The Navy's Oceanographic Program

There is no line of investigation in which so many different forms of science play a part as in the study of the sea.

What is known as oceanography contemplates investigation of the waves and tides and currents and of all the physical and chemical properties of water, both pure and with various substances in solution or suspension. It also includes the study of the erosion of the shore lines and the change in bottom contours as well as of the piling up of sediments, organic and inorganic, on the ocean bottom and of the resulting alteration in the isotatic balance. It further covers the investigation of the evaporation from the surface of the water, and of the circulation of the air above it. And an important part of oceanography is the study of the plants and animals of the sea, of the relationships between them and of the relationships of both to the physical and chemical features, fixed or variable, of the medium in which they live. Oceanographic observations are of value only if we know the exact spot where they were taken. The localities are determined by recourse to applied astronomy and various forms of mathematics.

Importance of the Study of Oceanography

From the sea each year we draw an enormous quantity of food, mostly in the form of fish, shellfish, crabs and lobsters. In order to conserve these food resources and further to develop them we must know just how these creatures live, what they feed upon, their habits and the habits of their parasites and enemies, and their relation to salinity and temperature.

Other peoples use sea plants and animals far more extensively than we. Millions of their population find a livelihood in reaping harvests of sea organisms unused by us, and millions more on land profit by their labors.

Each year the rivers of the world carry to the sea millions of tons of mud taken from the surface of the land, and millions of tons of salts in solution in their waters. By this continuous process an enormous total weight of soil and salts is being constantly removed from the land areas. The soil, in the form of mud and sand, is dumped upon the ocean bottom, while the dissolved salts increase the weight of ocean water both by their own added weight and by gradually di-

---

1 Read at the General Session of the American Association for the Advancement of Science on December 30, 1924.
Science 61 (1576), x-294.