Massachusetts Institute of Technology, and described before the meeting of the Seismological Society of America by Arthur C. Ruge of the Institute staff, makes it possible for them to reproduce at will, on a small scale, all the wracking movements of any earthquake that has been recorded on a seismograph. Models of buildings, set on this machine, are given a chance to display points of strength and weakness, and the engineers can turn the knowledge they thus obtain to account in perfecting the resistance of their structures to the thrusts and pulls of an unruly earth.

Machines constructed for this purpose in the past have not been able to follow the actual movements of an earthquake at all accurately, due largely to imperfect control mechanisms. Mr. Ruge's device consists essentially of an electro-magnetic control over a valve, that in turn determines the rate and amplitude of motion of an oil-driven piston moving the shaking table. The current that operates the control is increased and diminished by a photo-electric cell, or "electric eye," in response to a controlling cam cut out of paper, in the exact shape of the earthquake's record curves. A spot of light constantly "watches" the irregular edge of the cam.

Since each historic earthquake has its own characteristic shape and record, any earthquake can be called back at will and made to dance again in the Institute laboratory, simply by cutting out a shadowgraph of its record.

Science News Letter, January 4, 1936

BACTERIOLOGY

Find New Form of TB "Germ" In Breeding Experiments

ARTIFICIAL breeding experiments with the tuberculosis "germ" which resulted in the discovery of a new form of this bacillus and shed fresh light on the disease were reported to the Society of American Bacteriologists by Drs. Ralph R. Mellon, Philip J. Almaden and Ruth D. Richardson of the Western Pennsylvania Hospital's Institute of Pathology, Pittsburgh. Dr. Mellon is also director of the medical research affiliate of the Mellon Institute, which sponsored this work.

The new organism produces in experimental animals a kind of reaction not produced by conventional forms of the tubercle bacillus. This kind of reaction is known technically as non-caseating, meaning that the tissue is not killed en masse by the infection. Since this tissue-killing is one characteristic of the disease, its absence has made diagnosis difficult and uncertain in some cases, Dr. Mellon explained.

"Preliminary studies already conducted in suitable patients have illuminated these uncertainties for the first time," he said, "and to an extent that gives promise of still wider application of this knowledge."

Another of the unique and important characteristics of the new bacillus is the fact that it is either non-pathogenic or produces a benign form of the disease in highly susceptible animals. This suggests that in part, at least, resistance to tuberculosis may be acquired by people as a result of infection with the newly-discovered organism rather than from repeated infection with small amounts of the usual disease-producing form, as has been previously supposed.

The breeding of this new tuberculosis "germ" may aid diagnosis of the disease in still another way, it appears from the report of the Pittsburgh investigators. This new organism can produce a tuberculin that is different from the tuberculin produced by the human, bovine or avian bacillus. Tuberculin is a chemical product of the tuberculosis "germ" specific for this organism and used for diagnosis of the disease.

"It becomes distinctly possible that patients reacting to the new type of tuberculin still have a form of tuberculosis not detectable perhaps with the old type," Dr. Mellon said.

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PHYSIOLOGY

Turnips Found Effective As "Carrier" for Iodine

WE MAY all soon be eating turnips as a means of getting goiter-preventing iodine into our systems, just as we now eat spinach for the vitamins it contains. Or if we live in the South, we may combine the two benefits in a dish of turnip greens.

At the meeting of the American Association for the Advancement of Science, Dr. Warren B. Mack told of experiments with many kinds of vegetables, to see which would make best use of iodine applied with fertilizer to the soil. He found turnips to be most efficient, increasing their iodine content more than a hundred-fold when plenty of that necessary element was available in the soil.

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CHEMISTRY

Chemistry Aids Farmers In Many Varied Fields

CHEMISTS are the farmer's allies in a long series of activities, many of which would hardly be guessed at by the uninitiated, Dr. Henry G. Knight, chief of the bureau of chemistry and soils, U. S. Department of Agriculture, indicated in his annual report.

Chemical research for the improvement of fertilizers, and for the better understanding of legume-crops' fixation of nitrogen from the air, chemical work toward the improvement of poison sprays to kill off insect pests and fungus diseases—these are obvious points of contact between chemical science and agriculture. But even more numerous, Dr. Knight's report shows, are chemistry's good offices in finding new uses for agricultural products, and in improving old ones. Alpha cellulose from cornstalks, gas for lighting and heating from barnyard wastes, industrial solvents from by-products of corn processing, are only a few of the possibilities on which research is actively in progress at the present time. An investigation into the color of apples turned up a piece of basic information that may be of use in the seemingly remote field of corn breeding. Studies of enzymes have application in such dollars-and-cents matters as tanning of hides and storage of eggs.

The list is long, and might be longer, Dr. Knight emphasizes, if we only had more basic chemical knowledge to apply to immediate problems. For this reason he stresses the need not only for applied chemistry but for fundamental research in "pure" chemistry—which is never far from application, once its results come into the clear.

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About 98 per cent. of the cashew nuts sold in this country come from India.