

MEDICINE

New Drugs Fight TB

Much heralded anti-tuberculosis drugs are not preventives. If they are as effective as hoped, present shortage of hospital beds will probably be intensified.

► THE NEW, much heralded anti-tuberculosis drugs will probably intensify the present shortage of hospital beds instead of making possible conversion of tuberculosis hospitals to other uses, as some enthusiastic reports have claimed.

In some cases patients who would otherwise have died may be so helped by the new drugs that they will be able to benefit by other forms of treatment, including operations, to bring them to complete health. But in such cases, the patients will have to be in hospitals longer than they otherwise would. To put it brutally, when a patient dies a hospital bed is free just as it would be if a patient gets well and goes home. And death may free the bed faster than recovery.

Thousands of persons are now infected with tuberculosis germs who later will develop active disease. The new patients must be given the benefits of any new, effective drugs, for their own sakes and for the protection of other, uninfected persons. The latest new anti-TB drugs, Rimifon and Nydrazide, are not preventives of tuberculosis. But if they prove as effective as is hoped, efforts should be pushed to find and bring under treatment even more patients than are now in hospitals. This will add to the need, not decrease it, for hospital beds, physicians and surgeons, nurses, and rehabilitation and social service workers. (See SNL, Feb. 2., p. 72 and March 1, p. 132).

While these two new drugs seem to be giving good results in treatment now, some

authorities feel almost certain that strains of germs resistant to them will develop in time. They explain it this way: The new drugs apparently stop TB germs by interfering with a chemical process vital to the germ's health and survival. Whenever this is done, the germ or other living organism is likely to find a way to bypass the block and carry on its chemistry by another route.

The new drugs, if and when germs become resistant to them, may be used in combination with streptomycin or some other drugs. This may help but is not expected to overcome completely the drug-resistance problem. Giving PAS with streptomycin results in only about 20% resistance developing instead of the 35% that develops when streptomycin alone is used. On the basis of test tube experiments, the PAS-streptomycin combination could be expected to result in no drug-resistance.

It does not because in the body, tuberculosis germs cause many spots of trouble, or lesions as they are termed medically. Streptomycin may reach some of these, PAS some others, and the combination still others. Where streptomycin alone reaches the TB germs, there is a chance for the germs in time to develop resistance.

Treatment of tuberculosis, even with the best modern drugs, takes time. Whether over a long period these drugs may cause damage to liver or to blood-forming organs has not yet been determined because there has not yet been enough time for such trouble to develop if it is going to.

Science News Letter, March 15, 1952

SEISMOLOGY

Japanese Tidal Waves

► ONLY A very small percentage of subsea earthquakes cause tidal waves such as those that rolled over the Japanese island of Hokkaido, devastating the coastal area and leaving thousands homeless.

The earthquake that caused the extensive damage was of magnitude 8.2 on a scale where 8.6 is the top ever recorded, seismologists at the U. S. Coast and Geodetic Survey reported. Energy released by the shock was roughly 100,000,000 times that of one of the A-bombs set off in the first atomic tests at Eniwetok. It is the largest earthquake since Assam, India, was rocked in August, 1950.

Epicenter of the earthquake was 143.5 E and 42.5 N. The shock was recorded on seismographs all over the world.

Seismologists call tidal waves tsunami, pronounced tsoo-nah-me, with equal accent on all syllables. The tidal waves got their start when a great break in the ocean bottom occurred, allowing one part of the earth's crust to slip past its neighbor, with a possible drop for maybe a dozen feet and carrying with it many millions of tons of sea water.

Ocean rushed into the vacated space and set up the tidal waves that, moving like water ripples in a tub, swept the coast of Hokkaido.

Earthquakes occur when strains in the earth's crust become too great. These strains are adjusted by the slips and breaks we know as earthquakes. The rocks of the crust are elastic like steel and will stand a certain

amount of strain before they relieve it by such sudden movements.

A notable feature of tsunami is that the first motion usually noticed along a shore line is a withdrawal of the sea water, much as if there were an exceptionally low tide. Tsunami travel across the open ocean with a velocity of from 300 to 500 miles per hour. Although at sea the waves are usually much too small to be observed, they pile up to great heights when they hit shallow water. The crests have been known to reach 100 feet in height in shallow places.

The tidal waves measure from 100 to 400 miles from crest to crest. Measurements made at a spectacular tsunami in Hawaii in April, 1946, suggest that the first wave of a tsunami has a relatively small crest, so that the withdrawal motion, being more striking, is the first noticeable warning.

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VETERINARY MEDICINE

New Brucellosis Test Speeds Spotting of Disease

► A NEW method of testing for brucellosis in dairy herds will speed the nationwide fight against this disease. Developed by the Bureau of Animal Industry of the U. S. Department of Agriculture, it consists of a plate test using milk, similar to the test of blood now in use. Milk from a whole herd is tested and then, if the disease is present, blood tests will spot individual infected cows.

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AERONAUTICS

Automatic Pilot Gives Fliers More Gunnery Time

► AN AUTOMATIC pilot has been designed to relieve U. S. Navy fliers of 90% of their "stick and rudder" work.

Designated by the General Electric Co., Schenectady, N. Y., as the G-3, the autopilot will hold a plane at the desired barometric altitude within a 25-foot tolerance at 10,000 feet, will hold the plane within one-half of a degree on its course, will level off the plane from a bank or climb and will damp out effects of buffeting winds.

Gyroscopes and a compass feed electric signals into an amplifier which in turn operates the proper motor-driven airplane control-surface at the proper time to give satisfactory performance.

The pilot pushes a button when he wants the autopilot to take over. If the plane is banking or climbing, the device returns the plane to level flight when another button is depressed.

A miniature control stick allows the pilot to maneuver the plane even though the autopilot is working.

The device was developed to allow Navy pilots to devote more attention to navigation and gunnery while flying.

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