from the nozzle. These specks were isolated, and a powder photograph of them showed the pattern of native lead. Subsequently, after subtracting the lead lines the structures recorded on the contaminated photographs could be assigned to known mica polymorphs.

It would seem advisable, therefore, that whenever Duco cement is used as a binding agent in powder work, certain precautions against lead contamination should be practiced. Every time the screw eye is inserted or withdrawn from the tube nozzle, small lead shavings are loosened and are ejected with the cement. Inasmuch as most of the lead shavings usually are expelled with the first emission, the contamination may be materially reduced by discarding the first few drops immediately preceding each use. A more satisfactory method is to slit the tube down the side and empty its contents into an applicator bottle, from which largely uncontaminated cement may be easily withdrawn.

The duPont Company has stated (written communication dated March 26, 1952) that they are currently experimenting with an aluminum type tube which may eventually replace the lead tube now is use. Nevertheless, even with aluminum, this particular problem will still be present. An alternative mounting method which avoids an internal binder altogether may be advisable in some types of work. A procedure which makes use of plastic capillary tubes (K. E. Beu, *Rev. Sci. Instr.*, **22,** 62, 1951) for this purpose has been perfected.

PREFERRED ORIENTATION OF OLIVINE CRYSTALS IN TROCTOLITE OF THE WICHITA MOUNTAINS, OKLAHOMA

W. T. Huang and C. A. Merritt, *University of Oklahoma, Norman, Oklahoma*

The Wichita Mountains of Southwest Oklahoma are made up of pre-Cambrian igneous rocks, mostly gabbros, anorthosite and granites, which probably form sheet-like intrusions. Troctolites occurring in the oldest intrusion crop out near Roosevelt and other locations of the central Wichita Mountains. The rock has an average composition of 68 per cent bytownite (An_{72-78}), 30 per cent olivine and 2 per cent accessory minerals. It is interpreted as formed by gravity settling of crystals as some outcrops show a downward gradation from an anorthosite through an olivine gabbro to a troctolite.

The troctolite is medium to coarse-grained with feldspar tablets as much as 5 cm. in length and 3 cm. in width, and with olivine crystals as

large as 4 cm. in diameter. The average size of grains is about 3 mm. by 2 mm. Some phases show mafic minerals which form interstitial grains between blocky plagioclase crystals while others, generally medium-grained and relatively high in olivine crystals, are markedly saccharoidal. Most of the olivine is evenly distributed in the rock, but local concentration is common. The mineral is altered commonly to goethite, which stands out on the surface of the outcrop. Marked irregularities in grain size, some zonal arrangement of minerals in the coarse-grained phases, and the occurrence of massive mafic minerals suggest that at least a part of the excessively coarse-grained material is pegmatoid in character.

Some troctolites are massive, whereas others show conspicuous banding, which feature in the associated gabbro-anorthosite was interpreted as due to magmatic flow by Walper (3). As the intrusion is a horizontal sheet, the general attitude of the banding of the troctolite is horizontal.

