

CHEMISTRY-MEDICINE

New Drug May Check TB

Christened neomycin, this new antibiotic is effective against TB germs that cannot be stopped by streptomycin. Manufacturing difficulties are yet to be solved.

► WITH the hope of completing the medical conquest of tuberculosis, a new drug from the soil better than streptomycin has been discovered by Dr. Selman A. Waksman, the Rutgers microbiologist who has already given the world the best treatment of the white plague.

Christened neomycin, the new antibiotic comes from the same general kind of microscopic organism that produces streptomycin.

Neomycin has the great advantage of being active against strains of human tuberculosis germs that cannot be stopped by streptomycin. Experiments outside the living body, with limited amounts of the new wonder drug, demonstrate this superiority and show that it lacks troublesome toxicity that has tended to limit treatment of some tuberculosis cases.

Tests first in animals and then in human cases will be made when the Rutgers laboratory in New Brunswick, N. J., and co-operating manufacturers produce enough neomycin.

So new is the drug that not all the inevitable difficulties in manufacture have been solved. But the same apparatus and general methods used in streptomycin production can be used for neomycin.

When given to mice by mouth, neomycin was effective in combatting germ infections. For this reason, scientists hope that tuberculosis will eventually be treated by a drug that can be swallowed, saving patients the bother of injections now necessary with streptomycin.

A large variety of bacteria other than those that cause human and animal tuberculosis are subdued by neomycin, and the new drug gives promise of fighting infections that have built up resistance to streptomycin.

The details of neomycin's discovery, which Dr. Waksman made jointly with Hubert A. Lechevalier, a Canadian graduate student, are given in a report to the journal, *SCIENCE* (March 25).

The new antibiotic is produced by an organism known as *Streptomyces fradiae* whereas streptomycin is produced by a very closely related strain of the actinomycetes, known as *Streptomyces griseus*. Strangely, the two substances are different both chemically and in the way they act on bacteria.

Striking reports of effectiveness of streptomycin in treating tuberculosis are being received by Dr. Waksman from all parts of the world and it is being produced abroad as well as by eight companies in this country. Streptomycin is now only five years old.

Streptomycin does produce some nerve

symptoms when it is administered for a prolonged time and this limitation, as well as the resistance that develops in some cases, will cause doctors to welcome neomycin when it proves itself and is produced in

sufficient quantity. The neurotoxic effect is upon the eighth nerve, which controls body balance, and causes dizziness and inability to walk a straight line without wobbling.

Much of the streptomycin now used is a new form of the drug, called dihydrostreptomycin, which is proving to be less toxic, although Dr. Waksman hopes neomycin will be even better.

The soil microbe that produces neomycin is a close relative of a culture that was isolated from the soil in 1915 by Dr. Waksman and a fellow student when they were both laboratory assistants at Rutgers.

Science News Letter, April 2, 1949

BIOLOGY

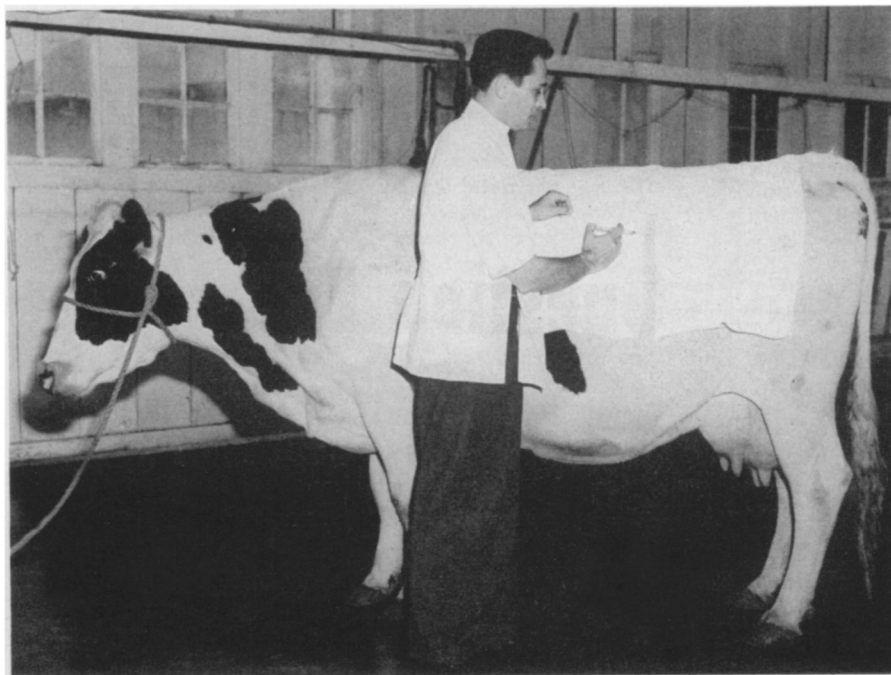
Cow Ova Transplanted

► PEDIGREED, blue-blooded calves produced by scrub cows are the startling promise of a revolutionary method developed by Raymond Umbaugh, a young zoologist at the Foundation of Applied Research in San Antonio, Texas. Mr. Umbaugh's method consists in the surgical removal of fertilized ova or egg cells from the body of a pedigreed cow and their transplantation into the body of a scrub cow which thereafter serves as a biological foster-mother during the development of the embryo calf.

