

CHEMISTRY

Two New B Vitamins

Closely related to pyridoxine, these two may bring greater understanding of the role of vitamin B₆ in nutrition and health.

➤ GREATER understanding of the role of vitamin B₆, or pyridoxine, in nutrition and health may come from the discovery and synthesis of two new B vitamins closely related to pyridoxine, it appears from an announcement from the University of Texas.

The new vitamins, pyridoxamine and pyridoxal, are reported by Dr. Esmond E. Snell, of the University's Biochemical Institute, in the *Journal of Biological Chemistry* (June). The final synthesis of the vitamins was carried out in the research laboratories of Merck and Company by Dr. S. A. Harris, Dr. Dorothea Heyl and Dr. K. Folkers, who collaborated with Dr. Snell in the last phases of the problem.

The new vitamins were discovered because they are several thousand times as active in promoting growth of certain

bacteria as is pyridoxine. They appear to make up an important part of the vitamin B₆ activity of plant and animal tissues. That such compounds existed in natural materials was discovered as early as 1941; their nature was at that time unknown, and they were tentatively called "pseudopyridoxine."

Pyridoxine has been found necessary for growth and health of all animals so far investigated. It is effective in treating anemia in rabbits, dogs, and hogs, in maintaining the nervous tissue of hogs, and in reducing oiliness of skin in some cases of human acne. The role of pyridoxine in nutrition and health has not been clear, however, and some of the possibilities opened up by the new discovery are being investigated further with the hope that the functioning of vitamin B₆ may be clarified.

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pounds used as a moisture-guarding ingredient in bakery products are pointed out by Dr. Tseng as reasons why the seaweed industry merits improvement now to prepare it for the return of Japanese competition later.

The high food value of seaweeds is not something we should leave for the thrifty Orientals to thrive upon, warns Dr. Tseng. The rich supply of potassium chloride which the Japanese and Chinese get from their kelp diets is suggested by the seaweed specialist as the factor responsible for the complete absence of hay-fever cases in the Orient.

Because it furnishes vitamins and minerals, especially goiter-curing iodine, seaweed should have its place among common vegetables like cabbage and tomatoes, Dr. Tseng recommends.

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RADIO-PHARMACY

Radio Dries Penicillin Much Faster Than Old Way

➤ A METHOD of using radio heat for drying penicillin, accomplishing this step 48 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. (*Turn to next page.*)

OCEANOGRAPHY

Harvesting the Sea

Five factories are hauling in tons of kelp from the coast of southern California and extracting the salts and gels which formerly came from Japan.

➤ HARVESTING the sea for its salty crop of useful seaweeds is a war-fostered enterprise with a promising future, declares Dr. C. K. Tseng, of the Scripps Institution of Oceanography (*Scientific Monthly*, July).

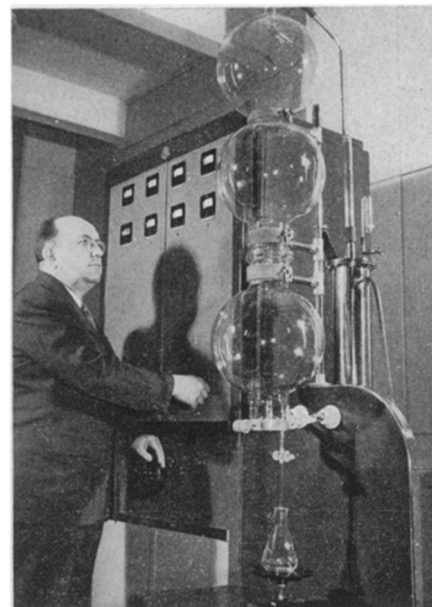
Five factories now, where there was only one before the war, are hauling in tons of kelp from the southern California coast and extracting the salts and gels our industries used to get from Japan. Great masses of seaweed stalks a hundred feet long are being mowed off Maine and California coasts for their yield of algin salts, good for emulsifying agents in camouflage paints, fire-proofing, and latex coating for signal wires.

