The individual becomes a member of a team and his sphere of work is intensive though possibly restricted to a small subdivision of a section of the science in which he works. It is in this respect that we should congratulate ourselves on the opening of the National Laboratories and Research Institutes during the last three years such as the one we have assembled to bless to-day".

NOBEL AWARD FOR PHYSICS

THE Nobel Prize for Physics for the year 1950 has been awarded to the British Nuclear Physicist, Prof. Cecil Frank Powell, for his distinguished work in developing the photographic technique of detecting nuclear particles. Powell is at present Professor of Physics at the University of Bristol, England. Last year, he was the recipient of the Hughes Medal of the Royal Society of London.

Powell's early researches were concerned with the properties of ion, which led him to an investigation of fundamental particles and atomic nuclei using photographic plates. In this method the particles are detected by the tracks which they leave in the photographic emulsion, which can be observed through a microscope after the plate is developed. Powell played a large part in bringing about a marked improvement in the quality of sensitive materials and also in the development of methods whereby the energy, mass and other characteristics of the particles can be actually measured. Using these improved plates, Powell discovered a new elementary particle, the π-meson, whose mass is 280 times that of the electron and of which both positively and negatively charged varieties exist.

Powell was instrumental in establishing the photographic method as a standard technique in nuclear research Together with G P. S. Occhialini, he has published a book entitled *Nuclear Physics in Photographs*, which contains a description of the technique, and also a large number of photographs illustrating various types of nuclear reactions.

RADIOACTIVE CALENDARS

NUCLEAR physicists have found a new and accurate method of dating history by using radioactive materials to supplement the archæologist's pick and shovel.

The pioneer is Prof W F. Libby of the University of Chicago, who has been experimenting with his colleagues in this field for several years. In 1947, he announced that C^{14}, up to then known only as the product of nuclear bombardment in atom smashing machines such as cyclotrons or atomic piles, is found in every living thing. In fact, there is more radioactive carbon to be found in human beings, animals and plants than physicists are ever likely to make by transmutation in the laboratory.

The atoms in the air are bombarded continuously by cosmic rays, and the nitrogen atoms in the air are transformed by the impact of cosmic radiation into radio-carbon (C^{14}). Now this radio-carbon has a "half-life" of 5,000 years. It is known that living plants absorb all forms of carbon through their intake of carbon dioxide. Animals eat these plants and in this way return the carbon dioxide to the air. The C^{14} absorbed by organisms during their lives is not renewed, but decays slowly after death.

As the radio-activity of a given weight of carbon derived from organic matter 5,000 years old is half that derived from carbon in living material, it is possible to determine the age of an object merely by measuring its radio-activity. Thus, a wooden object 2,500 years old will have lost a fixed proportion of its radio-activity, while another object, only 1,000 years old, will have lost less and will produce more radiations.

In other words, *all* carbon of biological origin is in a slight degree radioactive. Because the earth is at least 2·5 thousand million years old, it is assumed its atmosphere must have reached a stage of radioactive equilibrium centuries ago. That is, C^{14} atoms are produced at a rate equal to their rate of decay. This decay is the result of a loss of a β-particle, and they can be detected by a sensitive Geiger counter.

This radio-carbon method of dating can be used to supplement dating by the tree-ring method. With trees dated by the direct method the radio-carbon method has shown good agreement. In other cases, the discrepancy has been great, and it has been suggested that it would be an interesting experiment to treat Prof. Libby's method as established and use it to check dates calculated from incomplete tree-ring data.—(*UNESCO.*)