moved instrument console, ideal for clutching with the knees when you're down low over the rocks! At the base of the console is a neat little receptical for a BEI-990. This will be standard on all the American models. The instrument and radio batteries, along with the total-energy attachment and thermos, go into an adequate compartment forward of the console. There is baggage space behind the pilot's cushioned headrest. I manage to stuff in a ski jacket, canteen, survival kit, lunch, Kodak Instamatic and barograph, but the sandwiches do get squashed.

The controls, which use push rods with ball bearings and nylon guides, are mounted on the sides of the cockpit. Stick, gear handle and spring elevator trim are on the right, flap handle and dive-brake handle

(Continued on page 14)

When the Do-X made its round-the-world flight in 1931 it created quite a sensation. This was the epoch when aircraft manufacturers were convinced that air travel had a tremendous future and that larger and larger planes would be needed. The Do-X, with its 20-ton payload, 75-passenger capacity and 12 push-pull engines was a daring, and unique step in that direction.

After many successful flights the Do-X, aided by the world-wide depression of the times, passed quietly away. There remained, in Altenrhein, Switzerland, the factory where the great monster had been built, however. It has been five years since Herr Dornier, who already owned a well-known factory in Germany, had expanded into Switzerland and established the modern plant at Altenrhein (Old Rhein).

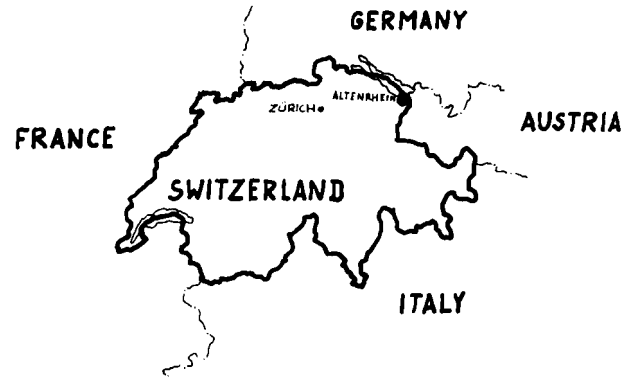
In subsequent years the Dornier works at Altenrhein participated in the production of other famous aircraft, notably the Dornier-Wal seaplane which Amundsen used for his Arctic expedition and the Bucker Jungmann and Jungmeister aerobatic aircraft. During the second world war the factory was put under Swiss management and built fighter planes for the Swiss Air Force.

Three years after the war the company was purchased by private Swiss interests and the name became Flug- und Fahrzeugwerke AG. Altenrhein. The plant was expanded to the extent of a new division for the manufacture of railway coaches and another for fiberglass construction. One of the firm's most successful ventures was the basic design of the Lear business jet.

About two years ago FFA decided to undertake the manufacture of the fiberglass sailplane Diamant, the primary development of which had originated at the Swiss Federal Institute of Technology in Zurich. Since the factory was already experienced in fiberglass construction, it was comparatively easy to add a new line. Nor did the production of metal parts, controls and the like present any problem. The management was aware, however, that high-performance fiberglass sailplanes are something very special and that it would be necessary to proceed cautiously at first. On the other hand the managers were confident that, with the excellent team of engineers and craftsmen available, it would be possible to transfer the traditional standards of quality to the new product. It was further realized that, since the use of fiberglass in aircraft construction is fairly new, all sorts of strength tests would have to be made in order to obtain an airworthy glider. In this respect the factory is well equipped, having both testing apparatus and trained personel.

Fiberglass structures, as has been pointed out before, require an entirely new approach. Of paramount importance is the fact that the strength of fiberglass-reinforced resins decrease with higher temperatures. For the Diamant a basic design temperature of 54° C (129.2° F) was chosen. This is the figure used by the majority of fiberglass-aircraft designers today, and the one at which it is intended to meet maximum load factors. Since the actual temperature in flight is always considerably below 130° one enjoys a safety margin over that of the design requirements.

There is frequently concern as to what happens when the temperature of the fiberglass structure goes beyond the specified 129.2°. In this instance the rupture strength of the material drops below the certified figure. The instruction booklet says that the aircraft should not take off before it has been cooled down. This can easily be done by wetting it down with a sponge or rag. When the structure is overheated there is no permanent change in the material; it resumes full strength as soon as it has cooled. The resin compound does not melt, nor will it change its shape until it has been heated to well over 130° and is, at the same time, subjected to great loads over a considerable period of time.



In actual practice the temperature of the structure would tend to exceed the allowed maximum only if it were left for a long period of time in an inadequately ventilated trailer which is standing in the baking sun. The factory provides a special thermometer to indicate the structure temperature. Dick Delafield, who used such a thermometer last summer, both at Marfa and Reno, checked regularly (especially when unloading the ship from the trailer) and reported that the indication never came near the 54° C red line.

The FFA's sailplane program for 1967 includes continued construction of the 15-meter Diamant HBV which uses Libelle wings supplied by the Glasflugel firm. It will introduce, in addition, two new wings of its own design, one with 16.5- and the other with 18-meter span. All wings will fit the same fuselage and the fuselage-wing connections will be identical for all three versions. They will not, however, be interchangeable without proper adjustment by the factory or by a competent workshop. The cockpit will be slightly modified to give more elbow room to the stouter pilots and a hinged canopy will be provided. Delivery of the new ships will begin this coming spring.

RENE COMTE