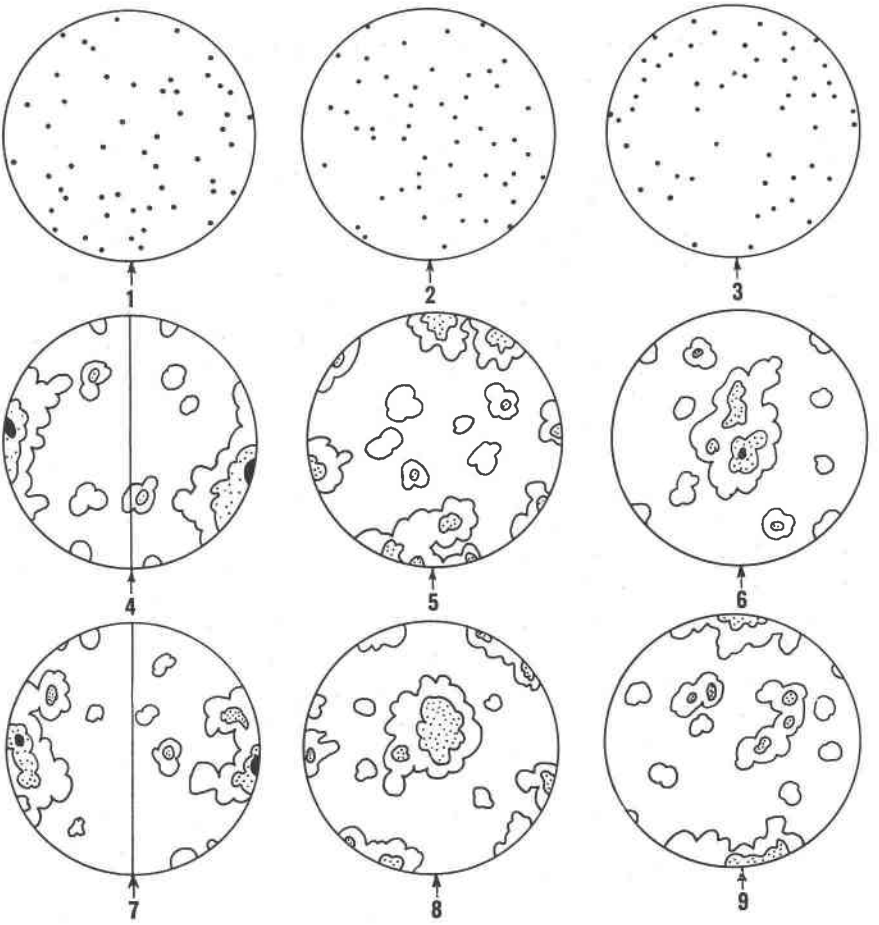
Locally well defined platy and linear parallelism of feldspar in the plane of the banding was observed in several horizons. The bands, usually a few centimeters in thickness, continue with regularity for several yards before they terminate by lensing, or are displaced by small shears. The contacts between adjacent bands are sharp in some cases and gradational in others. Within many of the bands there is a variation from an olivine-rich facies at the bottom to a feldspar-rich one at the top. Repetitions of this feature are common and reversals were observed.

Fabric diagrams were prepared for the olivine crystals from a number of selected specimens of the troctolite. For each slide, the X, Y and Z directions of 52 olivine grains measured in several traverses have been plotted. This number is sufficient to demonstrate the essential features of preferred orientation.

1. *Fabrics of olivine crystals resulting from gravity settling.* The orientation of 52 olivine grains in the troctolite taken from an outcrop one and one-half miles northeast of Roosevelt was analyzed. The fabric of this aggregate of olivine grains was produced by gravitative settling and was not affected by subsequent deformation. The mineral makes up about 28 per cent of the thin section and has the form of equant grains averaging 0.8 mm. in diameter. The resulting diagrams fail to reveal any trace of preferred orientation of olivine (Figs. 1, 2 and 3).

In his analysis of preferred orientation of olivine crystals in peridotites, Turner (2) concluded that the gravitative settling of olivine crystals from basic magmas under static conditions fails to produce preferred orientation of the mineral concerned; this conclusion is borne out by the present study.

2. *Fabrics of the banded troctolite.* Two selected troctolites with banded



FIGS. 1–3. Orientation of X, Y and Z respectively in 52 olivine grains in troctolite, H-25. Location: one and one-half miles northeast of Roosevelt (SW ¼, SW ¼, Sec. 33, T. 5 N., R. 17 W.).

FIGS. 4–6. Orientation of X, Y and Z respectively in 52 olivine grains in banded troctolite, H-41; contours, 6-4-2 per cent. Location: 13 miles southeast of Roosevelt (NE ¼, Sec. 9, T. 3 N., R. 15 W.).

FIGS. 7–9. Orientation of X, Y and Z respectively in 52 olivine grains in banded troctolite, H-47; contours, 6-4-2 per cent. Location: 14 miles southeast of Roosevelt (SE ¼, SE ¼, Sec. 5. T. 3 N.. R. 15 W.).

structure were analyzed. The olivine grains are xenomorphic, with some having a weak undulose extinction. Many of the olivine grains are slightly but distinctly elongated parallel to the banding of the rock.

