

MEDICINE

Attack TB With Vitamin-Like Drug

► **SUCCESSFUL USE** of a new drug for the treatment of tuberculosis was announced by Drs. Robert L. Yeager, W. G. C. Munroe and Frederick I. Dessau at a Veterans Administration Conference in St. Louis. Drs. Yeager and Munroe are attached to Summit Park Sanatorium, Pomona, N. Y., where the patients were treated. Dr. Dessau is with Lederle Laboratories, Pearl River, N. Y., where the new drug is made.

The new TB medicine is a pyrazine chemical. It is related to the B vitamin, niacin, which is found in the eggs and milk long considered important diet items for tuberculosis patients. It is called pyrazinamide and by its trade name, Aldinamide.

First of the 43 patients at Summit Park Sanatorium to get the new drug was started on this treatment in September, 1949. The forty-third started on the drug in December, 1951.

In nearly all patients who had more than one degree of fever when treatment started, the temperature was rapidly reduced. Patients coughed less, brought up less sputum and in many cases the number of germs in the sputum was reduced. X-rays showed improvement in some "early" active acute cases.

Advantages of the new drug are that it is effective against strains of TB germs which have become resistant to streptomycin and that it can be given by mouth instead of injection. Chief disadvantage is that the germs also build up resistance to it after eight weeks. Experiments to overcome this are now under way.

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PSYCHIATRY

Standards Set High Goal For Public Mental Hospitals

► **COMMUNITIES THAT** really want their mentally sick to have active treatment and humane care have a new yardstick for measuring the quality of their public mental hospitals.

The yardstick consists of new official standards for psychiatric hospitals and clinics set by the American Psychiatric Association (See p. 78). No public mental hospital has yet come up to these standards, the association's president, Dr. Leo H. Bartheimer of Detroit, states.

"But," he said, "if we really want to give mental patients active treatment and humane care—and who doesn't?—then there is no excuse for pussyfooting about what is required to do the job."

The standards specify that to provide the kind of intensive treatment that will give newly admitted patients the best chance

of an early discharge, a public mental hospital with a 40-hour work week for employees, should have one doctor for every 30 patients, a registered nurse for every five, and a psychiatric aide or attendant for every four. For patients who do not respond to early intensive treatment and require more prolonged care, there should be a doctor for every 150 patients, a registered nurse for every 40, and a psychiatric aide or attendant for every six.

Bringing public mental hospitals up to these standards will take more money and more personnel than is now available. While some psychiatrists feel these new standards are therefore unrealistic, the association has decided that it is wiser to set a high goal. The hope is that the public wants good care for the mentally sick and will help achieve that goal.

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ENTOMOLOGY

Ants Put to Work on Farms To Fight Insects and Fungi

► **SCIENCE MAY** soon put ants to work helping the farmer.

Dr. Stanley E. Flanders, professor of biological control at the University of California Experiment Station at Riverside, is conducting experiments on rearing useful ant colonies.

"Certain ants that are harvesters or protect scale insects and aphids are harmful as well as annoying," he admits. "But there are other species that eat insects and fungi. These we want to find and cultivate."

For biological control, he pointed out, certain ants have just the right habits—if they can be controlled.

"We want to test them on incipient insect infestations in grains and fruits," Dr. Flanders said. "We hope to get them into colonies we can move around like the apiculturists do bees."

Use of ants for biological control of insect pests is not a new idea. They were the first insects used in biological control. Two or three thousand years ago they were used by the Chinese for control of citrus bugs and caterpillars. They still are. Some people in China make their livelihood collecting tree-nesting ants. They sell the nests to farmers to hang in their citrus trees.

In Germany, said Dr. Flanders, ants have been used for 100 years in forest insect control. German foresters have encouraged increase of ant colonies by providing favorable sites. They impose a penalty for destroying ants. Use of ants to destroy termites has been reported from India. And nearer home, in some orchards in Virginia, ants are reported the most effective control of the apple worm or codling moth.

