BACTERIOLOGY

"Harmless" Germ a Killer

Violet germ, long thought to be innocent, now found guilty of killing by serious infections. Prompt, energetic treatment with antibiotics found to be the remedy.

➤ MURDER MYSTERY fans, and perhaps the writers, should like this one: It might be called the Story of the Violet Germ, Or How a Presumably Harmless Bacterium Turned Killer.

The idea comes from a report by four physicians of the fatal infection of a British army officer with a germ called *Chromobacterium violaceum*. The name comes from the fact that the germ, or bacterium, produces a violet color when grown in cultures in the laboratory.

For the murder mystery fans there is also the fact that this germ produces deadly hydrogen cyanide. The bitter almond smell of this gas may be a clue to the true identity of the germ in case a particular strain loses its ability to produce its identifying color.

The medical report is by Drs. P. H. A. Sneath, R. Bhagwan Singh, J. P. F. Whelan and D. Edwards of the British Military Hospital, Kinrara, and the Institute for Medical Research, Kuala Lumpur. It appears in an English journal for physicians, the *Lancet* (Aug. 8).

The germ of the violet color is commonly found in water and soil and is generally held to be a harmless organism living on dead or decaying matter. First record of its being a killer came in 1904 when Dr. P. G. Woolley found it guilty of killing three buffaloes in the Philippine Islands.

Since then 13 human cases, almost all from the tropics, have been reported. Only two of these are known to have recovered, with records lacking on three others. The British army officer was among those who died of the infection. In his case amebic liver infection was suspected and he was treated with emetine, standard drug for amebic infections, and with the antibiotic, aureomycin, and the anti-malaria drug, chloroquine.

His condition improved and the drugs were stopped. Then he relapsed and was again given emetine and chloroquine.

The day before he died greenish pus was drawn from his liver. No amebas were found but the supposedly harmless, violet-color-producing bacterium was found and identified as the killer.

Tests with this bacterium later showed that it is sensitive to streptomycin, chloramphenicol, aureomycin and terramycin but not to penicillin or sulfadiazine. The officer's improvement, believed at the time due to the emetine, evidently was due to the aureomycin. This, the doctors point out, shows the danger of giving more than one drug at a time.

"Energetic treatment with antibiotics" when the diagnosis can be made in time is advised by the four doctors in their report.

Science News Letter, September 19, 1953

PHYSICS

Supersonic Vortex Tube

➤ SCIENTISTS IN the physics department of Cornell Aeronautical Laboratory, Inc., at Buffalo, N. Y., may be on the trail of a new instrument that will play a big role in supersonic research.

The instrument is a vortex tube. It measures the temperature of air around an airplane. It compensates for the "ram heating" of air and, in tests, gave temperature readings accurate to within one degree Centigrade.

The vortex tube is an extremely simple device. It has no moving parts. A heat-sensing element inside produces direct temperature readings for the scientists.

Conventional vortex tubes separate an air stream into a cold and a warm air stream at lower pressure. The modified tube used, however, does not actually separate the cold from the warm air. Instead, it keeps a stable core of cold air inside the tube. This core of air yields the temperature of the "free" air around the plane.

At 600 miles an hour, a plane flying just above ocean waves may be warmed 30 degrees Centigrade around its wings and tail because of the heat released by compressed air. At supersonic speeds the heating rises sharply. Now that the so-called "sonic barrier" has been cracked, many aeronautical scientists are hotly pursuing a solution to the "thermal barrier" problem.

"Supersonic heat" has become imposing at speeds flown by supersonic research aircraft today. Great refrigerating systems have been installed in some of the planes to keep their pilots from "frying."

The vortex tube some day may prove valuable as an instrument needed to help scientists chill the effect of the thermal barrier. Scientists at Cornell, however, point out they still must learn how the tube works under supersonic conditions, how it is affected by icing and altitude changes, and how it should be mounted on airplanes.

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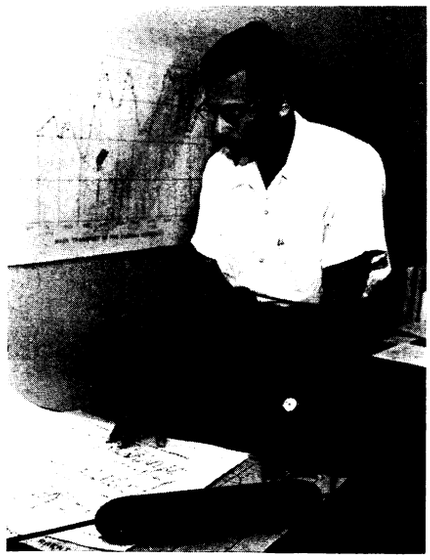

GULF STREAM FLOW—Dr. Gunther K. Wertheim, research associate of the Woods Hole Oceanographic Institution, with the electrode used to record the electrical potential produced in a submarine cable by the flow of Gulf Stream water through the earth's magnetic field.

OCEANOGRAPHY

Measure Flow of Florida Current

➤ YEAR-'ROUND FLUCTUATIONS in the Florida Current, an important branch of the Gulf Stream, have been measured by electromagnetic induction involving a telegraph cable linking Key West and Havana.

The measurements, conducted by scientists of the Woods Hole Oceanographic Institution in Massachusetts, reveal that every second an amount of water equal to 100,000,000 brimming bathtubs moves through the Straits of Florida.

The current flow is tied in with meteorological conditions and is somewhat erratic over short periods. But in general, the maximum occurred at the end of April, when 39,000,000 cubic meters of water flowed past the submerged cable each second. Water moved at its slowest speeds from late August to mid-October, 1952, and in March of this year.

Special electrodes were set out near the shore, and were connected to the telegraph cable to measure the electric potential generated in the cable by the water as it moved through the earth's magnetic field. This method proved superior to previous techniques that frequently involved the difficult task of anchoring a ship in deep water.

Science News Letter, September 19, 1953

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