

PHYSICS-CHEMISTRY

All Nobelists American

Dr. P. W. Bridgman won the physics award; the chemistry award went one half to Dr. J. B. Sumner, and the other half to Drs. W. M. Stanley and J. H. Northrop.

➤ AMERICAN scientists have scored a clean sweep of the world's highest honors in physics, chemistry and medicine and physiology by winning all three of the Nobel prize awards in science for 1946.

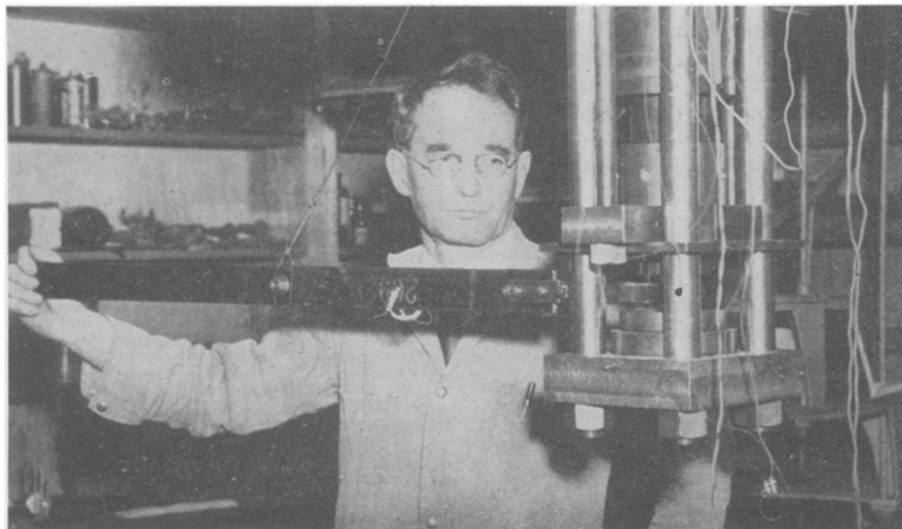
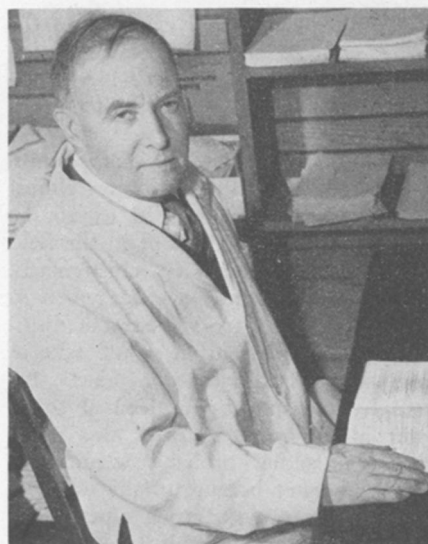
Dr. P. W. Bridgman of Harvard University won the physics award, while Dr. J. B. Sumner of Cornell University was awarded half of the prize in chemistry and Drs. W. M. Stanley and J. H. Northrop of the Rockefeller Institute for Medical Research, Princeton, N. J., shared the other half. These winners were announced following the earlier award in medicine and physiology to Dr. Hermann J. Muller of Indiana University. (See *SNL*, Nov. 9, 1946.) Germany, which swept the Nobel scientific honors in 1905, is the only other country to take all three prizes for a single year in the 46 years of the awards.

Enormous pressures, measured in millions of pounds per square inch, were what won Prof. Bridgman the Nobel prize in physics. Except for their lower temperatures, they approach conditions prevailing in the deep interior of the earth, and give us some idea of strange states in which ordinary matter may exist at a thousand miles straight down.

"Hot ice", or solid water 163 degrees Fahrenheit above ordinary boiling point, was produced in one of his massive presses, which can build pressure up to as much as six million pounds per square inch. This strange form of water is denser than ordinary ice, and will sink in water. In another of his experiments, Dr. Bridgman showed it to be highly unlikely that diamond can be formed from carbon by pressure alone.

Dr. Stanley will receive part of the Nobel prize in chemistry for researches on the borderline of life. He showed that the filterable viruses that cause such plant diseases as tobacco mosaic and aster yellows are not living organisms like ordinary bacteria, but non-living, crystallizable proteins with huge and complex molecules that in many respects behave as if they were alive.

