite construction drawings of a full-size primary glider with a wingspan of 10 meters. The drawings were neatly folded and appended to the binding at the back of the book. They were very brittle and I had to open them very carefully. It appeared to me that they had never previously been opened!

Furthermore, the glider, called simply “Sitzgleiter” (referring to a glider in which the pilot sits, as opposed to a ‘hang’-glider) was one that I had never previously seen mentioned, nor to my knowledge had there ever been a model of it built. For a scale modeler, this was the ‘Mother Lode!’

Now I had both newly uncovered drawings and some knowledge of how to proceed, a very dangerous combination. I began to build a ‘real’ glider, but for purposes of flying it myself as a radio-controlled model, I decided to scale down to 40%, a scale that would yield a generous 4-meter wingspan and still allow me to fabricate all the parts and especially all the metal hardware with reasonable precision. Furthermore, the thinnest...
plywood parts in the original were 1 mm-thick, and the thinnest readily available plywood for modeling is 0.4 mm-thick (1/64"). Hence, all the wooden parts could be fabricated at exact scale.

A further motivation for my interests in the aircraft of Alexander Lippisch began in 1958 on my first day of classes at Carleton College, Northfield Minnesota. In the beginning German class, our instructor Herr Mendel asked everyone to introduce themselves and to say and why they wanted to study German. When the turn came for a blonde co-ed in the back row, she answered in perfect German. We thought "Great, she will get the only ‘A’ in this class!" She was there because although she spoke German while growing up in Cedar Rapids, Iowa, she had no formal knowledge of German grammar. Her name was Sybil Lippisch. All we knew about her father was a rumor that "he had designed airplanes for Hitler." Yes, sadly for the rest of us, Sybil did get the only "A"!

Sybil left Carleton before graduating, but later she married a man who happened to be a friend of my sister's husband. When Sybil moved to Des Moines, her parents followed her, left Cedar Rapids, and bought a house directly across the street from my parents! I was in graduate school at Berkeley, California from 1962 through 1968. I then spent two years in Leiden, Holland at the Kamerlingh Onnes Laboratorium (I spent my career in low-temperature physics). When I returned from Holland, my parents had moved to a new, smaller house on the other side of town. I had visited them only rarely in the preceding eight years, so that I must now confess that during the time that Dr. Lippisch lived across the street from my parents, I never met the man. I cannot recall even seeing him. In light of my present interests in vintage sailplanes, I consider this a missed opportunity, to say the least. I hope that my present efforts have made amends for this oversight.

In 1927, Hans Jacobs began his career with gliders and sailplanes on the Wasserkuppe, originally as an aircraft designer apprentice to Lippisch and later as the head of the German Sailplane Institute (DSF) in Darmstadt. Lippisch also left the Wasserkuppe in 1933 and later joined the Messerschmitt Aircraft Company where he designed the Me-163 Komet, the little Luftwaffe rocket-powered glider that could fly much faster than any Allied aircraft.

During the course of the three-year-long build of the Sitzgleiter, I took time-out to translate the two chapters of Gliders and Gliding. The copyrights for these translations belong to me, but I have given the USSSM permission to disseminate them, both in printed form and as a CD. The CD contains the translations as well as photocopies of the original German pages. The five drawings are included, each in several forms. Details on the construction of my scale model are included, with many photos of the subassemblies. The cost of the CD is only $20. Postage costs an additional $2.00 and would be gratefully accepted. jimnelshoffer@msn.com

Beginning in mid-2007, the construction of the 40%-scale Sitzgleiter followed Jacobs’ principles as closely as possible. The ribs were built exactly to scale using a nail-jig. The first rib took a week of evenings to build. Then, again following Jacobs, I prepared all the needed plywood gussets, basswood cap-strips, and upright and diagonal struts and found that with the parts on-hand I could build a single rib in one long evening session.
In total, the 32 ribs took many months to fabricate. The spruce for the wing spars was procured at the correct thickness from the Aircraft Spruce Co. The assembly of the wing took place by sliding the ribs over the spars and adding the trailing edge, wing-tip members, and internal bracing. This went surprisingly quickly. There was no leading edge longeron. Then began the lengthy process of adding 0.4 mm sheeting as the leading edge, using a scarfed joint technique at each box-rib.

Finally, after ~18 months of work, the wings were finished! OK, so I’m a slow builder!
The fuselage, tail feathers, and stainless-steel rigging hardware took another year to complete and the ‘Sitz’ was assembled in the living room.
It sat there, much to the consternation of my wife, almost four months while we waited for the pilot ‘Fritz’ to be trained in Germany. Finally, he arrived and took his place in the cockpit seat.

Fritz and Sitz now repose in the museum, hanging near the restoration room.

You can contact Jim at jimnelshoffer@msn.com.
Your membership number and expiration date are on the newsletter mailing label.

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