

New Sub Will Follow Gulf Stream

► A SCIENTIST'S DREAM to drift silently beneath the sea with the Gulf Stream and observe the moving under-sea world will become a reality when Dr. Jacques Piccard's undersea vessel is built by Grumman Aircraft Engineering Corporation.

The new PX-15 (Piccard Experimental 15), long an idea of Dr. Piccard, will be unlike most deep-sea vehicles ever designed. It will have complete "vertical stability," which means it will be able to float for weeks at a constant depth without expending energy for propulsion and without making any noise.

The new vessel, which will be constructed primarily at Monthey, Switzerland, is scheduled to be launched early in 1967, and will be ready for use by that summer.

The plan is for Dr. Piccard and four crewmen to drift in the craft for five or six weeks, at depths varying from 300 to 1,200 feet in the 1,500-mile long Gulf Stream. The current will carry them along at an average drift rate of 36 to 48 nautical miles a day. During this time the scientists will be able to make valuable observations on undisturbed layers of the sea and on the natural motions and habits of fish, sea mammals, plankton and other forms of sea life.

The well-known scientist, with his famous father Auguste, helped design the bathyscaph Trieste which in 1960 made man's deepest recorded plunge—to 35,800 feet in the Marianas Trench in the Pacific Ocean. The Trieste was pulled from research to search for the submarine Thresher that disappeared in 1963. Dr. Jacques Piccard also designed the mesoscaph that conveyed passengers below Lake Lausanne during the Swiss National Fair in 1964.

Measurements will also be made on the salinity, temperatures, light intensities and other water characteristics. The deep scattering layers of the sea will be investigated, and voices of fish and other marine creatures recorded.

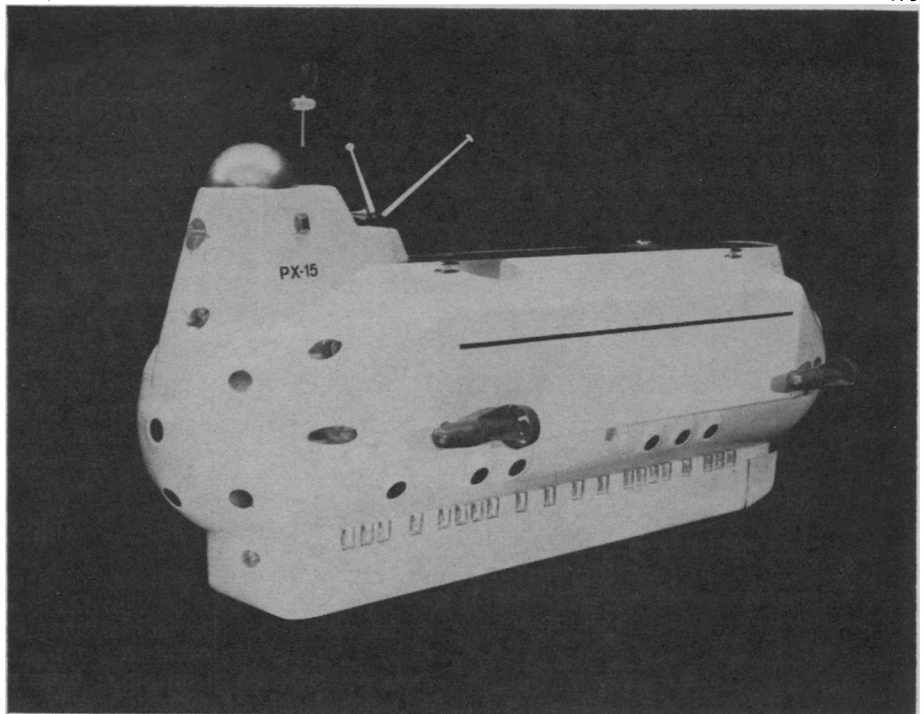
• Science News, 89:475 June 11, 1966

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SILENT LADY—The PX-15 will be able to float silently for weeks at a constant depth. The vessel, developed by Grumman Aircraft Engineering Corporation, Long Island, N.Y., was designed by Dr. Jacques Piccard.

TECHNOLOGY

Ceramics Can Be Made Eight Times Stronger

► A NEW PROCESS that can make ordinary ceramics eight times stronger has been developed in an engineering laboratory at the University of California at Los Angeles.

The research by Profs. Francis R. Shanley and William J. Knapp points to a host of likely new uses for ceramics, ranging from nose cone for missiles to prefabricated ceramic houses.

In a series of tests using a compression process called "pre-stressing," the scientists applied 10,000 pounds of pressure per square inch along the width and length of an ordinary brittle tile.

For laboratory purposes, the compression force was furnished by two hydraulic jacks, each of which exerted 30 tons of pressure against the edge of the six-inch-square tile. A third jack, pushing from below, tested the load bearing strength of the compressed tile.

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Results of the experiments showed that brittle ceramics are 8 to 10 times stronger under compression than in tension.

Ceramics could be used to make strong, lightweight, decorative fireproof and earthquake-resistant buildings, as well as bridges, pavement and airport runways.

The high heat resistance of ceramics is already making them useful in jet and rocket engines and for space vehicles exposed to extreme temperatures during reentry into the atmosphere.

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