OCEANOGRAPHY

Gulf Stream Formation

An electronic computer will be tried for calculating how the Gulf Stream was formed. If planned approach is successful, scientists should also learn more about the jet stream.

➤ SCIENTISTS ARE planning in the near future to use an electronic computer, or giant "brain," to probe the formation of the Gulf Stream.

Dr. Columbus O'D. Iselin and Henry M. Stomml of the Woods Hole Oceanographic Institution, Woods Hole, Mass., are cooperating with Dr. Jule Charney at the Institute for Advanced Study, Princeton, N. J., in the study, SCIENCE SERVICE has learned.

The scientists are starting with a model representing the ocean, but without any strong current such as the Gulf Stream. By feeding the proper formulas to the electronic computer, they will then try to show that a sharp, narrow current must be formed in the model ocean.

If the model and the formulas are correct, the scientists will know how and why the Gulf Stream was formed. And they will also know much more about our weather and how it is affected by the jet stream, a narrow current of air high in the atmosphere that has been clocked at speeds up to 300 miles an hour.

Understanding of the weather will come because the swift-moving current that is the atmosphere's jet stream and the river in the ocean that is the Gulf Stream can be considered very similar as far as their formation and energy sources are concerned.

That the Gulf Stream and jet streams have many features in common was first pointed out a few years ago by Dr. Carl-Gustaf Rossby, then a meteorologist at the University of Chicago.

More information about jet streams would enable pilots to take advantage of their powerful winds on west to east flights, and could save bucking tremendous head winds when flying cross-country east to west.

Scientists have estimated that the same kind of changes that take place in one day in the atmospheric jets require a week or more in the Gulf Stream.

For both of these strong narrow currents, however, the stream remains constant much longer than present knowledge can explain. There seems to be a preferred width and a preferred velocity to the streams' currents, scientists have found, with the energy having been acquired well upstream from the point where the jet begins to develop.

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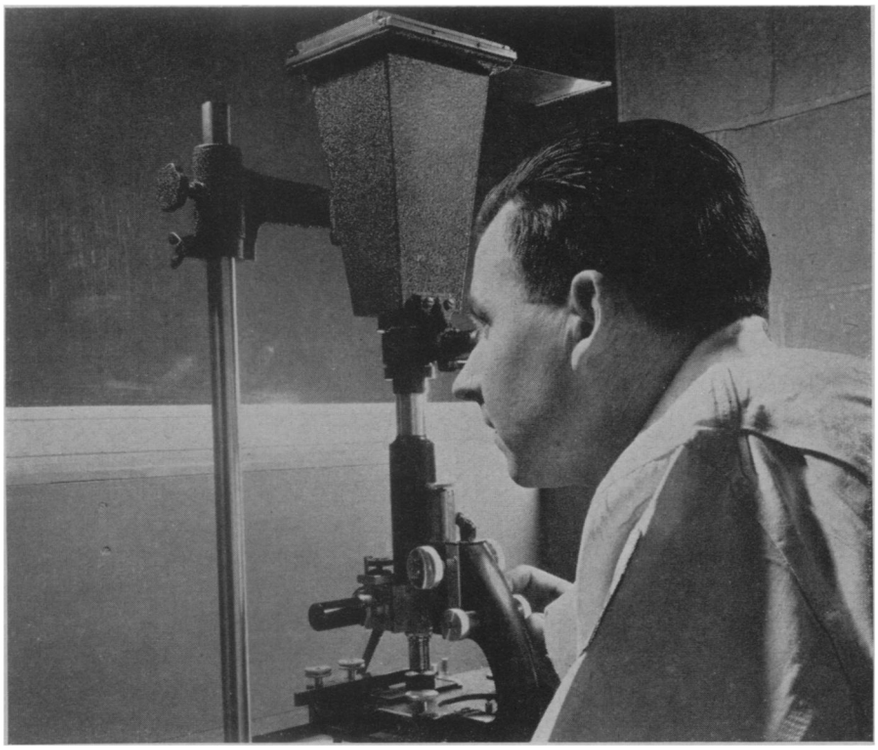

FOR FINE MEASURE—A new type of microscope, known as an interference microscope, is being used by General Motors Research Laboratories to measure the smoothness of surfaces. Using the instrument, which outwardly resembles a conventional microscope, scientists can measure depth or height of minute detail on surfaces ranging from two to 100 millionths of an inch. Above the instrument is a camera for photographing interference patterns.

MARINE BIOLOGY

Ambergris Manufacture Seen as Possibility

➤ LABORATORY PRODUCTION of one of the most expensive and rarest materials used in perfumery, ambergris, may be possible, Dr. Robert Clarke of Britain's National Institute of Oceanography at Wormley, Surrey, has suggested in connection with making known the great haul of almost a half ton of this material during the last Antarctic whaling season.

This material, which is sometimes found floating in the sea but more often is contained in connection with whaling kills, is still a valuable commodity without equal as a fixative in perfumes.

Scientists have not been able to agree just how it is formed except that it is a result of unusual digestive processes in the whale.

A boulder of ambergris, weighing 926 pounds, was found in the large intestine of a bull sperm whale 49 feet long, being cut up on board the floating factory, Southern Harvester, last December. Only four other finds of ambergris exceeded this weight, but three of them may not have been taken from one whale.

Dr. Clarke says in *Nature* (July 24) that ambergris is formed by the chemical transformations within the intestines of waste products of the whale's digestion. He believes that it may be possible to produce ambergris in the laboratory by incubating such waste material from the whale under suitable conditions, and because of the value and rarity of the material, this problem might be worth working upon.

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TECHNOLOGY

Interference Microscope Measures Smoothness

➤ FOR MEASURING smoother surfaces, General Motors Research Laboratories in Detroit, Mich., is using an interference microscope, which detects depressions and ridges of two to 100 millionths of an inch.

One of three such instruments built in the United States, it determines extremely small depths by comparison with a beam of light from a flat reflecting surface.

The microscope is being applied to measurement of plating thickness, effects of weathering on painted surfaces, standardization of machine part surfaces, corrosion pitting and other such uses.

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