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MEMORIAL

JACQUES MERING

(3 *January* 1904–29 *March* 1973)

The death of Jacques Mering on 29 March 1973, after a long illness has taken from The Clay Minerals Society an eminent crystallographer and mineralogist. His fundamental theoretical studies of diffraction and his meticulous applications of X-ray and electron diffraction methods of analysis made major contributions to our knowledge of disordered mineral structures.

Jacques Mering was born 3 January 1904, in Vilkaviskis, Russia. He came to France in 1921, and acquired French nationality in 1930. His scientific training was principally as an engineer and in 1925 he received a Diplome Ingenieur-Electricien from the Ecole des Travaux Publics. From 1925–1931 he worked as a research engineer, and at the same time studied at the Faculté des Sciences in Paris, where he obtained the Licence des-Sciences in 1928. After a year of military service, he was associated with the Laboratoire Central des Services Chimiques de l'Etat, (now the Institut National de Recherche Chimique Appliquée), first in Montpellier, then in Grenoble (Institut Fourier) and eventually in Paris. In 1959 he became a Director of Research at the Centre National de Recherche Scientifique (C.N.R.S.) and in 1969 Director of the newly built C.N.R.S. Laboratory in Orléans for Research on Imperfect Crystalline Solids. The development of this laboratory for the work in which Mering excelled is the highest tribute which could be paid to his outstanding abilities.

Mering has a long series of publications, running to more than one hundred items, some of a fundamental theoretical character dealing with X-ray and electron diffraction by imperfect structures, and others, usually with collaborators, involving careful experimental studies. His primary research interests involved many aspects of clays and related layer silicates, and of carbon, graphite, and the phenomena involved in graphitization. Besides these major areas of theoretical and experimental research, he was interested in many other aspects of fine-grained materials, including crystal growth in gels, the crystalline organization in cellulose, the 'decoration' of kaolinite crystals with colloidal gold particles, clays as catalysts, and clay–organic complexes.

His theoretical work on X-ray diffraction by interstratified layer systems and by two-dimensional layer structures (the latter with the present writer) laid the foundation for subsequent detailed studies of clay minerals and of carbons. With A. Oberlin, C. Tchoubar, and others he applied electron-optical methods to the study of the structure and morphology of montmorillonite, hectorite, and sepiolite, and of the crystalline development in magnesium hydroxide and nickel hydroxide sols.

His collaboration with R. Glaeser, H. Pezerat, I. Mantin and others has resulted in many detailed studies of the swelling and other properties of montmorillonites. His early, now classical study of the hydration of montmorillonite in 1948 paved the way for much subsequent work. Several papers with R. Glaeser dealt with the swelling of mixed-cation montmorillonites and hectorite. More recently, they studied the effect of heat on montmorillonites saturated to varying degrees with Li^+ ions, the so-called Hofmann–Klemen effect. In collaboration with L. Gatineau, H. Kodama, C. Tchoubar, and others, Mering has applied more general diffraction methods to the study of short-range as distinct from the average long-range order in imperfect structures. These latest developments, greatly facilitated by the new laboratory in Orléans, will rank amongst his major achievements and doubtless will be continued by Gatineau, Tchoubar, and others in that laboratory.

Less well-known to clay mineralogists but equally important have been his studies of carbon and graphite. This work goes back to the study of graphitic carbons by Rosalind E. Franklin (*Acta Cryst.* **4**, 253–261, 1951) carried out in Mering's laboratory and which owed much to his help and encouragement. The writer was privileged to be in Mering's laboratory at that time. Mering's collaboration with J. Maire and others has led to a series of important papers on graphitization of carbon and related physical properties.

Mering was generous in the assistance he gave to others. His fundamental approach to diffraction problems was always illuminating, and he was as much at home in 'space reciproque' as in normal space. He was responsible for the preparation of many theses, the publication of which by French custom did not carry his name as co-author. The theses of Rachel Glaeser on "Organo-clay Complexes and the Role of Exchangeable Cations" (*Mem. Serv. Chim. Etat* **39**, 1954) and of Lucien Gatineau on "The Real Structure of Muscovite. Distribution of Isomorphous Substitutions" (*Bull. Soc. Fr. Minér. Crist.* **87**, 321–355, 1964) especially may be mentioned as important contributions to clay and layer silicate mineralogy.

Mering was active in the formation of the Groupe Français des Argiles and was president 1956–1958. He was president of the Groupe Français d'Etude des Carbones, and of the Association Française de Cristallographie. At the time of his death, he was vice-president of the Société Française de Minéralogie et Cristallographie. Mering was well-known to clay mineralogists and carbon specialists in the U.S.A., and was invited to a number of conferences in both areas of study. Many will feel they have lost a very good friend, but none more than myself, for I have enjoyed his friendship since 1948; for me, going to France or going to Paris, meant always going to stay with Mering, visiting his laboratory and often hiking with him through the woods around Paris.

I wish to acknowledge the assistance of Monsieur L. Gatineau in the preparation of this Memorial. In

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adding a selected bibliography of his work, I feel that it is a very inadequate indication of his total contribution to science.

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