SCIENCE NEWS

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DRYING PENICILLIN BY RADIO HEAT

A METHOD of using radio heat for drying penicillin, accomplishing this step forty-eight times as fast as the present "freeze-drying" method, has been developed by Dr. George H. Brown, research engineer of the Radio Corporation of America.

Tests of the electronic equipment made at the new E. R. Squibb penicillin production plant at New Brunswick, N. J., showed that in twenty-four hours enough penicillin could be dried to treat 4,000 patients each requiring 500,000 units of the germ-fighting mold chemical.

This drying of the penicillin is only one step in production, which starts with growing the mold and proceeds through extraction and purification processes. After purification, the penicillin is still in a solution with a potency of about 40,000 units per cubic centimeter. The objective is to attain 100,000 units per cubic centimeter. Since ordinary heat methods of evaporation destroy the effectiveness of the chemical, the bulk reduction has been accomplished by evaporation in a high vacuum at below freezing temperatures. Dr. Brown's electronic bulk-reducer uses radio frequency current to concentrate the penicillin solution.

Advantages for the electronic method besides the saving in time are given as follows: 1. Reduction in operating costs equivalent to the saving of one ton of dry ice a day or about $65 per 24 hours. 2. Reduction in maintenance costs. 3. Smoother flow of production. 4. Reduction in floor space requirements by nearly 10 times. 5. Saving in initial investment of several hundred per cent. The equipment of the RCA is to be sold at a cost of about $6,000 for a single unit.

THE GROWTH HORMONE

AN accurate, sensitive method for testing the potency of the pituitary growth hormone has been worked out by Dr. Herbert Evans, Dr. Miriam E. Simpson and Dr. Walter Marx, of the University of California at Berkeley.

The test is based on the fact that a cartilage disk on the end of one of the leg bones, the epiphyseal cartilage of the tibia, changes its width in proportion to the increase of weight of the young rat as it grows. The solution of the growth hormone to be tested is injected for four days in succession into an immature female rat from which the pituitary gland has been removed. At the end of the fifth day the tibia is dissected, split, and hardened with formalin. It is then treated with a silver solution, exposed to light, fixed, and washed, somewhat in the manner of a photographic film. The epiphyseal cartilage shows up as a white band which may be measured under the low-power microscope. Width of this band is proportional to the amount and strength of the hormone.

Trial of the growth hormone is as yet limited to work with animals, but standardization of a test for potency is one of the necessary steps before any hormone can be used clinically.

ITEMS

THERE are real shortages of high quality specialty timbers such as yellow birch, yellow poplar, Port Orford cedar, airplane spruce and ship-building oak, according to the U. S. Forest Service. Although it is a popular belief that there are no timber shortages, but only shortages of labor and equipment to get out the timber, the truth is that there are no longer adequate sawtimber supplies accessible throughout the country. Records show that the total volume of standing timber in the United States was reduced nearly 40 per cent. between 1909 and 1938, to say nothing of recent intensive logging necessary because of the war. Nearly 17 billion cubic feet, or 50 per cent. more than the total growth of timber, was cut or destroyed in 1943. In sawtimber alone the drain was almost twice the annual growth. Even if the two billion cubic feet lost each year to fire, insects and disease were all saved, the drain would still exceed the growth by a substantial margin. In spite of the fact that millions of trees are planted, all agencies, public and private, established only 3,500,000 acres of successful plantations. The National Resources Planning Board sees a 25-year, 32-million acre planting program as necessary to meet the nation's "most urgent" tree-planting needs.

AN investigation of 2,993 Liberty ships shows that no lives have been lost as a result of structural failures, except in the case of the *John P. Gaines*, from which ten persons were missing after successfully embarking in a lifeboat. This statement was made in a report of a board of investigation convened by the Secretary of the Navy to study the design and methods of construction of welded steel merchant vessels. Out of the group of ships studied, twenty vessels suffered complete fractures of the strength deck, and of these, five vessels have completely broken in two. Two of these complete fractures occurred before the ships were placed in service. Cracking in ships afloat has usually been associated with very low, near-freezing temperatures, or heavy seas, or a combination of the two conditions.

ADAPTATION of aircraft-type engines for commercial vehicles is a postwar possibility, according to a report made by Vincent C. Young, of the Eaton Manufacturing Company, to the Detroit meeting of the Society of Automotive Engineers on National War Materiel. Mr. Young stated that ground vehicles can use many of the aircraft engine's war-developed qualities, such as light weight, high power, good economy and reliability. Commercial motor vehicle operators, seeking to transport the greatest pay-load over the most miles at the least cost, will find the low operating costs, higher power and greater speed ranges of the aircraft engine very desirable. Mr. Young stated that experiments might lead to a high percentage of failures during the developmental period, and pointed out that such failures must be recognized as steps in progress toward lighter, more efficient designs in engines. He recommended that engineers of ground vehicles learn to develop higher power at greater speed, to make use of the high heat conductivity of some metals, and to study effective cooling methods.