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THE GRUMAN-PICARD EXPEDITION

Jacques Picard, son of the illustrious Swiss scientist August Picard, the first to explore the depth of the oceans in a submersible called a bathyscape and to investigate the stratosphere in a similar vessel, came to speak at the Royal Geographical Society on his six-week *Gulf Stream expedition* last year. The Geographical Society had invited Monsieur and Madame René Keller for the occasion, and other Swiss diplomatic staff were equally present in the society's auditorium to listen to a fascinating exposé.

When the minutes of the Geographical Society's last meeting had been read and approved, and when he had been introduced to us by the President, Mr. Picard, a lank man standing almost seven feet high, put us in the picture of oceanographical research. He told us that over a hundred deep sea submersibles had been built and tested since the end of the war. He mentioned Coustaud's "Trieste" and its record dive of 36,000 feet in the Challenger Depths off the Isle of Guam. But this submersible, and others like it, were designed for 24-hour dives and didn't permit any kind of prolonged investigation. It was scientifically frustrating to interrupt work so soon and the need for designing a submersible capable of carrying a sizeable crew for a period of several weeks began to make

itself felt. But such a submarine had to be designed on other lines than deep-diving bathyscape. If they were to support a crew for any length of time, they had to be equipped with "life supply". This not only included food and oxygen, but water, soda lime and other dehydrating and purifying chemicals. Such a submarine would have to be designed as a "big sub". However, simple calculations showed that, barring the use of nuclear power, no submarine intended to remain submerged for over a month could possibly be equipped with an engine. The obvious solution that remained for propulsion was to make use of the many currents that flow across the oceans. The Gulf Stream was not only chosen because one of its two branches flows along the North American coast, thus covering a geographically convenient area, but also because it was the current on which the most research had been made. An underwater expedition of the kind eventually proposed to the Gruman Corporation by Mr. Picard would have produced new knowledge on the Gulf Stream and helped to integrate the body of data already obtained in previous oceanographical surveys. This possibility attracted the American Aerospace Company, Gruman, who was interested in submarine projects and had already started its special "Gruman

Marine Systems" division. A lengthy underwater mission also bore a useful relation to future space journeys, as it was an appropriate way of studying the psychology and performance of a crew confined to a very small area for a period of time comparable (however remotely) to the solitude of future interplanetary astronauts. The NASA therefore sent a "space psychologist" to join the two oceanographers, who, with three technicians (including Jacques Picard, an Englishman and another Swiss) formed this *Gruman-Picard Gulf Stream* expedition.

After lengthy discussions, Mr. Jacques Picard persuaded Gruman to have the bathyscape built in Switzerland by the firm Giovanella SA in Monthey who were equipped for this type of work and had already built the "Methoscape" which took visitors to the 1963 National Exhibition for rides under the Léman. The submarine could moreover be constructed more cheaply in Switzerland.

When it had been constructed, it was put on a train to Antwerp, from where it was shipped to Palm Beach, Florida.

After preliminary and successful tests, the expedition got on its way. The six explorers bade their families farewell on the quay at Palm Beach and were hauled away at sea until they joined the Gulf Stream.

Mr. Picard described the initial anxiety of the journey, when the submarine dropped to double its intended depth and approached dangerously near to security limit. He described some of the technical aspects of diving. When a submarine gained in depth it



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