

in fostering international confidence; and in that respect the Government has its primary responsibility in regard to the new export trade to which we may now look, quite apart from the humanitarian aspect to which the Queen referred. Here it might well be wise for the Government to be more forthcoming in regard to co-operation with the European Atomic Agency, and the fact that agreement has been reached at New York in regard to this vexed question of supervision may perhaps stimulate a fresh effort to deal successfully with that problem in Europe. At least it appears to be more doubtful whether Britain can afford to remain outside, even if to participate fully involves accepting a degree of control over the civil and military uses of nuclear energy which infringes national sovereignty more than we would wish, and, more important, could even impede our internal development and exploitation of nuclear power, as Sir George Thomson notes, at least in respect of the Euratom proposals, in his article on Britain's drive for atomic power in *Foreign Affairs* for October. Risks have to be taken, and Calder Hall is first and foremost the vindication of a policy of calculated risks, imaginatively conceived and boldly taken. The fruits of such an achievement will be reaped in no lesser way. The first task in the present troubled world is the restoration of international confidence. This is principally a duty of statesmen and politicians, though scientists can play their part by demonstrating, as they have already done in organizing the project for the International Geophysical Year, that co-operation is still possible in certain fields of activity among the nations.

CORRESPONDENCE OF LAVOISIER

Oeuvres de Lavoisier

Correspondance. Par René Fric. Fascicule 1 : 1763-1769. Pp. xviii+252. (Paris: Éditions Albin Michel, 1955.) 2,750 francs or 8.5 dollars.

THE appearance of the first part of the seventh volume of Lavoisier's collected works marks, we hope, the beginning of the last phase in the publication of the literary remains of this many-sided genius. The first four volumes, containing his contribution to chemistry and physics, appeared during 1862-66 under the editorship of Dumas; Volumes 5 and 6, containing his work in geology, meteorology, agriculture, economics and education, were edited by Grimaux during 1894-95; and now comes the beginning of the seventh volume, containing his correspondence between the years 1762 and 1769, collected and edited with scholarly care by M. René Fric and published under the aegis of the Paris Academy of Sciences, helped by a grant from Unesco.

Lavoisier was born in 1743. His mother died in 1748, when his father then went to live with his mother-in-law, and Lavoisier's aunt, Mlle. Punctis, devoted her life to her nephew and his sister. In 1760 Lavoisier went to the Mazarin College, where he had distinguished teachers in the sciences, including the chemist Rouelle. His interests turned first to geology and for three years he assisted Guettard, the foremost geologist of France, in his researches. In 1767 he went on a geological tour in

Alsace and Lorraine with Guettard, to collect material for the first geological survey of France. The first half of this volume consists mainly of the correspondence between Lavoisier and his father and aunt during this journey, which lasted four months. They travelled on horseback with an old family servant who carried Lavoisier's barometer and scientific instruments. Lavoisier's letters give a lively description of the incidents of the journey, the progress of his work, and the scientific people they met. The letters from his father and aunt kept him in touch with the life of the family, and reveal their anxiety about the safety of the young traveller and the affectionate home-circle in which they all lived. Travel in France was not without its dangers in those days; but the journey was successful in its object, and Geikie in "The Founders of Geology" speaks of the great promise shown by Lavoisier in his early geological papers.

One of his occupations on the journey was the analysis of the mineral waters in each locality they visited; this and the analysis of minerals first turned Lavoisier's attention to chemistry. His papers were already attracting notice, and the correspondence in 1768 includes letters of congratulation on his election to the Academy at the early age of twenty-five. In the same year Lavoisier joined the Tax Farm, a step which was to have such a tragic ending. The King's Farmers General in France enjoyed the privilege of collecting the indirect taxes on salt and tobacco and certain dues by paying in advance an agreed sum to the Treasury once a year, so that the profitability of their investment depended on the skill of their administration. Lavoisier became an assistant to his future father-in-law, Paulze, and the second half of the volume consists almost entirely of Lavoisier's reports of his work in supervising the collection of the duty on tobacco in the district between Chalons and Lille. The letters describe Lavoisier's daily work and the great care he devoted to his tasks. They show, too, his firm grasp of the administrative problems involved in checking the purchases, the manufacture and the sales of tobacco. Lavoisier makes suggestions for improving the routine of inspection, he sends shrewd comments on the character and ability of the officers, and he devotes much care to the analysis of samples of tobacco to detect adulteration. It was the irony of fate that the chief crime of which he was accused during the Terror was the adulteration of tobacco by increasing its moisture content.

The letters give a revealing picture of Lavoisier as a young man just embarking on his career as a scientist and administrator, and they whet one's appetite for a sight of the next section, which will cover the period when his classic researches on combustion were beginning.

The possibility of continued publication of the remaining volumes must depend partly on the support they receive, and it is to be hoped that nothing will delay their publication. It is confidently expected that the second part of Vol. 1 will appear early in 1957. M. Fric has also traced the missing volume of Lavoisier's laboratory note-books, so that the set is now complete and ready for printing. The extracts published by Berthelot in "La Révolution Chimique" show the intense interest of these daily records of Lavoisier's work. Their publication would throw much fresh light on what was probably the most decisive event in the history of chemistry.

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