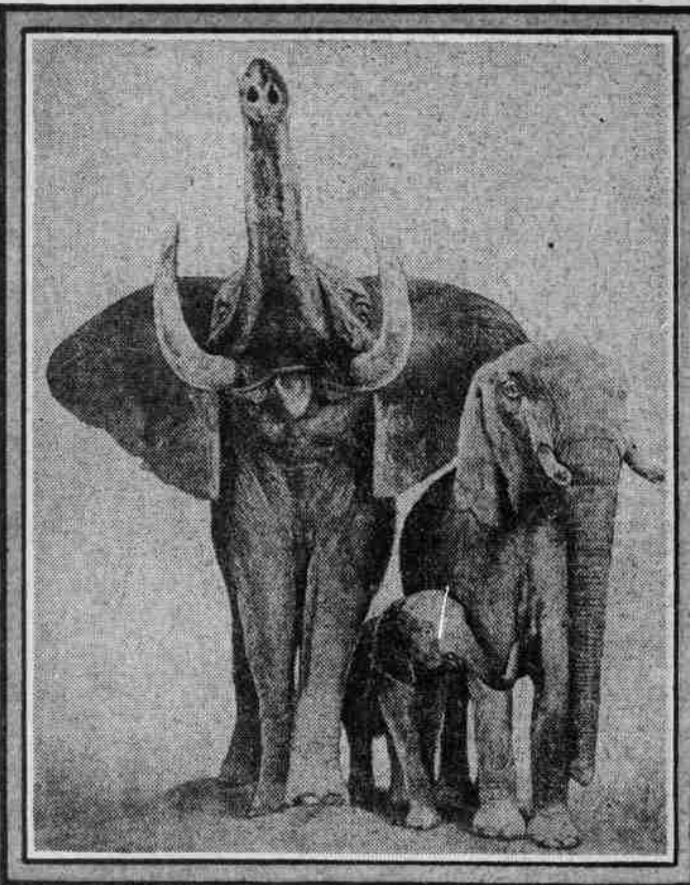


Science Now Calls the Ocean a "Radium Bath Tub"

The Revolutionary New Theory of an Earth Sun That Gives Sea Creatures a Prodigious Vitality.



A single flipper of a radium-energized whale weighs as much as the whole body of the biggest elephant.

BY DR. W. H. BALLOU.
WHAT is at the bottom of the sea? For a hundred million years that question went unanswered while man explored the earth, penetrated its most remote harbors, and wrested out its last secrets except the one great riddle of what was hidden by the deep waters his ships sailed.

Now, countless centuries since the first fisherman peered over the side of his boat and marveled at the ghostly glow he saw drowned in weedy depths, science claims to have solved the mystery.

The bottom of the sea, says science, is floored with ton after ton of that costly super-energy which itself was only recently discovered—radium. The ocean, in brief, is one gigantic "radium bathtub!"

It is radium that causes the weird flashes in the track of ocean liners which we call "phosphorus."

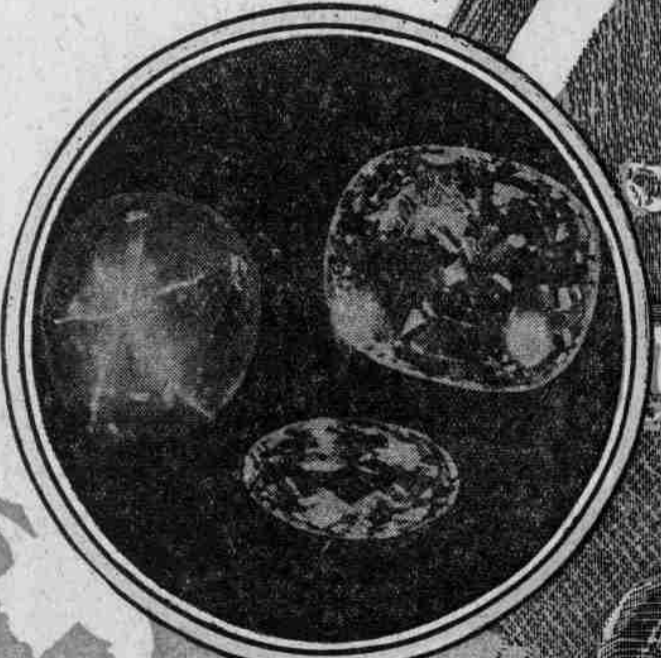
It is radium that gives the tingling, tracing, restorative quality to sea air.

It is radium that produces brilliant lights around the heads and in the mouths of certain deep-sea monsters.

It is radium that makes whales grow so big, turtles live so long, octopuses wax so strong and sharks so hard to kill.