Colleague of Dr. Stanley in the Rockefeller Institute laboratories at Princeton, and sharing half the Nobel prize with him, is Dr. Northrop. His most notable work has been in the field of enzymes, the chemical reagents that make digestion, respiration and other vital processes possible. In 1930 he prepared crystalline pepsin for the first time. This fall he announced the discovery of a mother



NOBEL PHYSICIST—Dr. P. W. Bridgman, winner of the Nobel prize in physics, works at duplicating earth pressures.

NOBELISTS—Dr. W. M. Stanley (top), Dr. J. B. Sumner (center), and Dr. J. K. Northrup, winners of the Nobel Prize in chemistry.

substance of all proteins, whether they occur in meat, enzymes, viruses or antibodies. This mother substance he has named proteinogen.

The other half of the prize in chemistry goes to Dr. Sumner, who was the first scientist ever to crystallize an enzyme. He prepared crystalline urease

in 1926. This enzyme is important in the nitrogen cycle in nature. Eleven years later, in 1937, he crystallized the important enzyme, catalase, which protects living cells against the hydrogen peroxide they form in their own respiratory processes.

Science News Letter, November 23, 1946

CHEMISTRY

Iodine Purifies GI Water

Disinfectant tablet contains iodine, which makes water in GI canteens taste better than that with a chlorine disinfectant.

► WATER FROM GI canteens in the future will be safer and taste better, thanks to a new disinfectant tablet which uses iodine instead of chlorine to purify the water.

Chlorine and chlorine compounds, stand-bys in water disinfection for almost 40 years, as ordinarily used cannot be counted on to protect troops in the field from amebic dysentery or schistosomiasis. The parasites of these diseases when in the cyst stage are too resistant to disinfection by such means. It would take at least six standard Halazone tablets, for example, to disinfect a canteen of warm water in 36 minutes. After this treatment, the soldier probably would not drink the water because of the unpleasant taste. Even with strict supervision, it was sometimes difficult to keep soldiers from drinking water from streams or wells of doubtful purity, rather than use the chlorine-disinfected water.

Search for more satisfactory canteen disinfectants was led during the war by Dr. Gordon M. Fair of Harvard under OSRD contracts. Quarternary ammonium compounds and triiodides were investigated. One of the latter, triglycine hydroperiodide, was finally selected by the Quartermaster Corps as having the highest military characteristics.

Tablets of this dissolve quickly, liberate seven and one-half parts per million of elemental iodine, enough to kill quickly the cysts of amebic dysentery germs and to reduce the number of typhoid, cholera and bacillary dysentery germs from about one hundred million to five or less per 100 cubic centimeters (about three ounces) of water.

Soldiers and Marines who tried the tablets did not object to the taste or odor of the water. Additional tests of the new "tablet, water purification, individual,

iodine," will be carried out during the coming year.

Science News Letter, November 23, 1946

CHEMISTRY

Soviet Chemists Join World Chemistry Union

► SOVIET CHEMISTS have pledged themselves to participate in a post-war revival of the International Union of Chemistry when representatives of 21 nations gather in London next July.

Despite lack of Soviet participation in such United Nations sponsored organizations as UNESCO, Dr. Alexander Nesmeyanov has been elected vice-president of the international union upon nomination of the Moscow Academy of Sciences. He takes the place of a German dropped because Germany, with Japan, is now barred from the world chemical organization.

Dr. Marston Bogert of Columbia University, as president of the union, has received assurances from other Soviet scientists that they will aid in re-establishing the world organization of chemists.

Difficulty in locating some officials of the union who disappeared in various countries during the war is hampering the plans for reconstituting this world organization which last met in Rome in 1938.

Science News Letter, November 23, 1946

Some scientists believe that *bees* work in the dark to keep the honey soft, as it crystallizes in the light.

The *coyote* eats almost four times as many rabbits and other rodents as it does domestic animals.

ENGINEERING

Silica Particles Used As Modifiers in Cement

► SILICA PARTICLES almost too small to be seen under a microscope, which are formed as a byproduct in metallurgical operations, can be used as modifying agents in cement, James W. Sharp of Los Altos, Calif., has discovered. He has assigned rights in his patent, No. 2,410,954, to the Permanente Cement Company, one of Henry Kaiser's firms.

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Alaskan coastal *forests* contain spruce trees up to five feet in diameter and over 150 feet high.

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