

In 1948, Professor Nishio⁷ of our department devised a compass similar to Ingerson's and made it in his laboratory (Fig. 3). Ten instruments were made there and then about fifty have been manufactured in Katsushima Seisaku-sho (Katsushima Factory).⁸ The price of it is \$8 to \$10. It is used by Japanese geologists in universities, the Geological survey and mining companies. They say that it is convenient not only for the determination of direction of lineation but also of flow structure in igneous rocks and slicken grooves in fault planes.

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LEAD CONTAMINATION IN DUCO CEMENT

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Because of its availability and adaptability, Duco cement has become widely employed as a binding agent in powder x-ray work in the United States. Recently investigators (e.g., G. T. Faust, *Am. Mineral.*, **36**, 813, 1951) have observed that Duco gives a broad, diffuse but characteristic band on powder photographs. This contamination is of minor importance and normally does not jeopardize accurate interpretation.

In the course of powder work on fine-grained micas, several x-ray photographs revealed mica lines of unusual intensities, as well as extraneous lines, which made accurate crystal structure determination impossible. At first these photographs were put aside in the belief that they were obtained from micas with a hitherto unreported structure. After several such photographs had accumulated out of a total of 50, some type of contamination was suspected. However investigation showed that the mica samples themselves were pure and therefore that the contamination was introduced during or after the preparation of the mount.

When the Duco was studied microscopically, small black specks, occasionally in considerable quantities, were observed in it as it emerged

⁷ At that time, journals of the United States of America were very sparsely distributed in Japan. Nishio was not aware of Ingerson's paper.

Nishio, S., Measurement of linear schistosity in crystalline schists: *Mining Geology and Applied Geophysics*, compiled by H. Sano. 1951 (In Japanese).

This apparatus has a water-level, as shown in Fig. 3, so we can also determine the dip and strike of the schistosity plane or of bedding plane by using it.

⁸ Katsushima Seisaku-sho, 17, 2 chome, Nippori-machi, Arakawa-ku, Tokyo, Japan.

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 in 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

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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