

MEDICINE

Cure for Undulant Fever?

Hope that a combination of streptomycin and sulfadiazine may be completely effective against this disease was provided by nine recovered patients.

► THE combination of a sulfa drug and streptomycin, anti-germ chemical from an earth mold, may provide a cure for undulant fever, the disease that killed Edsel Ford, it appears from a report by four University of Minnesota medical scientists in the *Journal of the American Medical Association*, (Feb. 7). The scientists are Drs. Wesley W. Spink, Wendell H. Hall, James M. Shaffer and Abraham I. Braude.

Nine patients recovered from the disease completely when given both streptomycin and sulfadiazine, they report.

Neither drug alone, nor any other treatment, has given as good results, they state. But an even more effective weapon against the disease may come, they suggest, from the intensive investigations now being made of other drugs like penicillin and streptomycin.

The treatment was effective in both acute and chronic undulant fever. Particularly encouraging is the fact that it was effective in complications of the disease such as subacute bacterial endocarditis (a form of heart trouble) and the spinal disease, spondylitis.

The idea of using both drugs together came partly from tests the scientists were making on chick embryos and partly from experience with a patient who had improved when treated with streptomycin alone.

Toward the end of treatment and after the streptomycin was stopped, undulant fever germs in his blood were found to have developed resistance to streptomycin. The germs proved rather sensitive to sulfadiazine in laboratory tests, however, so the patient was given large doses of the sulfa drug. Whereupon his fever disappeared and there were no more undulant fever germs in his blood. Unfortunately, he had developed a severe heart inflammation and died suddenly of heart failure, although the germs that had caused the heart trouble had been eradicated.

The chick embryos had been used instead of guinea pigs to provide a faster way of screening possible remedies for undulant fever. Five sulfa drugs, penicillin and streptomycin were each tested. Although the sulfa drugs and strepto-

mycin each, when used alone, prolonged the lives of infected chick embryos, none of the remedies alone was very effective in killing the germs. But the combination of large doses of sulfadiazine with streptomycin did bring about 100% sterilization of the undulant-fever-infected chick embryos.

PHYSICS

Liquid Surfaces Measured

► THAT fine film which forms a liquid surface has measurable depth, scientists at the Stanford Research Institute declared. A million of these liquid surfaces, piled one on top of another, would give a depth of one inch, they claim.

To determine the depth of a liquid surface, they developed an instrument, as yet without a name, which measures the minute distortion of polarized light reflected off them. This depth is not a matter of purely scientific interest; it has a practical value in the fields of lubrication, oil exploration and biology, in fact wherever the reaction of liquid surfaces in contact with other materials is a factor.

The method of measuring the depth of a liquid surface was carried out by Stanford scientists working on a Naval Research contract under Dr. A. Paul Brady, research director, and the overall supervision of Dr. J. W. McBain, consultant on research. Two others who assisted were Dr. J. C. Henniker and Dr. Frank A. Lucy.

Classical mathematical theory assumed liquid surfaces had no depth. General scientific opinion for the past several decades thought the depth to be a billionth of an inch rather than the millionth now claimed. This belief was based on the assumption that attraction between molecules in the liquid was effective only over this very short range.

The work at Stanford is claimed to prove that molecular attraction takes place over a wider range than ever proved before. Dr. McBain explains the action by comparison with that of the ordinary magnet. It has a short direct

attraction on a cluster of nails, but can pick up a series of them, one hanging to another.

Undulant fever is also known as Malta fever and brucellosis. The germs are called *Brucella*, after Sir David Bruce, British medical officer who first discovered them. The disease attacks cattle, swine and goats and is responsible for heavy economic losses in livestock. Cattle owners in the United States lose more than \$50,000,000 annually, swine owners more than \$10,000,000 through this disease, it is estimated. Among humans there are believed to be 30,000 to 40,000 active cases annually.

Humans get the disease through contact with infected animals, their secretions and carcasses, and from drinking raw milk from infected cows and goats.

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Molecules in a liquid surface, he believes, polarize several neighbors and these in turn polarize others. This chain-like relayed action extends over what he calls an "impressive distance."

Science News Letter, February 14, 1948



UPSET OF CLASSICAL THEORIES—Experiments shedding new light on the behavior of matter have resulted from the development of a new instrument, without a name as yet, which measures the minute distortion of polarized light reflected off liquid surfaces. Dr. A. Paul Brady is shown looking through this new instrument while Dr. J. W. McBain, research consultant, watches.