

OCEANOGRAPHY

Oceans Half Billion Years Old, Their Salt Tells Scientists

Finding That Clay Acts to Remove Salt Content of Water Leads To Revision of Antiquity Estimates

THE EARTH'S salty oceans are some 500,000,000 to 700,000,000 years old, almost double the accepted previous estimates, Drs. A. C. Spencer and K. J. Murata, of the U. S. Geological Survey, have concluded after an intensive study of oceanic chemistry.

Before the turn of the century, geologists determined the age of the oceans by dividing the amount of salt in them by the amount added each year. This was based on the idea that all the salt brought to the oceans by rivers stayed there. Such an early determination of age, after hundreds of surveys and analyses, was about 100,000,000 years. Later research brought the age to 350,000,000 years. But such figures were found to be too small. Dinosaurs are now known to have existed about 100,000,000 years ago and oceans obviously existed long before that.

Studying the action of clay on salt water, Drs. Spencer and Murata in the recent work have found that some of the salt carried to the oceans is removed by clays, and deposited on the sea floors as a compound that does not easily dissolve. Correcting the old figures for this salt removal give them the new age figure of 500,000,000 to 700,000,000 years.

The geologists who measure the earth's age by the products of the decay of radioactive elements are expected to say the new ocean age estimates are too small. They pronounce the earth at least 2,000,000,000 (two billion) years old. While the earth in its earlier stages may have been oceanless, there is in the radioactive age figures plenty of room for even more ancient oceans.

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CHEMISTRY

Synthesizing Carbohydrates Will Not Cause Revolution

REVOLUTION in agriculture will not come immediately as a result of the artificial preparation of carbohydrates by Prof. E. C. C. Baly of Liverpool University. Such seems to be the consensus of opinion among U. S. Department of Agriculture scientists interviewed by Science Service.

The nub of the matter is the very great expenditure of light-energy necessary, when water and carbon dioxide are brought together in the presence of the nickel oxide catalyst used by Prof. Baly. Plants are admittedly inefficient in their energy use, but in its present stage of development the artificial synthesis of food out of its raw materials is even less efficient when carried out in glass flasks.

It is more or less like the atomic energy situation. Fabulous sums of energy are locked up in atoms, and assertions are freely made that if this could be

liberated one could run all the machinery in the world on a few quarts of water a day. The only trouble is that in practical experiments it takes more energy to break the atoms apart than they yield by their decomposition.

So we probably won't be able to put out our nickel-oxide-lined dish full of soda-water in the morning and let the sun make our porridge for us. There will still be a market for oats raised in the old-fashioned way.

The real value in Prof. Baly's work, and what he was aiming at in the first place, is a better understanding of how plants themselves carry on photosynthesis. It has long been a disputed point, for example, whether they first made sugar and then turn it into starch, or whether starch comes first and is broken down into sugar. In the results presented at Calcutta there is a hint that

the progress is from the more complex starch to the less complex sugar.

Nevertheless, it would be rash to deny the possibility of eventual practical application. When Benjamin Franklin performed his classic kite experiment, he was interested only in finding out, as "pure" science, what lightning was made of. It was not until a hundred years or more later that even the crudest beginnings of the Age of Electricity could be recognized. Perhaps there will be sunshine-and-sodawater porridge in 2038.

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GEOGRAPHY

Northwest Coast Once Worried Map-Makers

SCHOOL children today scarcely realize what a past the American map has had. Maps of America are invariably the same shape—two triangles linked by the same thin isthmus, and with the same bays, lakes, cities, in the same expected places.

It was very different in earlier days. A young scholar in Colonial New England might be taught that California was an island by one teacher, and later might encounter another teacher who put faith in a different map, equally insistent that California was not an island. The entire northwest coast was one big uncertainty, with map-makers violently disagreeing over its shape and features.

Tracing the evolution of that part of the North American map is no easy task. Henry R. Wagner, who has studied the history and cartography of the northwest coast almost 15 years, has finally put the results into two volumes, each the size of a geography schoolbook. (*THE CARTOGRAPHY OF THE NORTHWEST COAST OF AMERICA TO THE YEAR 1800—Henry R. Wagner—Univ. of California Press, II Vols., 543 p., illus., \$20.*)

Our northwest coast was for a long time, he explains, the most remote part of the inhabited world that a European could think of. True, a few colonists lived there in rude plenty. But in general, "no one wanted to go there and no one did."

The world was gold mad, and there was no gold near the sea. The coast had to wait for civilization to develop its riches.

Mr. Wagner describes nearly a thousand maps, atlases, and globes that confidently set forth the features of that distant region, up to 1800.

"Not only," he says, "did it form

part of every map of the world; it was also put on every map of Mexico and North America, and besides, after a good part of it was believed to be an island, many maps were made simply to show this feature."

