jam if one is in an unusual attitude.

In single seat or tandem configurations the metal cabin structure can be made unsymmetrical on either side of the plane of symmetry, with heavier structure on the lowered side to compensate for the reduced depth of beam. All things considered the increase in weight is negligible, the increase of safety and accessibility is remarkable.

Since wood is more "flexible" than metal (equal sections) a "cutdown" door in an all wood cabin must be rugged indeed, for rigidity in hard landing conditions is paramount to prevent rupture at or near glue joints over a period of time.

Hatches that are hinged at one side or lifted off should mate with the adjacent fixed structure in non-parallel planes, wider at the top. This prevents jamming due to distortions caused by a crackup.

It is easy to install handles to help one get into and out of a sailplane and to hang onto in rough stuff.

CABIN STRUCTURES AND FURNISHINGS

The cabin structure, of whatever material, *must be rugged*. Seats should be sturdy and of material that does not deteriorate, for strong, cushioned seats can prevent painful injuries due to crackups. Seat failure in flight, which in itself can he uncomfortable, usually jams controls.

Safety belts and shoulder straps should be attached to the strongest structure in the ship, and this structure should be adequately tied to the remainder of the glider. At least one pilot has burst from his sailplane in the tree tops and fallen to the ground wearing the glider's main bulkhead and a few splinters tightly strapped to his back.

The head should not, even when the neck is stretched, strike unyielding structures in rough air or in crash conditions that may come at almost any angle. Cowlings and coamings should not fit close to the face nor should there be any rigid members over one's skull.

Steel tubing should not be built so as to surround one, or this should be minimized. One should expect that if any cabin structure collapses it will buckle with great effort away from him by having been slightly bowed out during construction. One's feet should lie against large, flat or formed, strong rudder pedals with stirrups as opposed to an instep crippling tube. The floor should be covered by a flat, hard surface that will prevent buckling structures from ensnaring feet and legs.

No structural or control members should be located in such a fashion that persons could possibly be speared by them. Designers are invited to peruse the studies of the Flight Safety Foundation.

VISIBILITY

Since air traffic is heavier and faster, visibility is of increasing importance in the air and on the ground for all parties concerned. If one cannot afford to buy the glass, he cannot afford to fly. The following are desirable visibility conditions:

Forward — with fuselage level, one should be able to see the ground about ten feet ahead of the nose, even with a low frontal area, a large accessihle instrument panel and good lines. The windshield angle should be steep enough to give relatively little distortion. Bent flat sheets can be used for forward portions with essentially no loss aesthetically or aerodynamically for a good optical gain.

Sideways — this is usually no problem except in those cases where one's head lies completely in the wing root. In general, if the wing leading edge is about eye level and at or aft of one's ears, visibility over and under the wing, and aft, is maximum. In most cases, pilots like to be able to see their wing tips when flying close to slopes.

Aft — halfway down the fin is usually possible and, with the foregoing, gives as much safety in close thermal action as one can get.

Up — All around! — sun shields of aluminum foil are too opaque; try a white cap to reflect hea.t If that doesn't do it, put a wet sponge under the hat.

Bubbles—should be sufficiently large to permit easy movement of one's head, should not prevent wearing a hat or cap.

An openable "peep hole" about 5" x 8" is very desirable in any case where icing may occur.

Note: Tropical helmets are quite restrictive of vision, as are long billed caps. These should be worn sparingly and with full realization of impaired recognition of approaching dangerous situations.

(*To be concluded next month*)

SHEPARD AWARDED STREAMLINED BRICK BY SCSA

Commander Alan B. Shepard, USN, America's first astronaut, has been awarded the "Order of the Streamlined Brick, First Class" by the Southern California Soaring Assn. for his descent from 150,000 ft. to 100,000 ft. in 10 seconds over the Atlantic Ocean in the space capsule "Freedom 7." This award is given in admiration of "scientifically inspired successful downward plunges through the atmosphere in controlled, glider-type vehicles," by those who like to "savor ascents and descents while exploring the atmosphere in exquisite detail."

This is but the third such brick awarded since they are only given for increasingly greater rates of descent. The first went to Dr. Joachim P. Kuettner for a descent from 38,000 ft. to the Bishop, Calif., Airport (4000 ft. elev.) in a Pratt-Read sailplane in six minutes. The second went to Scott Crossfield for piloting the X-15 in a glide from 38,000 ft. to Edwards AFB, Calif. (2300 ft. elev.) in four minutes.

Astronaut Alan B. Shepard (left) receives his "Order of the Streamlined Brick, First Class" from Dr. Joachim Kuettner.

Photo by Anton Lohner