feat to have increased thirtyfold the range of pressures which was practicable when he first took up the subject. Clearly, the pressures now reached are of the greatest importance not only to physicists, chemists and engineers, but also to geologists. Bridgman's work has been a source of strength to the various schools of high-pressure work which have been set up of recent years. A valuable review of work in the field of high pressure since 1930 was published at the beginning of the present year by Bridgman in the *Reviews of Modern Physics* (vol. 18, pp. 1–93). Bridgman has written several outstanding books, besides his standard treatise on high pressure, dealing not only with the thermodynamics of the processes in which he is interested, but also with such subjects as dimensional analysis and the general philosophical aspect of modern physics.

Nobel Prize for Chemistry :

Prof. J. B. Sumner

Biochemists will learn with pleasure that Prof. J. B. Sumner's name is included among those who share, this year, the Nobel prize for chemistry. Prof. Sumner, professor of biochemistry in Cornell University, will always be remembered as the first person to succeed in crystallizing an enzyme—urease. This he accomplished in May 1926, and in doing so he helped greatly to dissipate the fog of obscurity which had surrounded the subject of enzyme chemistry. The isolation of the crystalline enzyme suceeded only after many years of preliminary work, during which period every conceivable method of purification was tried. Eventually, after studying the constituents of the jack bean and paying special attention to the properties of its proteins, an extremely simple procedure for the isolation of urease was adopted. It consisted of stirring 100 gm. jack bean meal with 500 ml. of 32 per cent acetone and allowing the mixture to filter in an ice chest. After standing overnight, the filtrate was seen to contain colourless octahedral crystals, which were found to be crystals of urease. Sumner's claim to have isolated the first enzyme in crystalline form was strongly contested, especially by members of the Willstätter school, and biochemists will recall the general scepticism with which the claim was at first received. Sumner's finding was, however, quickly confirmed, and it was followed during 1930, 1931 and 1933 by the crystallization of the proteolytic enzymes pepsin, trypsin and chymotrypsin by Northrop, and by Northrop and Kunitz. More than twenty enzymes have now been obtained pure, among these the well-known enzyme catalase crystallized by Sumner and Dounce in 1937. The use of crystalline enzymes has led to a major advance in our knowledge of the chemistry of enzymes, and they are now familiar objects of study in the hands of biochemists and physical chemists. Sumner's name is also associated with much interesting work on enzyme kinetics and on the production of anti-enzymes by immunological methods.

Dr. W. M. Stanley

Half of the Nobel Prize for Chemistry for 1946 has been awarded to Dr. W. M. Stanley and Dr. J. H. Northrop of the Rockefeller Institute for Medical Research, Princeton, New Jersey, and it is appropriate enough that these two workers should be honoured together since an important part of Stanley's work was carried out by means of Northrop's technique. It was in 1935 that Stanley announced (*Science*, **81**, 644) the isolation of the virus of tobacco mosaic in crystalline form, and thereby opened the way to the intensive studies of plant viruses which in the last decade have revolutionized the whole subject. Although Stanley was not the first to conceive of a virus as a chemical substance rather than an organism —Vinson and Petre may be mentioned as pioneers in this direction—he was the first to isolate a crystalline or paracrystalline virus protein, and thus enabled workers to visualize a virus as a tangible entity rather than a mysterious agent the existence of which could only be deduced from its effects on its host. This discovery was soon confirmed by workers in Britain and elsewhere. There was at first a good deal of scepticism as to whether the protein really was the virus itself. The biologist was loth to exchange his conception of a very small organism for that of a crystalline protein with the power to multiply, and the chemist was equally unwilling to contemplate the possibility of a mutating molecule. Stanley, however, showed that the virus protein could be obtained from plants botanically unrelated such as the tobacco and the phlox, but only if these plants were infected with tobacco mosaic virus. He also showed that a closely related strain of the tobacco mosaic virus could be isolated, and that it was similar to the first but yet possessed properties which were distinctive and characteristic. Nowadays, no plant virus worker doubts that the virus and crystalline protein are one and the same; several more viruses have been isolated in crystalline form, four of them as three-dimensional crystals, and all have been shown to be nucleoproteins.

Dr. John H. Northrop

The nature of the enzymes was a matter for considerable speculation so recently as twenty years ago, and the isolation of the gastric proteolytic enzyme pepsin by Dr. John H. Northrop in 1930 as beautiful hexagonal crystals having the composition of a protein did much to confirm their protein nature. Various tests applied to the pure preparations showed beyond reasonable doubt that the enzymatic activity was intimately related to the protein, and subsequent work by Northrop and other workers has amply confirmed the protein nature of the soluble enzymes. In 1932, in collaboration with Dr. M. Kunitz, also of the Rockefeller Institute, he was responsible for the isolation and crystallization of trypsin, and afterwards of several other proteolytic enzymes from pancreas. In the course of these studies, several inactive precursors of these enzymes were also isolated in a pure form, and it was found that trypsin and pepsin are capable of synthesizing themselves from their precursors. This autocatalytic synthesis has been compared with the multiplication of the viruses, but it has not the same specificity, as, for example, chicken pepsin is formed from chicken pepsinogen whether the reaction is catalysed by swine pepsin or chicken pepsin. It is interesting, however, that a possible inactive precursor of the tobacco mosaic virus has been reported recently. Besides his work on the isolation of the proteolytic enzymes and their precursors, Dr. Northrop has been responsible for studies on enzyme kinetics, on the estimation and purification of bacteriophage and on a large number of physico-chemical studies of which probably the best known are on the diffusion of solutes through porous membranes, on microcataphoresis and on the application of Gibbs's phase rule to the solubility of protein solutions as a test of their homogeneity.