

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.

*Science News Letter, July 22, 1944*

#### 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.

*Science News Letter, July 22, 1944*

#### 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

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.

*Science News Letter, July 22, 1944*

## SCIENCE NEWS LETTER

Vol. 46 JULY 22, 1944 No. 4

The weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C. North 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents. Monthly Overseas Edition: By first class mail to members of the U. S. armed forces overseas, \$1.25 a year. To others outside continental U. S. and Canada by first class mail where letter postage is 3 cents, \$1.25; where letter postage is 5 cents, \$1.50; by airmail, \$1.00 plus 12 times the half-ounce airmail rate from U. S. to destination.

Copyright, 1944, by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Entered as second class matter at the post-office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N. Y. C. Pennsylvania 6-5566; and 360 N. Michigan Ave., Chicago, STate 4439.

#### SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

**Board of Trustees—Nominated by the American Association for the Advancement of Science:** Edwin G. Conklin, American Philosophical Society; Otis W. Caldwell, Boyce Thompson Institute for Plant Research; Henry B. Ward, University of Illinois. **Nominated by the National Academy of Sciences:** Harlow Shapley, Harvard College Observatory; Warren H. Lewis, Wistar Institute; R. A. Millikan, California Institute of Technology. **Nominated by the National Research Council:** C. G. Abbot, Smithsonian Institution; Hugh S. Taylor, Princeton University; Ross G. Harrison, Yale University. **Nominated by the Journalistic Profession:** A. H. Kirchofer, Buffalo Evening News; Neil H. Swanson, Executive Editor, Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. **Nominated by the E. W. Scripps Estate:** Max B. Cook, Scripps Howard Newspapers; H. L. Smithton, Executive Agent of E. W. Scripps Trust; Frank R. Ford, Evansville Press.

**Officers—President:** Edwin G. Conklin. **Vice President and Chairman of Executive Committee:** Harlow Shapley. **Treasurer:** O. W. Riegel. **Secretary:** Watson Davis.

**Staff—Director:** Watson Davis. **Writers:** Frank Thone, Jane Stafford, Marjorie Van de Water, A. C. Monahan, Martha G. Morrow. **Science Clubs of America:** Joseph H. Kraus, Margaret E. Patterson. **Photography:** Fremont Davis. **Sales and Advertising:** Hallie Jenkins. **Business Manager:** Columbus S. Barber.