

rate of the oxygen blast; the more rapid, the less carbon. The pilot plant is now producing steel of controlled composition, and all types of steel, very mild and with the highest content of carbon, have been produced.

Spray steelmaking has a number of technical advantages. The method is continuous—steel comes out at the bottom as long as molten iron is poured in at the top. The hot metal is treated directly as it flows from the blast furnace, which minimizes the heat losses and high capital costs associated with moving hot metal. The scrap consumption is high, and the refractory consumption should be low, as none of the reactions takes place in contact with the refractory walls of the furnace. The control variables in the process are the flow rates, which it is hoped will make the process more amenable to computer control. Finally, and perhaps most important of all, the capital costs of the plant are very low in comparison with conventional steelmaking methods; the cost of the plant at Millom is only a few tens of thousands of pounds.

If doubts exist, they are about quality control; partial blockage of the outlet *B* by slag, for instance, would prevent the pig iron from flowing freely, and the carbon content of the steel produced would be less than specified. In addition, overflowing slag carries away too much of the purified metal, which makes the process less efficient.

BISRA is confident that these problems can be solved, and that the process can be operated on a larger scale than the experimental plant at Millom. If so, the implications will be enormous. Economic planning in steel is dominated by the high capital cost of conventional equipment. When capital costs are high, production is only profitable if concentrated in a few large units—an economic law borne out by the history of the motor car industry. Considerations of this sort led the Benson Committee to suggest that investment in a steel plant would not be justified if its production fell below between 2 and 3 million tons a year. The logic is inescapable, but a process of low capital cost destroys the premise. Yet even if spray steelmaking is successful, it will not spread like wildfire through the industry; many of the large companies have already committed themselves to the *LD* oxygen lance process, which will not be written off for at least ten years. So, ironically, the new process will appeal first to the technologically backward companies which have not yet replaced obsolete equipment, or companies producing pig iron for a declining market. More significantly, perhaps, the process may be a godsend to developing countries. And BISRA itself will be much fortified by any proof that the industry's research association can assume technical leadership of a re-nationalized steel industry.

### Fall-out in Food

THE suspension of weapons testing in the atmosphere has allowed the concentration of radioactive nuclides in food to decrease during 1965 and the early part of 1966. The ratio of strontium-90 to calcium in the normal mixed diet during the year was about two-thirds of the value in 1964, and half the peak value reached in 1963. This is the main finding of the Agricultural Research Council Radiobiological Laboratory, which carries out measurements of the level of radioactivity in foodstuffs. The report of the Labora-

tory (H.M.S.O., 8s. 6d.) indicates that fall-out at the present rate does not constitute a serious hazard to health, but until experience over a longer period of time is available it is impossible to be categorical about this. The knowledge which has been gained by the annual surveys will enable the Laboratory to reduce the scale of survey in the future while still providing adequate information. If widespread weapons testing is resumed, the continuous monitoring of milk will serve as an early warning of the build-up of radioactivity in food, and testing on a large scale could then be rapidly reintroduced.

The majority of the Laboratory's work is not, however, devoted to fall-out. The main effort goes on studies of the behaviour of ions in the soil, and their absorption by plants. Projects covered include the effects of fertilizers and water supply on the uptake of nutrients from the soil, and the effect of radiation on plant growth.

### Chadwick at Daresbury

SIR JAMES CHADWICK, who was 75 on October 19, was presented with a commemorative volume compiled by his friends and colleagues at a ceremony at the Daresbury (Cheshire) Nuclear Physics Laboratory of the Science Research Council on October 20. Although it is now eight years since Sir James retired as Master of Caius College, Cambridge, he has remained closely in touch with research in high energy nuclear physics, and is chairman of the Advisory Committee of the Daresbury Laboratory. He is also working on the Rutherford papers.

### Nobel Medicine 1966

THE Nobel Committee in Stockholm announced last week that the Nobel Prize in Medicine for 1966 has been awarded to Dr. Peyton Rous of the Rockefeller University and Professor Charles Huggins of the University of Chicago. The award to Dr. Rous will give particular pleasure, partly because of the great age (87) at which he continues to lead an active scientific life, partly because of the prophetic nature of his announcement half a century ago of virus-like agents as causes of tumours in chickens, and partly because of his endearing modesty which is typified by the way in which, in a recent article in this journal (*Nature*, 207, 457; 1965), he referred to the sarcoma virus known as RSV without explaining that "R" stands for "Rous".

Dr. Rous has been with the Rockefeller University (previously the Rockefeller Institute) since 1909. He isolated a virus-like agent from the solid sarcoma tumours of chickens in 1911, and has since been concerned with various aspects of the tumour-stimulating viruses. He and his collaborators were, for example, responsible for the observation that strains of the RSV maintained themselves without alteration of their specific oncogenic characteristics (with periodic waning of virulence) for more than forty years. (Only in 1957 did it first appear that certain lines of RSV could affect the tissues of hamsters and rats as well as cause sarcomata in chickens.) Although the work on tumour viruses was regarded sceptically for some decades, Dr. Rous was closely in touch with the discovery of the Shope papilloma virus in the thirties by the late Dr. Richard Shope and the work on the mouse mam-