

GEORGE WILLIAM BRINDLEY
1905—1983

George W. Brindley, outstanding mineralogist and crystallographer, founder of modern science of clay minerals, Emeritus Professor of Mineral Sciences at the Pennsylvania State University, died in State College, Pennsylvania on 23 October 1983.

Prof. Brindley was born on 19 June 1905 in Stoke-on-Trent in England and studied at the University of Manchester where in 1928 graduated with M.Sc. degree in Physics. For some time he worked in the laboratory led by Sir Lawrence Bragg and R. W. James, studying the problem of X-ray scattering in crystal lattice and gaining very deep grounds of structural researches. Afterwards, Brindley was employed as assistant lecturer in the Department of Physics at the University of Leeds where he contributed considerably to the development of X-ray diffraction and in 1933 was awarded the Ph.D. degree.

As follows from his own statements, Brindley's interests in clay minerals were of rather accidental origin and appeared after more than 15 years of studies in other fields, mainly in X-ray examinations of metals. The main cause was a request of his colleague Prof. A. L. Roberts, an outstanding specialist in chemistry and ceramics, who asked Prof. Brindley about the difference between china clay, fireclay and halloysite. Consequently, clay minerals became subsequently the main subject of his more than 35 years scientific activity. Simultaneously, he returned to youth interests in amateur geological field works.

In 1953 he transferred to the Pennsylvania State University as Research Professor of Mineral Sciences. In 1955 he became Professor of Solid State Technology and Head of the Department of Ceramic Technology.

G. W. Brindley's works have thrown new light on the structure of numerous clay minerals. He has evidenced the existence of deviations from earlier accepted ideal structural models of sheet silicates. When studying kaolinite polytypes he demonstrated the existence of chaotic translation of layers, the rotation of tetrahedra and deformation of octahedra in the structure. These deviations from ideal structural models were successively confirmed in other clay minerals.

Prof. Brindley has examined the structure of numerous sheet silicates e.g. of chlorites and serpentines. In the last period of his life he determined the structure and nature of magnesium and zinc sheet silicates, representing a not recognized mineral group. To commemorate his merits in this branch of mineralogy, Maksimovič and Bish (Amer. Mineral. 63, 484—489, 1978) named a new Ni-rich aluminous serpentine *brindleyite*.

G. W. Brindley paid much attention to high-temperature reactions of clay minerals. He determined the structure of metakaolinite and presented the mechanism of formation of mullite from metakaolinite through intermediate spinel phase. Besides, he examined the kinetics of dehydroxylation of minerals of kaolinite group and defined the mechanism of transformation of serpentine into forsterite.

Numerous publications of Prof. Brindley were devoted to clay-organic complexes. They are dealing with the mode of distribution of molecules of organic compounds in interlayer spaces of sheet silicates.

Prof. G. W. Brindley was the editor and author of five chapters of the monograph "X-ray Identification of Crystal Structure of Clay Minerals". Its three editions (the last coedited by G. Brown) were the basis of clay mineral science for several generations of mineralogists of the whole world.

He played a major role in the foundation of Clay Mineral Bulletin, later transformed into periodical Clay Minerals, and in the organization of AIPEA. Brindley was very active in this association, particularly in its Nomenclature Committee. The participants of International Clay Conferences of AIPEA will for long time remember his smart figure, warmly discussing, explaining contradictory problems and presenting still new original ideas.

Prof. Brindley's merits were highly appreciated everywhere. He has received the titles of honorary member of the Ceramic Association of Brazil, Mineralogical Society of Great Britain and French Society of Mineralogy and Crystallography. Besides he received the Roebling Medal, the highest award of the Mineralogical Society of America.

Prof. G. W. Brindley was an outstanding lecturer, paying much attention to teaching. His last plenary lecture at the VIIth International Clay Conference in Bologna in 1981, which could not be already presented by himself, was entitled "Teaching of Clay Mineralogy". In one of his sentences one reads: "Teaching involves interaction of minds and stimulation of new thinking..."

He had numerous international contacts and travelled widely, since in each country nearly could find his pupils and friends. His visits were always stimulating the development of studies on clay minerals.

Prof. Brindley is and will be for long warmly remembered also by Polish mineralogists, since in this country he left pupils and friends too. During the visit in 1973 he was the chairman of the first scientific session of newly formed Section of Clay Minerals of the Mineralogical Society of Poland. Later, he was remembering this fact and meeting with Polish specialists. He was interested e.g. in nickel and magnesium sheet silicates from Szklary, Lower Silesia, described by Ostrowski (*Prace Mineral.* 1).

Polish clay mineralogists have initiated very interesting cooperation with prof. Brindley in the studies on disordered structure of dickite and on kaolinite from Santonian clay in the environs of Bolesławiec, showing abnormally high dehydroxylation temperature. Unfortunately, premature death of this outstanding scientist has interrupted this fruitful cooperation.

Prof. G. W. Brindley was very interested in vicissitudes of Poland and Polish peoples. In the post-war period he helped Polish soldiers who stayed in United Kingdom, especially those who tried to study at the Universities of Leeds and Manchester. In his friendly letters we often find warm words concerning Polish affairs. With the death of Prof. G. W. Brindley we have lost a man of great heart and intellect who founded the basis of a vast branch of modern mineralogy — the science of clay minerals.

Leszek Stoch