The Use of Aircraft for Oceanographic Surveys

In the course of some test work with the Catalina Patrol Bomber (Navy PBY) it occurred to the writers that oceanographic surveys of a physical, chemical, and biological nature could be made to advantage, using such aircraft, rather than boats, as an observation vehicle. The advantages to such a procedure are: greater speed, operating economy, simultaneity of observation, and possibility of obtaining data from remote areas.

The question of making observations on sea water for temperature, conductivity, etc. by means of a drag from the airplane at speeds of 90 mph or more can be answered by the suitable design of such drags. The aircraft can safely operate at very low altitudes above the sea in fair weather; hence, relatively short lines with small tear-drop-shaped metal bobs can be dragged in the water without difficulty by these planes at 100 mph. If thermocouples, conductivity cells, etc. were built into these bobs, the whole assembly could be connected to a small winch in the plane and dragged at desired depths. Water samples could be obtained with a similar arrangement.

A few technical characteristics of the aircraft are given below in order to permit assessment of the possibilities of using PBY aircraft for surveys. The maximum range is about 2,500 miles; maximum endurance (time in the air), 24 hours; operating speed range, 85–150 mph; useful load (including fuel), in excess of 10,000 lbs. Such aircraft are now surplus and could, presumably, be obtained for a very nominal figure. Living and messing facilities are limited, but are adequate to care for flights up to 24 hours duration. Adequate space would be available for scientific instruments and a technical group of four or five persons.

In quiet water areas the aircraft can land on the open sea and can be either moored for a while or taxied along at low speeds. It is not suggested that the PBY be used for open sea work in general. It is more suited to the needs of small stations which cannot afford the expense of a large survey ship and its crew, yet which desire to make observations within a radius of 1,000 miles or so. There are other amphibious aircraft which would be entirely suitable for world-wide operations.

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Notice About Sending Reprints to Austria

Prof. Kisser's plea for reprints (*Science*, 1946, **103**, 337) sets me to wonder how one does send reprints to Austrian scientists. When I mailed one to a member of the faculty of the Hochschule für Welthandel in Vienna, it was returned to me from the New York 1 Post Office with a sticker referring to the Postal Bulletin of 15 January 1946, which apparently prohibits the mailing of printed matter.

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[Science has checked with the U. S. Post Office, which bears out Dr. Fromm's statements: only one-ounce, first-class mail is accepted for Austria.]