Regard for future national defense should lead our government to give the growing seaweed business a permanent status, and not let it sink back into 90%

dependence upon Japanese supplies after the war, advocates Dr. Tseng, a seaweed diver himself.

The seaweed product most in need of government-sponsored research on cheaper methods of manufacture, Dr. Tseng believes, is agar, a kind of vegetable gelatin which the government is now buying at three dollars a pound for use in wound dressings, in bacteriological laboratories, in developing photographs and in manufacturing ice cream.

Using only 50,000 out of the 30,000,000 tons of marine crops which scientists estimate are available off Point Conception, Calif., the seaweed industry is worth annually \$2,000,000 to California now. The thousands of pounds of agar, algin and carragenin used in a peacetime year to give a creamy-smooth texture to chocolate malted milk, ice cream, and candies and the hundred thousand



SAVES TIME—Life-saving penicillin is produced much faster when the solutions are dried with this new electronic installation, shown with its inventor, Dr. George H. Brown, research engineer of RCA Laboratories.

Tests of the electronic equipment made at the new E. R. Squibb penicillin production plant at New Brunswick, N. J., showed that in 24 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 accom-

plished 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: 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 to about one-tenth. 5. Saving amounting to several hundred per cent of original investment. The RCA equipment is destined to be sold at a cost of about \$6000 for a single unit.

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necessary to use both Springfield and the Garand rifles, in order to have adequate fire power and a grenade launcher as well. With the new device, the Garand can be used interchangeably as a grenade launcher or semi-automatic rifle.

Grenades for use with the Garand launcher include the anti-tank grenade, hand fragmentation grenade, the familiar pineapple hand grenade and approximately 30 signal grenades.

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CHEMISTRY

Reversed Cyclotron

Cosmic rays may be slowed down and possibly put to work in explaining the secrets of the universe. Big obstacle is the fact that the rays choose their own directions.

➤ CATCHING COSMIC rays (in a different way from at present), slowing them down for study and perhaps putting them to work in explaining the secrets of the universe, is suggested by Prof. Laurence Ellsworth Dodd of the University of California at Los Angeles. The cyclotron, now used for speeding up the flight of atomic particles, would work in reverse for this operation.

It is theoretically quite possible, Dr. Dodd states, to reverse the usual cyclotron procedure so that rapidly traveling particles can be slowed down for investigation. The high-speed cosmic-ray ions that approach the earth from all directions would theoretically enter the cyclotron and could be stopped by it if it can be further developed to the point where it can emit particles of the same speeds as those of the cosmic rays.

The cyclotron gives tremendous speeds to particles by whirling them in an ever-increasing spiral between two electrodes which alternate their charges at high frequency. Even at its fastest, however, the cyclotron does not yet project particles with the higher speeds of cosmic rays, he stated, and some means of producing higher frequencies will have to be found before the cyclotron could act as a catcher for such rays. By varying present methods of studying these rays, further secrets of charged particles en-

tering our atmosphere from outer space might be discovered.

A practical obstacle, not to reversing the cyclotron, but to its use for catching cosmic rays, is that cosmic rays have a way of choosing their own directions, and one might have to be content with pointing this ion-catcher in a fixed direction and with "waiting for something to turn up." Cosmic rays are charged particles of exceedingly high energy running into billions of electron-volts which enter the earth's atmosphere and produce other high-speed particles whose velocities may approach that of light.

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ORDNANCE

Grenades Now Launched From the Garand Rifle

➤ GRENADES CAN now be launched from the Garand semi-automatic rifle, thus eliminating the need for Springfield rifles for this purpose in infantry units. The grenade launcher prevents the gases generated by the powder charge from operating the Garand's bolt mechanism with the resultant risk of injury to the bolt.

The new development was devised by Ray S. Miller, Army Ordnance civilian armament foreman at Fort Benning, Ga.

Prior to Mr. Miller's invention, it was