

conducted by Charles Pfizer & Company, makers of terramycin, indicate this death rate can be cut in half.

Turkeys Also Responsive

Turkeys, particularly sensitive to disease, are similarly responsive in hardiness and growth to antibiotic feeds. In a number of experiments deaths have been cut to 40% of normal.

Antibiotics will not make a chicken or pig grow abnormally large. They merely cut the time required to reach full growth—with a consequent saving of food and labor.

How do the antibiotics achieve their remarkable effect? There are a number of theories, none of them proved. They may kill off intestinal bacteria which compete for food; or destroy bacteria which produce growth-slowing toxins; or contain some unidentified nutrient.

Will the drugs stimulate growth of cows, sheep and goats? It is too early to say, since this work is only a few months old. But the answer will likely be no. These animals have pouch-like rumens, or stomachs, in which bacteria act on foods to produce essential vitamins. Antibiotics might kill off these valuable microbes—doing more harm than good.

Preliminary evidence indicates the antibiotics will be useful elsewhere in the animal world. They have hastened growth of the white rats used by medical experimenters. They appear to produce sturdier and healthier pups, and have even been used with good results in fish hatcheries. For reasons as yet unexplained, they seem to produce mink larger than normal; in one experiment they increased the size of pelts 20%.

Affect Other Animals

Almost as soon as the first experimental results were announced, commercial feed mixers started using antibiotics. Drug makers who had once measured antibiotics on chemists' balances started selling crude extracts by the boxcar, and now foresee an expanding market worth millions of dollars a year. Most of the antibiotics for this market are derived from broths that once went down sewers. After a certain point it is no longer economical to extract drugs for human use, but the spent broths contain enough antibiotic to stimulate animal growth.

Will antibiotics added to milk or cereal promote healthy growth of infants and young children? As yet, no one knows. But experiments to determine the effect are under way—experiments which will take several years to complete. For the present, antibiotics are significant enough for the new job they are beginning to do on a grand scale—assuring more meat at a lower cost at a time when skyrocketing prices are a matter of national concern.

This article was prepared for SCIENCE NEWS LETTER in cooperation with the READER'S DIGEST. It will appear shortly in that magazine.

Science News Letter, May 5, 1951

CHEMISTRY

Synthetic Steroid Chemical

➤ A CHEMICAL achievement which promises to aid the fight against cancer or heart disease or arthritis has been made by Prof. Robert B. Woodward and associates of Harvard University.

"The first total synthesis of a complete steroid" chemical is their accomplishment.

Steroids are a group of chemicals that include sex hormones, cortisone, bile acids which are the starting material for cortisone, some cancer-causing substances and the non-starch part of some plant chemicals such as the heart medicine, digitalis.

The chemical Prof. Woodward has made in his laboratory is not cortisone. It is not the related anti-arthritis chemical, compound F. Opinions are divided on whether it can be used as the starting point for synthesizing compound F or cortisone through a process by-passing the bile acids.

The practical value of the new synthetic chemical remains for the future to tell. It was pointed out, however, that the processes for converting one steroid chemical into another are so well worked out that the synthesis of natural steroids may be accomplished in the near future. Natural steroids are the ones found in plants and produced by certain glands such as the adrenal glands that produce cortisone.

Cortisone synthesis in the laboratory or manufacturing plant starts with another animal product, bile acids. Prof. Woodward's synthesis of a steroid starts with a simple coal tar derivative, orthotoluidine.

Working with Prof. Woodward at the completion of the synthesis were: Dr. Franz Sondheimer, Dr. David Taub, Dr. Karl Heusler, Dr. W. M. McLamore, Mrs.

Dorothy Voile and Mr. Irving Osvar. Financial support was given by Merck and Company, manufacturers of cortisone, and Research Corporation of New York.

Science News Letter, May 5, 1951

MEDICINE

Cortisone Helps Delay Liver Degeneration Due to Diet

➤ CORTISONE CAN help delay liver degeneration due to faulty diet, Dr. Klaus Schwarz, special research fellow of the U. S. Public Health Service, has discovered.

Dr. Schwarz's studies were made on rats who got their starch and sugar chemistry upset by feeding them a diet that was almost one-third yeast. This caused severe damage to their livers.

The liver damage was very like that seen in humans suffering from the almost always fatal disease, acute yellow atrophy of the liver. This suggests that cortisone might help human patients with this particular liver disease. Dr. Schwarz has not yet been able to make trials of this. European scientists, however, have used another hormone from the adrenal glands which produce cortisone to treat epidemic hepatitis. This is the liver disease that is believed caused by a virus and sometimes called jaundice, because of the yellow skin color it gives. The European doctors claim that the adrenal gland hormone helped in this disease.

Details of Dr. Schwarz's studies are reported in the journal, SCIENCE (April 27).

Science News Letter, May 5, 1951

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