The Canadian government is also looking into pest control by ants, and in the United States the useful insects are under study by a number of authorities.

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IN SCIEN

MEDICINE

That Aching Back, Often It's Old Age Rheumatism

► **OF 2,000** patients going to the Mayo Clinic in Rochester, Minn., complaining of backache, about one-fourth, or 511, owed their aching backs to osteoarthritis. This is the kind of arthritis attacking old people chiefly and marked by degeneration and enlargement of the bone and cartilage of the joints.

Protruded or ruptured intervertebral disk was suspected as the cause of the aching back in the next largest group of 445 patients, or just over one-fifth of the total aching backs. Almost three-fourths of these patients also had sciatic pain.

In a large proportion of cases, 384 or about one-fifth, the cause was indeterminate, "as would be expected," Dr. Ralph K. Ghormley stated in his report to a staff meeting of the Mayo Clinic.

Previous injuries, usually old breaks, accounted for 52 of the 2,000 backaches, with recent injuries and recent fractures or breaks accounting for 56.

Only one case was diagnosed "compensation neurosis." Dr. Ghormley believes this is misleading because "it seems we see such cases much oftener than was indicated in the study."

The statistics on these cases would not be characteristic of a cross section of the general population or a cross section of patients in an average community, Dr. Ghormley pointed out, because to some extent patients seen at the Clinic have sought medical advice and had medical treatment elsewhere.

Twenty-two other causes of backache were found in this study of 2,000 patients.

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INVENTION

Patent Improved Muffler For Automobile Engine

► **AN IMPROVED** muffler for the automobile engine, that reduces back pressure of the gases that decrease engine efficiency and at the same time kills the noise of escaping gases, brought Willard H. Engels, Kansas City, Mo., patent 2,583,366.

It is constructed of one cylinder within another with the space between filled with pressure and sound absorbing material such as mineral fiber or metallic wool. The inner cylinder contains many perforations which have inwardly and rearwardly projecting lips at their forward edges.

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CE FIELDS

INVENTION

Improve Fixation Process For Atmospheric Nitrogen

► AN IMPROVED process for making nitrates for fertilizers and explosives from the nitrogen in the atmosphere has been awarded a patent. It is a development by scientists at the University of Wisconsin and rights have been assigned to the Wisconsin Alumni Research Foundation.

The patent, number 2,578,674, was issued to Farrington Daniels, Madison, Wis., William G. Hendrickson, San Jose, Calif., and Elton Gordon Foster, Wilmington, Del. The principal feature of the invention is the method of recovering oxides of nitrogen from gaseous mixtures containing them. These gaseous mixtures are made by the so-called arc process of fixing atmospheric nitrogen and, more particularly, by what is known as the Wisconsin thermal process of nitrogen fixation.

This process for the recovery of nitrogen dioxide from a gas mixture containing nitrogen, oxygen and a small amount of nitrogen dioxide comprises passing the mixture in a dried and cooled state through a mass of adsorbent silicon dioxide. This results in an adsorption of the nitrogen dioxide in the silicon dioxide particles from which it is later separated.

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MATHEMATICS

Electronic Computers Aid In Electrical Engineering

► ELECTRONIC COMPUTERS, often called "giant brains" and used to solve in minutes mathematical problems that might take days by other means, are finding new applications in electrical engineering, the American Institute of Electrical Engineers meeting in New York was told.

A type known as an analog computer is in use calculating in quick time the performance of single-phase induction motors, the engineers were told by Cyril G. Veinott of Westinghouse Electric Corporation, Lima, Ohio. Calculating the performance of single phase motors is more difficult than calculating the performance of poly-phase motors, he stated. It is for this reason a computer was developed for this particular purpose.

This new analog computer is now dubbed the "Moneca." Its use has shortened the time for many present calculations, made practical many calculations that were formerly too time-consuming, and has given its users a clearer concept of the revolving-field theory. It appears, he added, to have

an almost unlimited number of future applications.

