

Devices Reduce Plane Motor Noise

Aviation

A device which will practically eliminate airplane motor noises and at the same time cause no reduction in power is being experimented with by the U. S. Navy Department. Mufflers and other equipment of this character have been frowned upon by the industry because they usually cause a loss of power and some added fire hazard.

The new device passes the exhaust gases through the vacuum created by the propeller blades, and the change in the rate of flow will greatly reduce the motor noise, it is believed. A patent has recently been issued to a commercial company on this device and with the refinements developed by Navy engineers, preliminary tests indicate that it soon may be placed in general use on Navy planes.

While other engineers are attempting to reduce the noise of aviation motors and propellers, the U. S. Bureau of Standards is trying to develop a soundproof airplane cabin. This is believed to be essential to bring planes into general use, because of the difficulty of reducing the noise created by the propeller of an airplane.

Dr. Paul Heyl, in charge of sound experiments at the bureau, believes that a light but strong cabin construction material can be developed which will allow passengers and pilots to converse in planes in flight

as easily as in a parlor. This is believed to be the first time that extensive experiments have been made to produce a soundproof cabin.

Hollow-bladed airplane propellers made of a special steel are another novelty that the Navy is testing.

The Navy Department recently let a contract for six experimental propeller blades of an entirely new construction. The new propeller is of hollow chrome vanadium steel and is said to be the first one of hollow construction to stand the great strains imposed by a high-speed airplane. Efforts to develop such a blade have been made for the last ten years, but they all met with failure because no satisfactory method of welding the two sides of the propeller together could be found. By using a new process of electric welding, the new propeller was fabricated so as to be as strong as those of aluminum alloy and other materials now in general use by the Navy.

The greatest advantage of the new propeller is that it can be produced at two-thirds of the cost of present equipment. Preliminary tests with twice the normal load, recently completed on the first of the propellers, indicate that the new blade will meet all requirements and the Navy plans to advertise for bids for a large number of the hollow propellers within a few months.

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Roman Damascus Swords

Archeology

The famous Roman steel that conquered the world was at least partly of the workmanship that later came to be known by the name of Damascus. Writing in the German scientific journal *Forschungen und Fortschritte*, Prof. B. Neumann of the Institute of Technology at Breslau tells of his recently completed metallurgical researches on fragments of a number of Roman swords found buried in a German peat bed where they had lain for some 1600 years. Due to the fact that they were preserved by the damp earth from the action of air, the blades were in far better condition than other surviving specimens of Roman steel, which has either rusted to almost complete destruction or has had its temper ruined by being heated in burning buildings and then annealed by slow cooling.

The bars from which these Damas-

cus blades were forged were made by sandwiching alternate thin layers of high and low carbon steel and then "sweating" the whole together. Left straight, the bar could be forged into a blade with a striped or ribbed effect. Twisted and then forged, it produced a blade with "V" damascening. Two twisted bars sweated together and then forged into a blade gave a "W" pattern on the finished sword. Some of the Roman blades also show a curled or "rose" pattern in the steel, but how the smiths achieved this is not yet known.

Prof. Neumann's examination of the steel samples shows that the Romans tempered only the outside of the blade, so that it would give a hard edge and point, backed up by a tough body of metal.

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New Volcano

Volcanology

Vast fields of pumice and volcanic ash, floating on the surface of the south Pacific Ocean between the Fiji and Tonga groups of islands, are the first indication of a new submarine volcano. Perhaps it may finally lead to the formation of a new island, for Falcon Island, 120 miles to the southeast, appeared about a year ago, formed from similar volcanic material.

The announcement of the floating pumice was made to Science Service by Dr. Andrew Thomson, director of the Apia Observatory. A British Ship, *H. M. S. Carisso*, was the first to report it. It was first observed on the evening of October 3, about 240 miles east of Suva, Fiji. During that night patches each several miles in extent were passed, the last one sighted about 70 miles southwest of the first. On October 7 another ship, *H. M. S. Veronica*, sighted some more floating pumice about 30 miles west of this, about a mile in diameter. A sounding was made, but with the line let out for 1,200 feet no bottom was found. The next day, farther east, they encountered the largest field of all, about a half mile broad, and extending for many miles in a north and south direction.

"The position of the submarine volcano which has thrown out the immense quantity of material reported cannot be located with the information now available," said Dr. Thomson. "The surface drift of the ocean in this area is from the northeast and east, so that the probability is the volcano is eastward but not far from where the pumice was first seen at 17 degrees 25 minutes South Latitude 176 degrees 09 minutes West Longitude.

"The ocean floor between the Tongan and Fiji islands is fairly level to the west of longitude 173 with an average depth of 1,500 to 2,000 fathoms. It is an area of great seismic activity, for no less than ten violent earthquakes have occurred in seven and a half years (1913-1920) at two principal centers.

"The pumice fields lie about 75 miles south of one of these epicenters.

"A large earthquake took place on September 6 at 8:50 a. m., Greenwich time, and the locality, about 100 miles southwest of Samoa, is known to have yielded pumice on at least one previous occasion."

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