

in student numbers and in research activities. As elsewhere, this has entailed a long struggle with the difficulties of inadequate accommodation and staff recruitment. But her admirable management and persistent advocacy leave the Department with a greatly enhanced reputation, and well poised for the further developments which may confidently be expected under her successor, Dr. M. Treisman (see *Nature*, 207, 689; 1965).

#### Discoverer of Nickel: Axel Fredrick Cronstedt

AXEL FREDRICK CRONSTEDT, the Swedish chemist and mineralogist, who died on August 17, 1765, is remembered not only for his discovery of nickel but also for his researches and writings. Though a member of the Stockholm Academy of Sciences, he had no university training; for, as a student at Uppsala, lack of finances meant abandoning his academic career to take a post as metallurgist in the Swedish Department of Mines. Yet this proved beneficial both to him and to his country. Georg Brandt coached Cronstedt in the techniques of assaying. In 1751 Cronstedt came across a new mineral from a cobalt mine, which at first was thought to contain copper, yet which yielded none by displacement from its solutions. The mineral, now known as niccolite, or nickel arsenide, formed green crystals on weathering; it was from these that Cronstedt prepared an oxide which on reduction with charcoal gave a new metal. Only in 1754 did Cronstedt christen it nickel, and describe the silver-white and feebly magnetic regulus to the Stockholm Academy. Cronstedt noted the brown borax bead, the blue solution formed with ammonia, and the close resemblance to cobalt. Chemists in France in particular refused to accept the new metal until Torbern Bergman, in 1774, added further evidence by preparing a specimen of it free from the cobalt, arsenic and iron which had contaminated Cronstedt's first specimen. In the history of chemistry and metallurgy Cronstedt's name appears frequently in connexions other than nickel, being listed with platinum, iron ores and zinc extraction—a field in which Cronstedt collaborated with Rinman, whose name remains in 'Rinman's Green'. Cronstedt won a niche even if only for his *System of Mineralogy* translated into several languages.

#### Political and Economic Planning

THE annual report of Political and Economic Planning (P.E.P.) outlines the current research programme which, during 1964–65, focused on problems of planning and policy-making in economic policy, Government, management, social issues and international affairs (Pp. 12. London: Political and Economic Planning, 1965). The Social and Economic Archives Committee has entrusted to P.E.P. the establishment of a Survey Archives Centre in Britain; for an initial period of two years P.E.P. will collect and disseminate information about survey data held, and surveys planned by university departments, research institutes, market research and commercial organizations and other relevant problems. During the year, a study of the effects of imprisonment of a man on his wife and dependants was published under the title *Prisoners and their Families* (see p. 216 of this issue). A survey of East African students in Britain was also completed during the year and published under the title *New Commonwealth Students in Britain—with Special Reference to Students from East Africa*. Since 1931, P.E.P. has organized 500 broadsheets and 50 books; a list of publications issued during 1963–65 is appended to the annual report.

#### Energy Forecasts for Britain

MR. D. G. TIPPING in the *Westminster Bank Review* for August 1965 questions the forecast of energy demand for 1980 of 450 million coal equivalent tons as too high,

since it is based on the assumption of a 4 per cent growth in the economy. He suggests that a more realistic range of expectation for 1980 would be 400–420 million tons, but he does not think that Britain is likely to be faced with a sudden critical shortage of energy brought about by unexpected changes in demand. He considers that the output of 200 million tons of coal per annum advocated by the coal industry is unrealistic, and points out that the demand for coal from the gas industry is likely eventually to fall to zero. The one market for coal which is likely to grow considerably is for the generation of electricity, and the main uncertainties here are the proportion of future demand to be met by nuclear power and the balance to be struck between the conventional fuels. There seem to be three major ways in which the coal industry could be helped to play its part in a cheap energy policy: through capital reorganization, apportionment of social costs (which lie at the core of the problem), and through the pricing system. Mr. Tipping insists that the State and not the consumers should bear the burden of interest on over-capitalization of some parts of the industry. Social costs should be borne by society and also a more rational pricing policy should be introduced. Any rational pricing system is logically prior to a rational target. He points out that we must plan not only to minimize any error but also to introduce sufficient flexibility to overcome the effects of error. There is already considerable spare primary capacity because the coal is accessible and merely needs the men and machines to get it. We are unaware, however, of the physical and economic possibilities of mothballing pits, or of the extent to which the present surplus capacity of 40 million tons would match the capacity of loss-making pits which one would like to close.

#### Utopia Reviewed

THE Spring, 1965, issue of *Daedalus*, the journal of the American Academy of Arts and Sciences, consists of a series of essays on various aspects of Utopia by writers who if not American born are, with two exceptions, working in the United States. Some, like Lewis Mumford's "Utopia, the City and the Machine", Prof. F. E. Manuel's "Toward a Psychological History of Utopias", Prof. Northrop Frye's "Varieties of Literary Utopias" and Judith Shklar's "The Political Theory of Utopia", have a certain historical bias. Others, including two at least of those already mentioned, are more concerned with the social implications, for example, Prof. C. Brinton's "Utopia and Democracy", Prof. A. B. Ulam's "Socialism and Utopia", F. Bloch-Lainé's "The Utility of Utopias for Reformers", Bertrand de Jouvenal's "Utopia for Practical Purposes" and J. R. Pierce's "Communications Technology and the Future". These, and also Prof. P. B. Sears's "Utopia and the Living Landscape" and Prof. J. M. Smith's "Eugenics and Utopia", may appropriately be read in conjunction with Jacques Ellul's recent book *The Technological Society*, to the fatalism of which some of the essays apply a slight corrective. Not even the more historical essays, however, refer to Marie Louise Berneri's scholarly work *Journey Through Utopia*, published posthumously in 1950, to which Mumford himself paid a generous tribute at the time. Prof. Frye, in fact, provides no references at all and generally, in contrast to Marci Berneri's book, the bibliographical side of the essays is weak. The titles of such essays as those of de Jouvenal, Sears, Smith and Pierce indicate their topical character, and perhaps the most optimistic are those of Prof. G. Kater on "Utopia and the Good Life" and Prof. Maren Lockwood on "The Experimental Utopia in America": both of these essays, incidentally, are well provided with references. While Mumford himself has not lost the optimism that marks his well-known trilogy, in the essay in *Daedalus* he accepts much of Ellul's position as to the dominance of the machine and points out that we can no longer think of the components of technology as additive.