

political control. However, during the Hitler regime it became so infiltrated with Nazism that after the war the four-power Allied Control Authority decided to dissolve it. Although this dissolution was never actually carried out, it seemed better to organize a replacement society as a nucleus for free research by German workers in scientific fields than to leave matters in a suspended and uncertain state.

Science News Letter, July 24, 1948

AERONAUTICS

Safer Rough-Water Hulls Promised for Flying Ships

➤ **BETTER** hulls for flying boats, particularly for landings and take-offs in rough water, are promised. They will have long, narrow bodies with curved noses and lengthened afterbodies, the Institute of the Aeronautical Sciences was told at a meeting in Los Angeles, by A. W. Carter, National Advisory Committee for Aeronautics, Langley Field, Va.

A series of related seaplane hulls having a wide variation in length-beam ratio have been investigated at the Langley laboratories, he said. It was found that an increase in hull length-beam ratio from six to 15 reduced the aerodynamic drag without appreciably affecting the hydrodynamic qualities in smooth water, reduced vertical accelerations and motions during landings in rough water, and reduced the structural weight required for a given load factor.

Practical tests of various hulls are now underway, conducted by the U. S. Navy. An amphibian plane has been so modified that interchangeable hulls may be used on it. The hulls can be removed and replaced easily by use of bolts. The first hull undergoing tests is the elongated type now on the new Navy Martin XP5M-1 patrol plane. The most striking feature of this is its so-called afterbody that extends to the extreme end of the plane. Two hulls designed by the National Advisory Committee for Aeronautics, both what are called planing-tail types, will be tested on the same flying boat.

Science News Letter, July 24, 1948

INVENTION

Stool Perch for Barbers Has Already Been Invented

➤ **RECENT PROPOSALS** that barbers and dentists should have stools on which to perch while they work seem to have been just a trifle late: the thing has already been invented. U. S. patent 2,445,000 has just been issued to Charles E. Paden of Pittsburgh, on an adjustable stool that rides on casters around the chair, to which it is attached by a pair of metal arms. The user can vary his distance, height and angle of operations at will.

Science News Letter, July 24, 1948

ENGINEERING

Roofs Supported on Air

This type of construction would be advantageous for medium-sized buildings, eliminating such obstructions as columns, trusses and beams.

➤ **ROOFS** of some future buildings will be supported on air, literally.

For medium to large one-story buildings, support of the roof by inside air pressure without trusses, interior bearing walls or columns seems practical. It is one way to decrease present high building construction costs.

The idea is not just an engineer's dream; it has had a successful tryout.

A grain-storage building was erected in Minneapolis in 1934. It was a structure with half-cylinder ends 50 feet in diameter, the over-all length of the building being 250 feet. The one-piece roof, of welded galvanized steel, attached with an air-tight joint at its edges along the outside wall, was satisfactorily supported by an air pressure of eight ounces supplied by ventilating fans. The building was dismantled at the end of a year because of the explosion hazard existing where grain dust is held in suspension.

Roofs supported by air pressure were given serious consideration during the war and tests were conducted at New York University for the U. S. War Production Board in 1944. Herbert H. Stevens, Jr., of New York, who is an authority on this type of construction, describes the roof as of circular or elliptical shape, made of thin, ductile sheet material. The enclosure formed by the roof, the floor and side-walls would be relatively air-tight. Air forced into the structure by ordinary ventilating fans raises and stretches the roof into a shallow dome shape.

"The air pressure would be reduced from about four ounces per square inch, needed to stretch the roof, to about one ounce per square inch which would be thereafter permanently required to support the roof, insulation, roofing, and such structures as lights, fireproofing and sprinkler system hung from the underside of the roof," he states. "About half of this pressure would be in excess of the total roof load and would serve to induce biaxial tensions throughout the roof membrane to resist depressing and oscillating effects of the wind."

The pressure could be maintained by continuous operation of only a small part of the ventilating system. Standby power would be required in case of interruption in the ordinary power supply. In case of extra load on the roof, as from snow, the inside air pressure would be increased automatically or otherwise. About one and one-third ounces of increased pressure would balance a one-foot load of snow.

The pressure required to support the roof would have negligible physiological effects on occupants of the building. Air locks to

retain the pressure need be little more than double-doored vestibules or revolving doors for people.

The merits of this type of construction lie chiefly in medium to large one-story buildings, according to Mr. Stevens. The method of roof support eliminates a great deal of the foundation structures, columns, trusses and beams found in ordinary buildings. Again, the interior is completely free of structural obstructions. A roof of 0.109 inches thick aluminum alloy could be used for spans of 900 feet, he declares.

A British patent has recently been allowed to Mr. Stevens for a roof supported by inside air pressure. An American patent, 2,079,461, was awarded to J. H. MacMillan, Jr., some years ago for similar construction. A report on the investigations at New York University was issued in 1944.

Science News Letter, July 24, 1948

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