

ILLITE IN THE ENFIELD SHALE FROM SOUTHERN NEW YORK

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Data on the mineralogical composition of shales are disappointingly scarce, in view of their abundance and importance. Some results obtained incidental to a mineralogical study of clay fractions from southern New York soils are therefore reported here. The soil clays revealed no measurable differences in mineralogical make-up either with depth in the profile or between the different soils examined, suggesting that perhaps the soil clay was derived by disintegration from flags of Enfield shale which are so prominent in these soils.

A sample of unweathered shale was obtained from the Cornell University Quarry, three miles southeast of Ithaca, New York. Mechanical analysis of the Enfield shale showed 16% clay < 1.0 μ , 73% silt 50-1 μ , and 11% sand. The following results were obtained on the clay fraction:

<i>Test²</i>	<i>Enfield Shale</i>	<i>Soil Clay (Average)</i>
Differential thermal analysis.	Illite only thermally active mineral.	Illite with chlorite in some samples.
X-ray diffraction.	Illite with traces of quartz and boehmite.	Illite with some chlorite and a small amount of quartz.
Total potash (% K ₂ O)	5.8	4.9
Cation exchange capacity (m.e./100 gm.)	18	22
Glycol retention for internal swelling (mgm. glycol/gm. clay).	15	22

The clay fraction of the Enfield shale is predominantly illite, indicating that the illite was not formed during the current soil cycle but is a reflection of an earlier combination of soil forming factors.

¹ Now at Massachusetts Institute of Technology, Cambridge, Massachusetts.

² See Martin, R. T. "Mineralogical Analysis of Some New York State Soil Clays," Cornell University Ph.D. Thesis, 1952, for experimental details.

GRAPHICAL METHOD FOR DETERMINING INTERPLANAR SPACINGS

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Studying Fig. 2 of the article that F. D. Bloss published in *Am. Mineral.*, **37**, 588 one recognizes the following collineations:

0	1	2	3	4	5	6	7	Levels
0	100	200	300	400	500	600	700	are colinear
0	110	220	330	440	550	660	770	are colinear
0	125	250	375	500	625	750		are colinear
0	150	300	450	600	750			are colinear
0	200	400	600	800				are colinear

This means that the whole "grid" is determined by the 1-level grid scale. Indeed this scale—being a graph of the function $\sqrt{1+x^2}$ —suffices for the rapid determination of the interplanar spacings. The method that uses only this scale requires the construction of the common crystallographic gnomogram showing the gnomon-circle and the poles (hkl). The center O_1 of the gnomon-circle corresponds to the point O_1 in Fig. 3 of the article of Bloss; and the length of the radius of the gnomon-circle is one fifth of the distance on the 1-level scale between the points 100 and 510 (because $\sqrt{1+5^2}=5, 1$). G_{hkl} values for all the face-poles having $l \neq 0$ (we suppose the plane of projection to be perpendicular to the crystallographic c -axis) are read on this scale by transfixing its point 100 to the center of the gnomon-circle and rotating it around this point in order to bring it in contact with the face pole under consideration. The real G_{hkl} value is found if the number pointed out by the scale is multiplied by l .

The G_{hkl} value for a pole ($hk0$) is found by taking with a simple measuring-staff (0-level scale of Bloss), having the gnomon-length for unit of length, the distance between the face poles (001) and ($hk1$).*

* Compare Fig. 147 in P. Terpstra: *Kristallographie* (Groningen, 1946).

INTERNATIONAL UNION OF CRYSTALLOGRAPHY

The Third General Assembly and International Congress of the Union will be held in Paris from 21 to 28 July 1954. Full details of the meeting are now available in the First Circular, copies of which may be obtained from the General Secretary of the Union (R. C. Evans, Crystallographic Laboratory, Cavendish Laboratory, Cambridge, England), from the Secretary of the Programme Committee (A. J. Rose, Laboratoire de Minéralogie, 1 rue Victor Cousin, Paris 5, France), or from any of the following regional representatives of the Programme Committee: G. Menzer (Universitätsinstitut für Kristallographie and Minéralogie, Luisenstrasse 37/II, München 2, Germany), W. H. Taylor (Crystallographic Laboratory, Cavendish Laboratory, Cambridge, England), J. D. H. Donnay (The Johns Hopkins University, Baltimore, Maryland, U.S.A.).

At the congress papers will be presented on all aspects of crystallographic research; there will also be an exhibition of crystallographic apparatus and books. After the Congress two specialized Symposia will be held on 'The Location and Function of Hydrogen' and 'The Mechanism of Phase Transitions in Crystals,' and there will be visits to localities of mineralogical interest. Offers of papers for the Congress and Symposia and notice of enrolment must reach the Secretary of the Programme Committee (preferably on the form accompanying the First Circular) by 15 February 1954. All general correspondence should also be addressed to the Secretary of the Programme Committee.

(See September issue of *Acta Crystallographica* for full details).

The Arizona Geological Society announces that it has sponsored reprinting the following report:

"Report on studies of stratification in modern sediments and in laboratory experiments" by Edwin D. McKee, Office of Naval Research, Project Nonr 164 (00), NR-081-123.

This report constitutes a record of characteristic types of stratification as found today in certain environments of deposition such as beaches, dunes, alluvial fans, lagoons, and tidal flats. The report also includes the results of laboratory experiments on the development of various kinds of stratification. It includes 61 pages of description, illustrated by 12 tables, 12 plates of photographs, and 28 text figures, mostly 3-dimensional drawings.

Copies can be obtained at \$1 each, postpaid, by sending your remittance and order to: Arizona Geological Society, P.O. Box 2270, Tucson, Arizona.

Dr. G. W. Brindley, of the physics department, University of Leeds, England, has joined the staff of the Pennsylvania State University as research professor of mineral sciences. In recent years Dr. Brindley has carried on a detailed crystallographic study, first of the kaolinite-halloysite minerals, then the chlorite minerals, and finally of the whole range of layer lattice minerals.

Word has been received of the death of Dmitri Stepanovich Belyankin (1876-1953), Russian mineralogist and petrologist.

The Austin Flint Rogers Research Fellowship in Mineralogy has been established at Stanford University. This fellowship is open to graduate students in the field of mineralogy and preference may be given to those who have had a year of graduate work. The emolument will be \$2000 and teaching duties will not be required of the Fellow.

Further inquiries should be made to Professor C. Osborne Hutton, School of Mineral Sciences, Stanford University, Stanford, California.

Correction

In the paper entitled "A spectrographic method for determining trace amounts of lead and zircon and other minerals," by C. L. Waring and Helen Worthing, *Am. Mineral.*, September-October 1953 issue, there are two errors on page 832. In both cases the ratio $\frac{\text{Bi } 2898.0}{\text{Pb } 2833.1}$ should have been stated $\frac{\text{Pb } 2833.1}{\text{Bi } 2898.0}$.

Beyrichite—Charles Milton, U. S. Geological Survey, Washington 25, D. C. is interested in studying this mineral, and would like information as to the whereabouts of any specimens so labelled.