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## **THE INDIAN OCEAN**

(A Preliminary Prospectus)

by

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International Indian Ocean Expedition,  
New York, 16, N. Y., U.S.A.**

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### ABSTRACT

The aim and objects of the International Indian Ocean Expedition the nations participating problems to be studied, and the outline of the programme of observations.

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*Physical Characteristics.*—Although the Indian Ocean's 28,000,000 square miles cover over 14 per cent of the earth's surface relatively little is known or understood about the region, which has an area five and a half times that of Antarctica and greater than that of Asia and Africa combined. The Ocean's behavior affects all of these continents yet only the most general features of its topography and circulation and the distribution of living organisms are known. For instance, more than three hundred times as many bathythermograph observations have been taken in the North Atlantic as in the Indian Ocean; almost half of the area has had no biological sampling and in most of the remainder observations range from 4 to 1 per 5° square.

The Indian Ocean has several unique characteristics. Nowhere else in the world is there a similar seasonal reversal of the prevailing wind. The wind system in that part of the Ocean lying above the equator is characterized by the two monsoons, one blowing from the northeast for approximately six months and the other blowing from the southwest for the rest of the year. This phenomenon has a vast, but essentially still unknown effect upon the currents and organisms in the waters.

Another notable feature is the apparent productivity of this Ocean. In June 1957 a Russian ship not far from the main trade route between Colombo and the Gulf of Aden reported millions of tons of dead fish floating in an area some one thousand kilometers long and two hundred kilometers wide extending across the middle of the Ocean. Similar reports came simultaneously from British ships in the region. During the same year smaller fish kills were reported in nearby parts of the Arabian Sea. It is not known how the fish were killed,

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but the very size of this catastrophe gives some idea of the potential mid-ocean resources which are currently untapped. There is further fragmentary evidence of unusually high productivity.

The Indian Ocean is one of our last unexplored frontiers. Since 1873 less than two dozen vessels have carried out oceanographic investigations there. Modern techniques have only been used in quite limited areas. Limited coverage has left great gaps in both areas visited and in the nature, intensity and accuracy of observations. No systematic study has been attempted nor do the combined profiles of the observations reported give more than a preliminary picture of the Ocean's behavior and characteristics.

*Socio-economic Characteristics.*—Many of the nations lying in the tropical and sub-tropical regions which surround the Indian Ocean are among the world's most densely populated countries, with continuing rapid growth. Over a quarter of the world's people live in these countries.

Population pressures on the existing food supplies result in prevalence of diseases attributed to protein starvation. Such protein deficiencies are common in India, Ceylon, Indonesia, Malaya and in parts of the east coast of Africa. Some of the nations bordering the Indian Ocean have a seafaring tradition and conduct extensive fisheries. To feed their crowded populations, they are interested in expanding these fisheries.

#### **Expedition Design**

*Participation.*—Under the non-governmental sponsorship of the International Council of Scientific Unions (ICSU) and its Special Committee on Oceanic Research (SCOR) scientists in the various nations experienced in oceanographic research will staff vessels provided by marine laboratories of these several nations. Scientists from countries unable to provide vessels will be invited to work on the Expedition's ships. Every effort will be made to obtain active participation by each nation bordering the Indian Ocean. The degree and nature of participation will depend to some extent on the ability of each country to provide funds, facilities and personnel, and in part on general interest in advancement of the science of oceanography.

Upto 1 December, 1959 the following fourteen nations had formed National Committees for SCOR: Australia, China (Taiwan), Denmark, France, Germany (Federal Republic), Great Britain, Indonesia, Israel, Japan, The Netherlands, Norway, Union of South Africa, United States of America, and Union of Soviet Socialist Republics. It is reasonable to assume that vessels

