

BIOLOGY

Tuberculosis Germ Produces Anti-Bleeding Vitamin K

Cause of Severe Bleeding Itself, It Nevertheless Gets Its Color From Anti-Hemorrhage Crystals

THE TUBERCULOSIS germ, often a cause of severe and fatal bleeding, may shortly give doctors a weapon against bleeding.

This surprising possibility of good coming from the White Plague seems promised by the discovery that the yellow crystals which give the TB germ its color are a form of vitamin K, called the anti-hemorrhagic vitamin because it prevents or checks tendency to fatal bleeding in obstructive jaundice.

The discovery, by Drs. H. J. Almquist and A. A. Klose of the University of California at Berkeley, is reported in the *Journal of the American Chemical Society*. (June)

Although the germs in the tuberculosis patient's body make this life-saving chemical which is both coloring matter and vitamin, the patient cannot get it from the germs that are making him sick and boring through his blood vessels to cause hemorrhage. Nor would it do him any good if he could, because lack of vitamin K is not the cause of hemorrhage in tuberculosis, and the TB patient does not suffer from lack of blood-clotting substance. Patients with obstructive jaundice, the ailment that turns the skin yellow, do suffer from lack of the blood-clotting substance because in their condition the flow of bile to the intestines is blocked. Without bile, the patient cannot absorb vitamin K from his food.

Fortunately, however, the chemical has been extracted from the TB germs and has ever been made synthetically by Prof. R. J. Anderson of Yale University, who christened it phthiocol. The California scientists used some of Prof. Anderson's synthetic phthiocol in their experiments.

"The compound has been definitely shown to be a form of vitamin K," they state.

It has physical and chemical properties similar to those known for vitamin K. Fed to chicks with a vitamin K-less diet, the synthetic TB chemical kept the clotting time of the chicks' blood

from being dangerously prolonged just as vitamin K itself would.

"This discovery essentially completes the vitamin K problem," the California scientists state, adding that they believe phthiocol is probably the simplest member of an homologous series of anti-hemorrhagic substances.

Their discovery of its identity as vitamin K is considered an amazing outcome of the tedious and even dangerous chemical studies of tuberculosis germs which Prof. Anderson has been making for 10 years under a grant from the National Tuberculosis Association, made possible by Christmas seal sales.

Prof. Anderson believed when he discovered phthiocol that it was a stimulus to growth and might prove valuable some day if scientists could learn how to use it. Firm in this belief, he persuaded Yale University to patent his synthetic phthiocol. It has not yet been made commercially but probably soon will be, and is expected to be available at a low cost.

Soon after Prof. Anderson discovered phthiocol in TB germs, other scientists found it in other forms of life and it is believed to be fairly widely distributed throughout nature.

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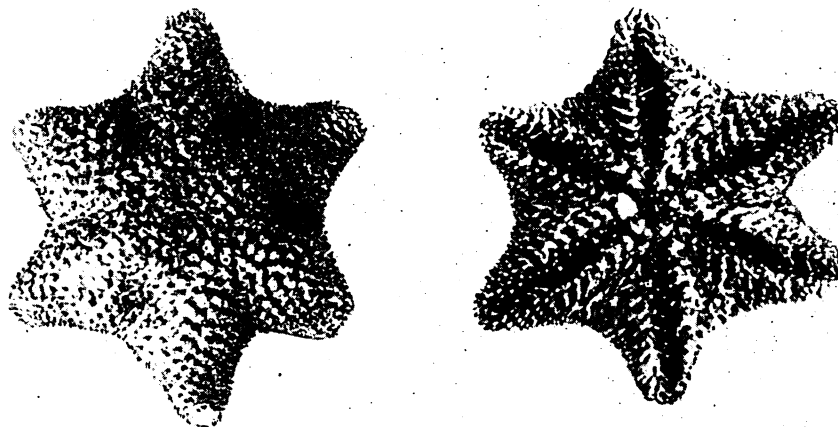
CHEMISTRY

Elements' "Fingerprints" In Gigantic Catalog

MILLIONS of "fingerprints" of the chemical elements, little lines in the spectrum of light, are being charted and listed under the direction of Prof. George Russell Harrison of the Massachusetts Institute of Technology to give science one of its most necessary and basic catalogs.

Design of machines which have made this work possible has won for Prof. Harrison the famous Count Rumford medal of the American Academy of Arts and Sciences to be presented this fall. Preparing the catalog is somewhat like compiling an unabridged dictionary, or the great fingerprint file of the Department of Justice in Washington. Its closest scientific counterpart is the Boss catalog giving the position and brightness of all stars in the sky down to 17th magnitude. But the catalog of spectral lines is even more important. It is a key to the basic stuff of which the universe is built.

Spectral lines have been listed and utilized from the middle of the last century when it was found that in Newton's



NEW STARFISH

*We are accustomed to thinking of starfish as being always five-armed, but this is by no means necessarily the case. An interesting genus of very small starfish, recently described by Austin H. Clark of the U. S. National Museum, is symmetrically six-armed, as the above pictures show. The actual diameter of the specimen, from tip to tip, is a little less than one centimeter. The new starfish, first collected in the Aleutian islands by Dr. Victor B. Scheffer of the U. S. Biological Survey, has been given the name *Aleutiaster schefferi*.*