

THE "COLD BLUE LIGHT" IS DEMONSTRATED BY PROF. HARVEY

PHILADELPHIA, May 25.—(U. P.)—Dr. E. Newton Harvey of Philadelphia, a graduate of the University of Pennsylvania, and now a professor at Princeton University, has succeeded in bringing from the bottom of the ocean something that in a different form Benjamin Franklin brought from the clouds.

Where Franklin with his kite brought about the eventual discovery of the electric light, Dr. Harvey with a fishing net, has brought about the discovery of "cold-blue"—light that shines continually with no more than a 1-1000th of a degree rise in temperature, and with no "power-house" but the air and its oxygen.

In an interview with the United Press Dr. Harvey commented not only to explain the nature of the discovery that has turned the eyes of the scientific world upon him, but to demonstrate the subject.

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Fighting Cock "Mothers" Chicks



When his spouse died, Bill, undefeated champion fighting cock, began to "mother" her 16 chicks, hovering over them at night and scratching food for them by day. He belongs to Mrs. S. Ory, New Orleans.

He then held the flask under a faucet and allowed about a glassful of distilled water to run over the powder. There commenced immediately to glow a clear bluish light that lit up the professor's form with a ghostly radiance. Nearby objects—a row of test-tubes, a Bunsen burner, a cupboard full of chemical supplies and bottles in which strange and aluminous fish lay quiet in a bath of alcohol were cast into prominence. Throughout the room, with its seeming confusion of tubing, retorts, flasks, scales and records there spread an unearthly blue that had a twilight intensity.

In the flask itself there appeared points of a blue light that looked like little stars forming part of a fairy firmament. As the scientist shook the container these points merged with the body of the light, and the entire phenomenon increased in intensity.

After several minutes had passed the light continued to glow as intensely as at the beginning. Dr. Harvey explained that he had succeeded in keeping the glow alive for more than twenty-four hours, and that he was confident he was on the trail of the method of making it entirely continuous.

Made No Heat.
The exhibition was wonderful in itself, as a vision. But the real value of the discovery was determined when he had his interviewer place a hand on the flask. It was found then to be cold to the touch. While the light had been shining for some

time there was not the slightest heat. It was this about the experiment that the world of science hails with hope. It sees a chance to abolish the electric light globe, with its heat and wasted energy, and to substitute a substance which will give light and nothing more and that will give it cheaply and continuously.

The substance that Dr. Harvey used was composed of two proteins taken from a diminutive shell-fish that is found by the million in the sea near the coast of Japan and is called the cypridina. It has the same substance in it that is found in fireflies, but in greater quantity. What makes this substance give off light is the discovery made by Dr. Harvey, who in the experiment described above had duplicated the process. It consists of adding oxygen to the protein known as "luciferin."

Several more years probably will be spent in research before the light can be proved to have a commercial possibility. It is now in the real of pure science.

There are at least forty or fifty animals and insects that give off light, or luminescence, that has no heat, and it was in the study of these that Dr. Harvey sought to find the answer to a problem that has perplexed scientists for decades. He concluded that if he could find what made the firefly flicker, he would have the formula for creating cold nights—that radiance produced by light rays between the wave lengths of infra red and those of ultra violet.

The phosphorescence that is found in decaying meat and other putrescent substances was the very first with which the doctor tried to work, but he found it could not be used in sufficient quantity to be of much use.

Not the Solution.
He then travelled into the fields and byways about Princeton and collected fireflies, which he brought into his laboratory. The task of finding in these diminutive insects the source of their light proved too much for him. It was then he thought of the fireflies of Japan, that are so large and numerous that the Japanese collect them and put them in cages. At a certain time of the year there are festivals at which these imprisoned insects are taken on lakes, amidst scenes of indescribable beauty and released in swarms of brilliance.

Accordingly he travelled to Japan, stopping at the Dutch East Indies to collect some specimens of a little fish found only there, known as the photophorus, that has a large luminescent organ below its eyes that shines continuously with a green light and which is covered at times by a lid like that of an eye. This fish proved of little use, and so did the fireflies of Japan.

Dr. Harvey stopped in Japan at Uotzu, near Toyama, where facilities for his work were provided, and upon giving up work with fireflies turned to luminous snail, a small fish that has eight tentacles like those of an octopus and in two of which are luminous organs. They are known as Hotaru-Ika, or firefly-squid. They did not prove satisfactory.

him was the cypridina, a crustacean about an eighth of an inch long, that lives at the bottom of the sea and comes to the surface at night. These he found to have a proportionately great amount of luminous material, and to be obtainable in such numbers that he could make effective progress.

The Combination Found
In them he found two similar proteins, luciferin and luciferase. Each was composed of carbon, hydrogen, oxygen, nitrogen and sulphur, though in exactly what combination has not been discovered. When the luciferin combined with oxygen it shone, turning into a substance called oxy-luciferin. The luciferase then acted to take out the oxygen from the oxy-luciferin. This permitted the original luciferin to repeat the oxidizing and shining process.

The continuous oxidation, or lighting of the luciferin, and its accompanying "reduction," or de-oxidation, has been produced by Dr. Harvey by the use of metal, known as catalyst, that acts as the luciferase does in the animal. In his combination the luciferase acts to help along the oxidation.

When Dr. Harvey has found how to make luciferin without resorting to fishing, and has increased the intensity of its light, the problem of commercial cold light will have been solved.

WAR OVER BEEF

MONTEVIDEO, (By Mail to the United Press).—Jerked beef is now threatening to become the cause of a tariff war between Uruguay and Brazil. The national council has announced its intention to lay a proposal before the chamber of deputies that customs duties levied upon Brazil products be increased as a reprisal for similar action which the neighboring country proposes to impose on the Uruguay meat.

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