In Figs. 4, 5 and 6 are plotted the X, Y and Z directions measured in 52 olivine grains from one section of the typical banded troctolite col-

lected from an outcrop 13 miles southeast of Roosevelt. The vertical line of Fig. 4 indicates the section parallel to the trends of bands, and it is seen readily that there is a distinct preferred orientation of X with a maximum at right angles to the plane of banding. In Fig. 6 the preferred orientation of Z direction within the plane of banding is distinct. In Fig. 5, Y shows a less obvious tendency to preferred orientation within the plane of banding and perpendicular to Z.

Figures 7, 8 and 9 illustrate the orientation of olivine crystals in the banded troctolite taken from an outcrop 14 miles southeast of Roosevelt. These diagrams, like Figs. 4, 5 and 6, show fairly distinct maxima for X, Y and Z in mutually perpendicular directions. Again the X maximum, almost normal to the banding, is the most conspicuous.

The preferred orientation patterns for olivine of flow-banded troctolites (Figs. 4–9) are reminiscent of those recorded by Phillips (1) and by Turner for olivine of banded or schistose peridotites which appear to have been emplaced by flow of a lubricated mass of crystals or by deformation subsequent to intrusion. Phillips refers to similar observations by Andreatta for olivine of olivinite and by Ernst for olivine of olivine-schist of metamorphic derivatives.

The conclusion of this study is that in the Wichita Mountains olivine of non-banded troctolites, the crystals of which were concentrated by gravitative settling, show no preferred orientation; whereas olivine of flow-banded troctolites shows marked preferred orientation with Y and Z in the plane of banding.

References

1. Phillips, F. C. (1938), Mineral orientation in some olivine-rich rocks from Rum and Skye: *Geol. Mag.*, **75**, 130–138.
2. Turner, F. J. (1943), Preferred orientation of olivine crystals in peridotites, with special reference to New Zealand examples: *Trans. Royal Soc. of New Zealand*, **72**, pt. 3, 280–300.
3. Walper, J. L. (1951), Assimilation in the Cold Springs Area of the Wichita Mountains Igneous Complex, Oklahoma: *Am. Jour. Sci.*, **249**, 47–65.

The University of Toledo and three Toledo glass companies have announced the establishment of a Graduate Institute in Silicate Chemistry and Related Sciences. The initial sponsors are the Libbey-Owens-Ford Glass Co., Owens-Illinois Glass Co., Owens-Corning Fiberglas Corporation, and the University. Heading the institute as director and also serving as professor of silicate chemistry will be Dr. Wilhelm Eitel, who was engaged at the Office of Naval Research in the synthesis of silicate minerals. For a period of twenty-five years Dr. Eitel organized and directed the Kaiser Wilhelm Institute of Silicate Research in Berlin-Dahlem, Germany.

Selected Notes from News Letter, American Geological Institute

David M. Delo, who has served as Executive Director of the American Geological Institute since it began operations on June 1, 1949, has resigned, effective in July to accept the presidency of Wagner College, Staten Island, New York. A new Executive Director will be appointed in the near future and Institute activities will continue without interruption.

The first printing of 5,000 copies of the preliminary career booklet entitled, "Shall I Study Geological Science?" has been exhausted. A second printing of 5,000 is now available for distribution. The booklets may be secured without charge by individuals, departments or societies if they will contact A.G.I. Headquarters: 2101 Constitution Ave., Washington, D. C.

The sale of A.G.I Report No. 6, "Departments of Geological Science in Educational Institutions of the U. S. and Canada" has been better than anticipated. Only about 100 copies of the original printing are still in stock. Those desiring the Directory should therefor order immediately. Price $1.00 from A.G.I. Headquarters.

Plans for bi-monthly issuance of a compilation of current geological and geophysical abstracts are now in the making. The publication will include authors abstracts from the geological journals in the U. S. and Canada, state and federal reports, and other publications whenever possible. These will be photolithed and issued in inexpensive form, with a current and annual index.

The new "compilation" should be invaluable to industrial geologists who do not have a large library available and to others desiring to keep abreast of current publications at a small expenditure of time and money.

Distribution will be through annual subscription. In accordance with A.G.I. policy, the "compilation" will be made available at the lowest feasible cost.

48th Meeting, Cordilleran Section, G.S.A.

