NOBEL PRIZE FOR CHEMISTRY, 1954

THE award of the Nobel Prize for Chemistry to Professor Linus (Carl) Pauling marks the recognition by the scientific world of the outstanding advances made by him in recent years in the field of protein structure.

Our knowledge of the molecular architecture of the protein molecule is now being developed from two directions One relied on making a direct attack on the intact protein complex in the beginning, and the results seemed to be rather discouraging. Pauling in 1937 decided to attack the problem from another direction by accurately determining the detailed structure of smaller units of the protein molecule such as the amino acids and peptides, thus permitting a good insight as to how the peptide chain would naturally fold itself to form a protein molecule or fibre. After several of these structures had been determined accurately enough, he showed the formation of helical or pleated sheet or layer configurations as structural elements in the several proteins. He also showed that the helices may be twisted about one another to form a compound helix or coiled coil giving rise to configurations like three- or seven-strand cables.

Pauling's investigations cover a very broad field of science including parts of physics, mineralogy, chemistry and biology; but, though varied in nature, they have had a common feature—an emphasis on structure and they may all be considered as being comprised in the general subject of modern structural chemistry. In addition to picturing for us molecules ranging from the simplest to the most complicated proteins and silicates through the determination of many molecular structures, interatomic distances, bond angles, covalent radii and electronegativity of atoms, and binding and resonance energies, he will be remembered for his pioneering work in applying the methods of quantum mechanics to chemistry, and also for popularizing the interpretations of quantum mechanical reasoning and the resonance principle to chemists.

Born in Portland, Ore (U.S.A), Pauling received his B.S. from Oregon State College in 1922 and his Ph.D. from California Institute of Technology in 1925. Since 1937, he has been Chairman of the Division of Chemistry and Chemical Engineering and Director of the Gates and Crellin Laboratory at CalTech.

A. B. Biswas.

RADIOISOTOPES IN INDUSTRY

A BRIEF news report in *Chemical and Engineering News* (1954, **32**, 3036) mentions a few of the monitoring tests that radioisotopes are carrying out Antimony-124 is being used to check oil pipe line flow; heavy losses are saved every time a change from one grade to another is made. With a Geiger counter at a suitable point outside the pipeline, the arrival of the new grade, if it contains the radioisotope, can be accurately judged. Manganese-54 is being used in paint mixing: minute amounts of this isotope added to the pigment enable the point of uniform mixing to be correctly assessed. Geiger counters on two stirring paddles show uniformity of mixing when each of them records the same amount of radioactivity. Leak detection in enclosed water systems is being aided by iodine-131; the point of leakage can be readily located by the large increase in gamma radiation there. The emission of radiation from radioisotope capsules can be used to measure the thickness of surface coatings while they are being applied to metals. Similarly, flaws in metal castings or welding are shown up if a capsule is placed on one side of the material and a film on the other. Radioisotopes can also be used to eliminate static electricity. Indeed, the known uses are already very numerous although the full potentialities of radioisotopes as control agents in industry have not yet been approached. The AEC has delivered approximately 50,000 consignments of radioisotopes to users in the United States since commercial distribution began.
