II.—Mineralogical Society of London.

January 23rd, 1906; Professor H. A. Miers, F.R.S., President, in the chair.—Studies in Crystallisation, Sodium Nitrate, by H. A. Miers and J. Chevalier. Microscopic observations were made upon solutions of known strength contained in open tubes or sealed tubes maintained at a known temperature, or in the form of drops upon a slide, with the object of comparing the growth of crystals in metastable and labile solutions respectively. The limits of the labile state (in which the solution can crystallise spontaneously) have been fixed by previous experiments by H. A. Miers and Miss F. Isaac. If a crystal of the salt be introduced into a supersaturated solution which is not labile, the centres of growth of new crystals are on its surface, and they grow in parallel positions upon it; if it be introduced into a labile solution the new centres of growth are in its neighbourhood, and the crystals fall upon it in various positions. If it be moved about in either, a cloud of crystals is produced; but in the metastable solution this appears to be due to minute crystals which are swept from its surface. A crystal having appeared spontaneously, can continue to grow in a labile solution without producing others in its neighbourhood; but if introduced, it at once produces a cloud. This may be because the growing crystal is surrounded by a zone of metastable solution.—Geikielite and the Ferro-magnesian Titanates, by T. Crook and B. M. Jones. Geikielite occurs in association with magnesian menaccanite and common ilmenite (menaccanite) in the gem gravels of the Balangoda and Rakwana districts of Ceylon. A considerable number of analyses indicate that Geikielite varies in composition, the iron oxides ranging from 8 to 14 per cent. No specimen has hitherto been found which contains less than 8·1 per cent. of iron oxide. For this reason the formula (Mg Fe) $Ti\,O_3$ is preferable to $Mg\,Ti\,O_3$, as expressing the true composition of Geikielite. Magnesian menaccanite containing about 28 per cent. of iron oxide is very closely allied to Geikielite in all its properties, more so than to common ilmenite. The alteration products of Geikielite are similar to those of ilmenite, consisting of rutile and so-called leucoxene; the latter is a mixture of amorphous titanic acid, sphene, and limonite. It seems advisable to classify the ferro-magnesian titanates as Ilmenites and Geikielites, treating magnesian menaccanite (which has the formula (Fe Mg) $Ti\,O_3$ where Fe : Mg = 1 : 1) as the middle member of the series.—G. F. Herbert Smith exhibited and explained the use of a diagram for the graphical determination of the refractive index from the prism angle and the angle of minimum deviation. He also explained a simple test for ascertaining the pair of faces corresponding to any refracted image.

CORRESPONDENCE.

MACHINE-MADE IMPLEMENTS.

Sir,—Since this article appeared, I have been able, in company with Mr. C. Bird, F.G.S., of Rochester, to visit a chalk wash-mill at the Borstall Cement Works near that city.

I found that the machinery used was much the same as that in the brickearth wash-mills referred to in my article of February, 1906, but I learnt this most important piece of information, not hitherto mentioned by anyone as far as I have been able to discover, viz., that during the 2 days, or 29 hours, that the mill is at work, *fresh charges of chalk are introduced*; this is of the utmost importance, as it affects materially the results obtained. I had only a very short time for my visit, but I think I got all the available information. The men told me that, as at Mantes, they removed all the visible flints, so that the remaining ones, which they do not want, are those concealed in the chalk. The harrows also, as in the Mantes mills, do not come within some inches of the bottom of the basin, and the speed would appear to be the same at Borstall as at Mantes.

From the flint refuse heap, "the heap of Eoliths" as M. Boule styles them, I got a very good selection, some of which, as the men were able to tell me, had been in *for the full time*, and some of which had been in *for only part of the time.*

Now from those that had been in for *only part of the time* I got some flints that, *if photographed*, would give very fair samples of Eoliths, though not comparable otherwise in true work, some showing bulbs of percussion and the fractures so polished that they have quite an *old* look. My own attempts at forgeries are useful, as they show me that I can produce in a short time this old polish, where the flint allows of this. So that I was quite prepared for the apparent old polish on newly fractured flints from the chalk. Some of these had still on them some of the white crust of flints fresh from the chalk.

But those flints that had been in the *full time were quite different from, and not Eoliths at all.* These must have sunk to the bottom, *quite out of reach of the harrows*, the "quasi-human element" referred to in my article of February, and thus were the results ultimately of *water-action only*, highly charged of course with chalk mud. These come out as almost perfectly *smooth spheres*, and quite unlike any *naturally water-worn* pebbles, and what one would naturally expect to be the outcome of flints, rotated at an uniform speed in a circular basin, and under conditions that do *not occur* in nature, save perhaps in a 'giant-cauldron.'

Those flints that *go in last*, especially if the space beyond the reach of the harrows be fully occupied, must be more or less, during that time, in contact with the harrows, and these are the pseudo-Eoliths.

So that we have this point, I think, clearly shown, and for the first time in this machine-made implement controversy, that the pseudo-Eoliths are the result of the pseudo-human element represented by the harrows, and that the pseudo-torrent action, apart from the harrows, only produces *spheres*. I made a selection of these from the battered, buffeted, rough, and imperfect, to the smooth and almost perfect sphere.

F. J. Bennett.

West Malling.
February 14th, 1906.