Radium, the investigators believe, collecting through the ages on the ocean's floor, today forms a tremendous "earth sun," which, shining up from its cavernous home, fills every drop of salt water with minute fires of life, imparts its energy to the plants and creatures of the sea, and dances in the air above the sea in billions of invisible sparks hammered from that huge anvil buried fathoms deep in ooze and slime.

Oddly enough, the first investigations that led to a discovery which may be of



Sapphire and Morganite color effects displayed by pieces of anthracite coal after exposure to radium rays.



incalculable benefit to mankind were made possible by mankind's coarser instincts.

It was the lust for gambling, concentrated in the famous Casino at Monte Carlo, that provided the funds that financed the researches that put science on the trail of the ocean's radium secret.

Monte Carlo, as almost everyone knows, is owned by the principality of Monaco. Its profits go to Monaco's regent. And the late prince of Monaco used most of them to pay for the indulgence of his greatest hobby. That hobby was trying to find the answer to the old question, "What is at the bottom of the sea?"

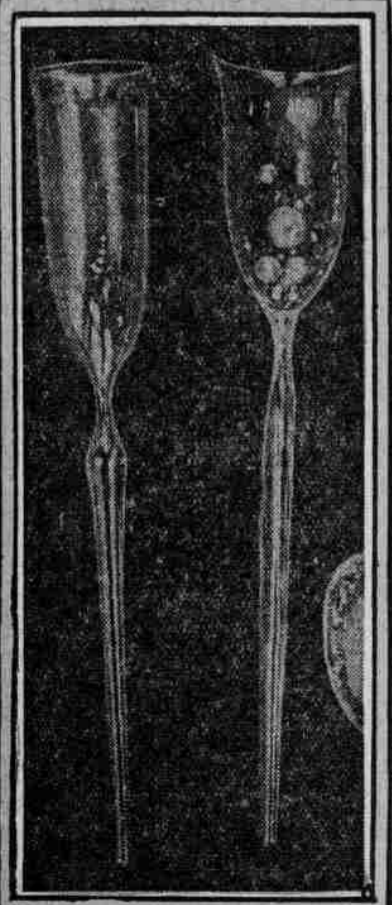
He owned a private yacht equipped with every resource science offered for

plumbing ocean depths. He financed expedition after expedition to discover "what's beyond the surface." Unearthing the ruins of buried Assyrian cities had no fascination to compare to unearthing the secrets of the sea, found the prince. And the skeletons of wrecks and the treasures of sunken galleons did not lure him with the strength of nature's own mysterious treasures—strange growths, fantastic fishes, and the magic glow which permeated all this hidden world.

The glow baffled the prince. He learned that, at a certain depth in the ocean, the light from the sun ceased. It could penetrate no farther. And yet, beyond this distance, even to the bottom-most holes in the ocean floor, there was light—an intense, violet light that illuminated cavities where the sun could never reach or reflect. The light of the sun came from above. This light came



Submarine life—Miss Lulu McCrath as the mermaid in a movie, made on the floor of the sea at the Bahamas.



Not a chemist's tubes, but minute sea animals, which get their light from radium.

... Strange growths, fantastic fishes, and the magic glow which permeated all this hidden world.

from below. It was, in effect, another sun—an "earth sun." The prince did not know what it was. He compared it to electricity, but he advanced the opinion that it was a distinct force in itself—an energy yet to be analyzed and classed by man.

In 1898 Mme. Curie of France discovered radium. Since then more than 30 radioactive elements have been found by scientists, but radium is the only one of these elements lending itself to practical use in industry and medicine.

The great handicap to man in using radium, however, is its cost. The uranium mines of Utah and Colorado, where reduction plants are located under the supervision of the government, can get only one part of radium to 3,000,000 parts of uranium. It requires 1000 tons of chemicals applied to 500 tons of uranium ore to produce one gram of radium. The American production amounts to but 50 grams annually, and at this writing there are in existence exactly six ounces of radium for commercial and medicinal use.

In view of the tremendous difficulty of manufacturing radium, one can understand the thrill that shot through the scientific world recently when investigators working on the theory advanced by the prince of Monaco announced that, in their opinion, the strange "glow" that fascinated the prince in his deep-sea adventures was from nothing more or less than radium.

Its presence in the ocean they explained in this way: Originally the seas of the world conceivably were of fresh water. During uncountable centuries, whether they were fresh or not, they received all types of salts and other elements conveyed to them from the land by the rivers that emptied into them. Among the deep-sea deposits were boundless quantities of uranium, the ore from which radium is extracted.

The United States geological survey computes that an inch of the entire surface of the earth is carried annually into the sea by the erosion of rains and streams and rivers on the land. During millions of years the uranium swept into the ocean has gone through the same process of reduction that the ores are subjected to in the reduction plants of Colorado. In addition, in the ocean itself are rocks with vast quantities of

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