Historians have rather neglected the

northwest, so far as its map story is concerned. It has had far less attention than the northeast, but as Mr. Wagner rightly protests, it is "quite as interesting."

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GEOGRAPHY

Ice Floe Rotation Prevents Magnetic Variation Measures

Scientists Follow a Lifeline in Blinding Snow From Camp to Tent at Which Their Soundings Are Made

ROTATION of the ice floe on which four Russian scientists are drifting in the Arctic has forced Jenya Fedorov, expedition magnetologist, to give up measurements of magnetic variations, Tass, Soviet news agency, has learned by radio from the ice floe camp.

"But it does not affect the other observations," I. Papanin, chief of the group, radioed. "In general our specialists, Shirshov and Fedorov, have to work under very difficult conditions."

Reporting on 200 days of scientific work since they were landed on an ice floe near the North Pole on May 21, Papanin radioed:

"We have thoroughly studied the path of the ice floe from the North Pole to the coast of Greenland. We measured the depth of the ocean at 15 points and made hydrological soundings at 26 points, having taken samples of water at each point from 15 to 25 various depths.

"We made several series of observations for the study of the direction and the speed of the submarine currents. Our hydrological work finally established the existence of a sufficiently abundant organic life in the central part of the Arctic Ocean.

"During our stay on the ice floe we have made more than 100 astronomical observations. These will make it possible to trace precisely the entire path of the drift and to learn the laws governing the movement of the ice floes in the Central Polar Basin.

"In general, our program of scientific observations has been extensive. We hope that 35 definitions of magnetic elements, 13 observations on gravitation, several series of observations of the electric condition of the atmosphere will not prove useless.

"We are aware that our regular meteorological observations are received

with great interest by scientific institutions on the mainland. We note weather changes every two hours and send the results four times a day to the south.

"We watch the Polar Ocean attentively. We have gathered substantial scientific material and many scientists will now obtain reliable data on the entire area of our drift from the North Pole to the final point."

Describing the taking of soundings, Papanin reports that the expedition members use a rope to connect the small sounding tent to their camp so as not to lose time looking for it in the Polar night. "Along this rope we travel safely in any weather. Without this it would be rather difficult to find one's bearings in a snowstorm. Once Krenkel and I lost our way and while being within a few steps of our tent, we could not find it for quite a long time."

The floe on which the four Soviet scientists have been living for more than seven months is large enough for a small town, P. Shirshov, another member of the group, radioed.

"Our ice floe, shaped like a huge triangle, stretches for nearly four kilometers," he reveals. "There is enough space on it for a small town with all its boulevards, squares and parks. We have smooth ice fields here suitable for the landing of a whole squadron of heavy airplanes, there are picturesque little hillocks up to three meters high. In places strips of scarcely frozen water gleam darkly.

"Our hydrological tent has been pitched on a small field of new ice. Under our conditions a hydrological sounding means thirty hours of work with three brief intervals for rest right here on the ice. When you wind a windlass for twenty-four hours, hoisting up hundreds and hundreds of meters of seemingly

endless line, a fur shirt, even at a temperature of thirty degrees below zero, becomes an altogether superfluous item of one's costume."

Soundings have revealed shallower water as the floe approached Greenland, Shirshov adds. On November 8 a great submarine elevation projecting a whole kilometer (a little more than 3,000 feet) above the surrounding sections of ocean bottom was found. At least the previous and succeeding soundings were a kilometer greater than the depth found on that day.

The party's ice floe is turning in a clockwise direction as a result of the approach to the Greenland coast, a subsequent radio message declares.

"The ice current, flowing from the Polar basin into the Atlantic Ocean, strikes on its flank the rocky promontories of land. Therefore the right edges of the ice fields drag. The retardation is transmitted from one ice floe to the other, and as a result each one separately rotates clockwise."

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INVENTION

Typewriter Ribbon Inked On Only One Side Invented

AMERICAN inventors have been thinking out new gadgets and devices to add to the pleasure of existence, a survey of the 744 patents issued in one week by the U. S. Patent Office showed.

To prevent the clogging of typewriter keys and other printing media that print through a ribbon, and to enable an operator who handles things like addressing machine plates to avoid soiling his hands, George W. Schaefer of Quincy, Mass., has invented a typewriter ribbon that is coated on one side only. The type presses on the clean side of the ribbon, pressing the ink on the other side onto the paper, Mr. Schaefer explains in the specifications accompanying Patent No. 2,103,275.

Manuel Somohano of Mexico City has devised a non-blurrable mirror for the bathroom. Patent No. 2,103,384 has been granted him for his mirror, which uses electric heating units to prevent moisture from condensing on the mirror, and also is equipped with electric lights.

A fountain pen cleaner featuring a rubber bulb into which the pen point is inserted has been designed by Joseph D. Sheehan of Brooklyn, N. Y. Squeezing the bulb and releasing it exerts suction on the pen and thus cleans it out.

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