

Notes and News

Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. The notes (in duplicate) should be sent to the General Secretary of the International Union of Crystallography (D. W. Smits, Rekencentrum der Rijksuniversiteit, Grote Appelstraat 11, Groningen, The Netherlands). Publication of an item in a particular issue cannot be guaranteed unless the draft is received 8 weeks before the date of publication.

The Upper Mantle Project

The Upper Mantle Project is an international programme of research of the outer one thousand kilometres of the earth for which the International Union of Geodesy and Geophysics (IUGG) is the main responsibility but in which other Unions can participate. The project has been accepted as a programme sponsored by the International Council of Scientific Unions.

The Upper Mantle Project was first suggested at the Helsinki General Assembly of IUGG in 1960. The Upper Mantle Committee as it now exists was set up at the Berkeley General Assembly of IUGG, with Prof. V. Belousov (U.S.S.R.) as Chairman and Prof. Knopoff (U.S.A.) as General Secretary. In the summer of 1963 the Committee recognized that in most countries the period 1962-64 would be primarily an organizational period for Upper Mantle Project programmes. The period of 1965-67 was designated as a second in which definite accomplishments should be achieved in international and interdisciplinary programmes. In 1964 the Committee outlined the following programmes of investigation to be sponsored.

A. International studies

1. Study of continental margins and island arcs
2. Study of the world rift system
3. Earth-tide studies of viscosity and mechanical behaviour of the upper mantle

B. Interdisciplinary studies

1. Combined geophysical-geochemical-geological surveys
2. Thermal history of the earth's crust and upper mantle
3. Rocks and minerals under high pressures and temperatures
4. Magmas and their relations to tectonics and other conditions in the crust and upper mantle
5. Investigations of oceanic crustal and upper mantle structures in areas of anomalous gravity.

C. Deep drilling

By August 1965, 43 countries had indicated their intention to participate in the Upper Mantle Project. Most of these programmes are under way.

The United States programme has issued a progress Report for 1965. Several items might be of interest to X-ray crystallographers, namely, the study of properties of materials under high pressure and high temperature. S. Katz (Rensselaer Polytechnic Institute) reports on the elasticity and density of the high pressure polymorphs of selective solids. John C. Jamieson (University of Chicago) reports on the physical behaviour of solids under very high pressures, using X-ray diffraction techniques presently available to pressures over 150,000 atm. T. Takahashi and W. A. Bassett (University of Rochester) use a diamond anvil apparatus

for high pressure-temperature compressibility measurements by X-ray techniques. B. J. Skinner, J. R. Clark and R. C. Coleman (U.S. Geological Survey) are making mineralogical studies of pyroxenes. D. B. Stewart and T. L. Wright (U.S. Geological Survey) are studying feldspar mineralogy. G. C. Kennedy and B. L. Davis (University of California) are studying rapidly running transitions at very high pressures. R. A. Robie (U.S. Geological Survey) is making thermodynamic studies. Precise X-ray crystallographic data have been compiled for more than 400 minerals and density and molar volume values computed from them. A computer program has been written to store, compute and tabulate these data.

For work outside the United States the following investigations may be of interest. J. L. Jambor and C. H. Smith (Geological Survey of Canada, Ottawa, Ontario) are studying olivine composition determination with small diameter X-ray powder cameras. L. T. Trembath (Queen's University, Kingston, Ontario) is studying the structure of olivines by X-rays. L. C. Coleman (University of Saskatchewan) is carrying on an investigation of relationships between ionic substitution in monoclinic pyroxenes and the unit-cell dimensions and optical constants. G. Perrault (École Polytechnique de Montreal, Québec) is carrying on X-ray diffraction studies of pyroxenes. G. Pouliot (Geological Survey of Canada, Ottawa, Ontario) is preparing an X-ray determinative curve for plagioclase feldspars for the composition of range An₆₀-An₉₀, and of structure investigation of feldspars in general. I. D. MacGregor and C. H. Smith (Geological Survey of Canada, Ottawa, Ontario) are using chrome spinels in petrographic studies of ultramafic intrusions. J. Y. H. Rimsaite (Geological Survey of Canada, Ottawa, Ontario) is studying rock-forming micas. The above list of work is not exhaustive and papers in other areas, especially in the area of magnetism and meteorites, might be of interest to crystallographers.

Of special interest may be also the *Handbook of Physical Constants*, 2nd edition, by Francis Birch and Sydney P. Clark, Jr, Editors, of the Geological Society of America, which is a revision of the Handbook of Physical Constants by Birch, Schairer and Spicer, Editors, published in 1943. The Upper Mantle Committee is expressing great interest in the preparation of a compilation of geophysical data in Handbook form. The above handbook fulfils a significant portion of this objective. It is the aim of the Committee to stimulate interdisciplinary studies, both in certain geological environments and also in theoretical and laboratory endeavours such as high pressure studies. Symposia are held at intervals.

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