Thus far, it has been possible to get several bovine pregnancies started by the use of this method, though as yet no living

calves have been born, Dr. Harold Vagt-borg, director of the Foundation and president of the affiliated Southwest Research Institute, announced. Dr. Vagt-borg added that he is quite confident that with improvements in technique it will become entirely practical to use the method in everyday stock-raising operations, with resulting vast improvements in both meat and dairy industries.

To obtain the pedigreed ova, the "donor" cow is induced to release them from her ovary by injecting into her veins a stimulating female sex hormone. Artificial insemination is then used, to fertilize the ova.



ARTIFICIAL BREEDING PROJECT—This cow is about to have its fertilized egg removed as one step in the project seeking to permit birth of pedigreed calves from ordinary scrub cows. Raymond Umbaugh, research associate in charge of project, is preparing to make the transfer.

After a suitable time interval, a small surgical incision is made into her flank, and an instrument inserted into the tube containing the ova to extract them. The fertilized ova, picked out under a low-power microscope, are then implanted into the bodies of the cows that are to become foster-mothers.

Final success with this method will not only produce high-quality calves from scrub cows, but will make it possible to make every calving a twin birth, thus boosting quantity as well as quality of offspring.

Neither the pedigreed donor cows nor the scrub foster-mothers are harmed by the operation. The donors can be drawn upon for fresh supplies of high-grade ova about every 35 days.

As in every scientific advance, the new method is founded largely upon earlier work done elsewhere by other researchers. Mr. Umbaugh acknowledged indebtedness to a number of precursors who had varying degrees of success in transplanting the ova of various animals, notably rabbits, and in eventually obtaining live offspring. He was encouraged to attempt the much more difficult problems presented by larger domestic animals by the pure-science results thus obtained.

Science News Letter, April 2, 1949

MEDICINE

Acute Gouty Arthritic Attacks Caused by Glands

➤ TWO glands, the pituitary at the base of the brain and the adrenals just above the kidneys, are declared responsible for onsets of acute gouty arthritis that often follow chilling, operations, X-radiation and other kinds of shock, by Dr. Leon Hellman of the Sloan-Kettering Institute for Cancer Research, and formerly of Montefiore Hospital, New York.

Immediate cause of the attacks, he states in the journal, *SCIENCE* (March 18), is much-increased activity of the cortex or outer

part of the adrenal glands. The adrenals are stimulated into this activity by a hormone produced in the pituitary under shock conditions. This hormone, which has been isolated and identified, is known by the long name of adrenocorticotropin—doctors call it ACTH for short.

Dr. Hellman demonstrated the connection of ACTH with the attacks by injecting it into the tissues of human volunteers—patients who were known to be subject to the disease. In a high proportion of such tests, attacks of acute gouty arthritis were provoked.

Science News Letter, April 2, 1949

PHARMACOLOGY

Drink-Limiting Drug Is Tested in this Country

➤ A DANISH drug which will limit you to just one drink has given "promising results" in tests in this country.

Called Antabuse, the drug can be taken in tablet form in daily doses. It has no effect after only one alcoholic drink. But a second drink, if you've been taking Antabuse, will make you blush, increase your heart rate with palpitations and give you an uneasy feeling of apprehension.

Dr. Theodore G. Klumpp, president of the American Pharmaceutical Manufacturers Association and of Winthrop-Stearns, Inc., described Antabuse as a guest of Watson Davis, director of Science Service, on *Adventures in Science*, over the Columbia network.

The drug is not yet on the American market, Dr. Klumpp said. It has been tested on 83 chronic alcoholics, with promising results in 74.

"It is reasonable to suppose that some such treatment as this may be helpful when other approaches fail," Dr. Klumpp concluded.

Science News Letter, April 2, 1949

GENERAL SCIENCE

Offer China Sea Specimens For Science Exchange

➤ OUT of the China Sea, specimens of plants and animals will be collected by the Oceanographic Institute of Nha Trang for any American museum or laboratory that will exchange them for publications and scientific equipment. UNESCO's field cooperation office in China has relayed this barter request in view of Chinese conditions. Nha Trang is on the southeast coast of French Indochina.

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