At a previous session the engineers were told about a unique new power system analog and network computer, just installed at the Detroit Edison Company by company engineers E. A. Baldini and A. P. Fugill. In order to study such problems as load, voltage regulation and stability, the company installed a conventional network calculator with a permanently connected analog.

Also described to the electrical engineers was a huge electronic computer utilizing 2,195 tubes and capable of solving problems containing up to 312 equations. Details were explained by J. J. Stone of the Oak Ridge National Laboratory where it is used. This "thinking" machine is the USAF-Fairchild Computer and has already been in use a year.

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PHYSIOLOGY

How Ears Are Made And How They Hear

► YOU READ much these days about protecting your hearing. Many persons, however, have only a vague idea of how ears are constructed and how they hear.

Dr. Harry L. Le Vett, ear specialist of Lansing, Mich., explains it simply in a report in HEARING NEWS (Jan.). The three main parts of the ear are the outer ear, the middle ear and the inner ear. The outer ear consists of the auricle which you see and a funnel or canal leading to the ear drum.

The drum is the beginning of the middle ear. The middle ear is a space filled with air and containing three small bones. These bones are named for their shapes, hammer, anvil and stirrup. The hammer is attached to the ear drum. The anvil is attached on one side to the hammer and on its other side to the stirrup. The stirrup is attached to a window leading to the inner ear.

The middle ear has an opening through which it gets air. This opening leads into the Eustachian tube which has its outer opening in the back part of the nose where the nose joins the throat.

The inner ear consists of the delicate organs of hearing and of balance and the nerve of hearing which leads to the center of hearing in the brain.

Sound waves are collected by the outer ear and travel through its canal to strike the ear drum. The drum vibrates and this sets the bones in the middle ear into vibration. Sound waves then travel across these bones to the window in which the stirrup is attached. They then travel through the window into the fluid of the inner ear. Here tiny hair-like projections pick up the sound waves and transfer them to the nerve of hearing which further transports them to the center of hearing in the brain. There these waves are interpreted as sound.

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MEDICINE

Four Appendectomies In Family Within One Week

► THE OCCURRENCE of appendicitis in four children of a family of six within six days is reported by Dr. J. M. E. Jewers, senior surgical registrar of the Weymouth and District Hospital at Weymouth, England.

Within the week a fifth child of the same family was also brought to the hospital with pain suspected of being due to appendicitis but in her case the doctors decided the pain was due to a digestive upset and did not operate.

The cases provided "considerable food for thought," Dr. Jewers states in his report to the medical journal, LANCET (Dec. 1951). The editor of the LANCET, commenting on them as rare and maybe even unique, cautiously suggests that appendicitis might be a contagious disease. Just because three or even two cases hardly ever appear together in a family is no reason for concluding appendicitis is not contagious, he states.

Other possible reasons for failing to see it heretofore as a contagious disease are: methods of diagnosis may be faulty; there might be one or more unrecognized forms of appendicitis; or most people might have enough immunity to withstand an attack of whatever germ cause there might be.

A "less fantastic" reason for being cautious about dismissing appendicitis as non-contagious, says the LANCET editor, is the fact that epidemics of strep. tonsillitis complicated by appendicitis are seen from time to time. Multiple cases may be no more rare than those of mastoid infection complicating strep. tonsillitis.

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PLANT PATHOLOGY

Irrigate with Fungicides To Control Root Diseases

► IRRIGATION OF plants with fungicidal chemicals to reduce root diseases is being investigated by Dr. George A. Zentmyer, Jr., associate plant pathologist at the University of California's Citrus Experiment Station in Riverside.

Dr. Zentmyer is conducting his experiments with particular emphasis on control of avocado root rot, the most serious pest of the avocado industry in southern California. It is caused by the cinnamon fungus, so-called because it was first found on cinnamon in the tropics.

Early tests, said Dr. Zentmyer, show that the population of soil fungi such as that causing avocado root rot can be reduced by the application of several chemicals. He is not yet ready, however, to recommend any particular material for commercial use.

Whether cinnamon fungus is of tropic origin, or native to California soils, is under investigation.

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