"More than 650 geologists, paleontologists, seismologists and hydrologists attended the 48th meeting of the Cordilleran Section, G.S.A. held under the sponsorship of the Arizona Geological Society at the University of Arizona, April 10–14. About 375 attended the various field trips, including about 130 on the two-day trip from Tucson through the Ray-Globe-Miami mining district, and on to Holbrook. This trip traversed Arizona from the basin-range type of country around Tucson, across the mountainous district separating the desert from the Colorado Plateau and on to the South Rim of the Plateau.

"The Guidebook prepared in connection with the field trips contains 150, $8\frac{1}{2}\times11$ pages, 51 figures and 5 tables. The figures include 19 photographs, 17 maps and 15 sections. It is the only currently available comprehensive publication on the geology of southern Arizona. In addition to the detailed road logs there are 15 articles dealing with the geology of the area. Price, $3.50: remittance should accompany orders."

New Section Officers for 1952–1953 are:

Chairman—William C. Putnam, University of California at Los Angeles.

Vice-Chairman—M. Y. Williams, University of British Columbia, Vancouver, B. C.

Secretary—V. L. VanderHoof (reelected for a third term) Independent Exploration Co., Santa Barbara, Calif.

The retiring officers of the Cordilleran Section are:

Chairman—Ian Campbell, C.I.T., Pasadena, California.

Vice-Chairman—C. M. Gilbert, University of California at Berkeley.

Secretary—V. L. VanderHoof.

Professor Emeritus Charles Palache, whose address has for many years been at 106 Appleton St., Cambridge, Massachusetts, desires to inform his friends and correspondents that after Sept. 10, 1952 his address will be changed to Charlottesville, Virginia, *R.F.D.* 3, Box 205-D.

His home will be on the property of Charles O. Gregory of the Law School of the University of Virginia. This lies in the suburban subdivision of Bellair, about one mile west of the University on Route 250 from Charlottesville.

Mr. Palache will still receive mail addressed to Harvard University, Department of Mineralogy and Petrography, Geological Museum, Oxford Street, Cambridge 38, Massachusetts.

Further Note on Unit Cell and Space Group of Glaucochroite

J. H. O'Mara, *Carter Oil Co., Box 209, Miles City, Montana*

Through the courtesy of Dr. Wilhelm Eitel, Electrotechnical Laboratory, Norris, Tennessee, I have become aware of a prior study of the unit cell and space group of glaucochroite by H. O'Daniel and L. Tscheischwili included in their more detailed paper, "Strukturuntersuchungen an Tephroit Mn_2SiO_4, Glaukochroit $(Mn, Ca)_2SiO_4$, und Willemit Zn_2SiO_4 von Franklin Furnace," *Zeit. Krist.*, (A), **105,** (1943), pp. 273–278. Issues of *Zeitschrift für Kristallographie* for the period covered by World War II were unavailable in the library consulted (Harvard University) at the time my short article was published in *Am. Mineral.*, **36,** 918 (1951). However, the data are in reasonable accord with the earlier published ones.

The Secretary of the Mineralogical Society of America has been requested by the Tolstoy Foundation to aid a certain Mrs. Maria Chijikov to locate her son, Mr. George Chijikov-Roman. There is little information about him except that he worked in a museum in the field of Mineralogy. If any one has information about him, please contact the Tolstoy Foundation, Inc., Search Department, 300 West 58th Street, New York, N. Y.

Tenth Annual Pittsburgh Diffraction Conference

Preliminary Announcement

The Tenth Annual Pittsburgh Diffraction Conference will be held at Mellon Institute of Industrial Research, Pittsburgh 13, Pa., on November 6 and 7, 1952. Technical sessions are being arranged on *Instrumentation and Methods, Neutron Diffraction and General Diffraction Studies*. Contributed papers on these and related subjects will be considered in the order in which they are received. Titles should be submitted to the Program Chairman, Mr. R. K. Scott, Hall Laboratories Inc., Box 1346, Pittsburgh 30, Pa., before September 1, 1952.

This year's conference will include a symposium of invited papers in the field of *Order—Disorder Studies*.

For further information, and for a copy of the preliminary program when available, write to Mr. E. E. Wicker, U. S. Steel Company, Research and Development Laboratory, 234 Atwood Street, Pittsburgh 13, Pa.