NEWS AND VIEWS

Ten Years Old

THE U.K. Atomic Energy Authority has made a modest fuss of itself to celebrate the tenth anniversary of the opening of Calder Hall—the first nuclear power station with civil uses to operate in Britain. There was no sentimentality, but Sir William Penney, the chairman of the authority, did let it be known that the cost of power from the new Advanced Gas Cooled Reactors which are the backbone of the 8,000 MW programme of construction upon which the Central Electricity Generating Board is now embarked will be less than conventional electricity from the beginning, and will be reduced by 20 per cent in the course of five years. Because the authority has so often been accused of over-optimism, it is worth remembering that it never claimed more than what its chairman is now announcing. What he says, indeed, sounds somewhat unadventurous compared with what is being said—and done—in the United States and Europe.

What Universities Spend

BRITISH universities remain a labour intensive industry, to judge from the details now made available by the University Grants Committee of the spending of public money on higher education in 1964–65 (Cmnd. 3106, *Returns from Universities and University Colleges*, H.M.S.O., 8*s*. 6*d*.). The recurrent expenditure of the universities in 1964–65 amounted to £122 million, of which £53 million (43·8 per cent) was spent on salaries and £14·7 million (12·1 per cent) on wages for laboratory technicians and assistants. Departmental maintenance took £20 million, or 16·9 per cent of the total, in 1964–65. During that year the exchequer grant through the U.G.C. amounted to £158 million, £94 million as the contribution of the central government to the total recurrent expenditure of £122 million, and £63 million as the U.G.C. contribution to the cost of university building.

In spite of recent talk about the desirability of increasing the income of British universities from fees, the £10 million raised in this way in 1964–65, much of which would have been paid to the universities by local education authorities, amounted to 8·1 per cent of the total income, compared with 10·0 per cent in 1959–60 and 12·0 per cent in 1953. In other words, the trend seems to be in a direction opposite to that favoured by those who regard an increased contribution from fees as a defence of university freedom.

The student population continues to increase. In 1964–65 there were 138,711 full-time students, with a slightly increased proportion of women. The fraction of undergraduates reading for degrees in science and applied science has increased to 40 per cent from 32·6 per cent in 1953–54; and the proportion of post-graduates in science and applied science is now more than half the total of all such students. In comparison with 1953–54, the new entrants to universities in pure science in 1964–65 have increased by 127·7 per cent. The corresponding increase in applied science is 104·1 per cent. Arts and the social sciences now take 90 per cent more entrants, but medicine, agriculture and veterinary science have increased only modestly in the last decade.

Instant Steel

A STEELMAKING process which combines low capital cost and technical sophistication is being developed by the Millom Hematite Ore and Iron Company. The process, known as spray steelmaking, was devised in the laboratories of the British Iron and Steel Research Association and is now being used on a small scale at Millom to convert excess pig iron to steel.

The physical chemistry of the process is fundamentally the same as that of traditional methods; the impurities in the iron are oxidized, and the products of oxidation are absorbed into slag, which floats on top of the liquid steel. The novelty is that by atomizing a falling column of liquid pig iron into discrete droplets by means of an oxygen blast, the reaction interface between the pig iron and the agents which form slag is enormously increased. A droplet which begins its fall as crude iron reaches the collecting ladle as steel.

The plant itself is absurdly simple. Molten pig iron is tapped directly from the blast furnace into a tundish (Fig. 1, *A*) and allowed to flow out under gravity at a rate determined by the size of the outlet (*B*). Lime and flux are introduced into the stream at a controlled rate (*C*) and the mixture is then atomized by a ring of eight oxygen jets (*D*) which impinge on the stream. The oxidation of the impurities (carbon, phosphorus, silicon, manganese, and sulphur) generates great heat, and temperatures of about 2,200° C are reached at *E*. The purifying reactions take place as the drops fall into a ladle at the bottom.

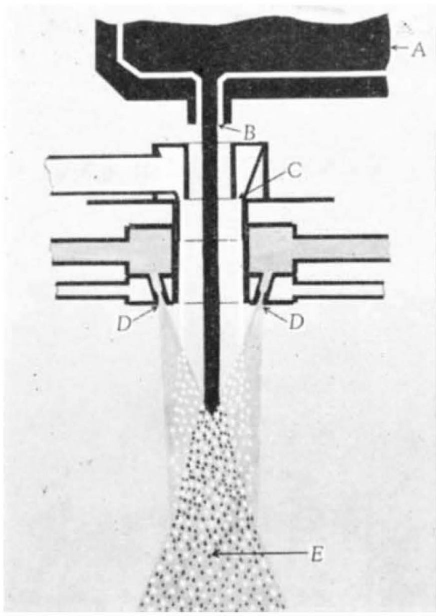

Fig. 1.

Scrap can be incorporated into the process either by filling the ladle with scrap before steelmaking, or by adding it continuously throughout the process. The high temperatures make it possible to use as much as 50 per cent of scrap, although 30 per cent is more usual. The carbon content of the steel is controlled by the