PLATINUM.

THE *Engineering and Mining Journal* calls attention to a renewed demand during the last year or so for crude platinum, or "platinum sand," and gives a summary of the localities where the metal can be found in this country. There are so many localities in this country where it has been found, that it seems reasonable to believe that a regular platinum-mining industry may at some time be established, perhaps, independently of placer gold-mining.

The placer mines of California, Oregon, and other States and Territories, have shown a large number of localities in which platinum occurs. Small lots have come into the market from many of them, and the number would doubtless have been greater had the miners known that the crude metal could be sold in very small quantities. While aware that their "black sand" contained platinum, it seemed hardly worth while to take the trouble to collect the ounce or so of metal which might be obtained at a clean-up.

Now that hydraulic mining in California has received such a setback from invidious legislation, the quantities of platinum found, or to be found, are naturally less than before. Still the known localities, where gold-mining is still carried on by the hydraulic process, or by sluicing from drift or cement mines, are not few.

It is very possible that some arrangement of the undercurrents, by which a larger quantity of black sand would be collected with the amalgam, might be profitable. Whenever grizzlies are used, the addition of screens, placed below, might be an improvement. The platinum grains are, as a rule, in better shape for concentration than particles of gold, and they do not flour like amalgam.

In cleaning up the main line of sluice in placer mines showing platinum, if pains were taken to collect a comparatively large amount of the heavy material, — "black sand," etc., — this, together with the savings from the undercurrents, might be run over some mechanical concentrating apparatus, such as a vanner, with a production of platinum which would pay for the extra trouble.

But there are possibilities of finding platinum in other than gold-mining regions. Of course, wherever the metals occur together, any method of saving gold by gravity will also result in the saving of platinum, if present; and when amalgamation is the principal dependence, as in ordinary sluicing, still gravity is mainly relied on, even if plates are also used, to hold or to catch the amalgam, and therefore any platinum which may be present. It may be, however, and very probably too, that there are localities which have been prospected for gold and abandoned as unprofitable, which would furnish platinum in commercial quantities. The association of the two metals is by no means a necessary condition. That they are in practice found together, simply means that a gravity process which saves the one saves also the other. It is therefore worth while for prospectors exploring new fields to keep an eye open for platinum.

The same journal is authority for the statement that within the last few days a noteworthy discovery has been made: platinum has been found *in place* in the nickeliferous ore of Sudbury, Canada, by Professor F. W. Clarke. This discovery was made accidentally, in the course of determinative and analytical work upon the ore, which presents other peculiarities. While the amount found is of little or no commercial importance, it has a very great scientific significance, and is certainly something new. Platinum grains have been found in secondary rocks, such as recent sandstones, conglomerates, etc.; but never before, so far as we are aware, in vein stuff, although it has long been looked for, and such an occurrence was to be expected. There is therefore always the chance that actual veins of platinum-bearing material, so often falsely reported, may actually be found, and that perhaps some of them may be of a paying grade. The number of localities, and their wide distribution, in this country, point to such an outcome.

THE HISTORY OF PORPHYRITIC QUARTZ IN ERUPTIVE ROCKS.

IN a very suggestive communication with the above title, presented to the Philosophical Society of Washington, Saturday evening, March 16, Mr. J. S. Diller emphasized the distinction first clearly drawn by Rosenbusch between granitic and porphyritic quartz in eruptive rocks.

Granitic quartz, he remarked, is the last mineral to solidify, as may be well seen in such rocks as granite, where it fills the angular spaces between the crystals of felspar and other silicates.

On the other hand, porphyritic quartz is characterized either by a well-developed crystallographic outline or by rounded or embayed forms derived from such crystals by the corrosive action of the molten lava in which they were suspended. The destructive forms are by far the most common, and their distribution indicates that porphyritic quartz crystallized in the magma at great depths beneath the earth's surface before the majority of the silicates with which it is associated were formed. Mr. Diller laid special stress on the fact, that, while the silicates are crystallizing in a molten mass, if porphyritic quartz is present it undergoes resorption; and not until the silicates are developed, and granitic quartz begins to form, does the resorbent action discontinue.

Mr. Iddings was quoted as having shown that the crystallization of porphyritic quartz is not determined by the chemical composition of the magma, but due to physical conditions; and the speaker agreed with Lagorio, also, that the resorptive phenomena of porphyritic quartz and other minerals in eruptive rocks is a consequence chiefly of the relief of pressure in the process of eruption.

To explain the crystallization of silica as porphyritic quartz, right in the face, so to speak, of the iron, magnesia, and other bases which, as we would suppose, were thirsting for the silica to form silicates, Mr. Diller advanced a novel hypothesis as to the influence of pressure on the crystallization of minerals in deep-seated magmas.

Reasoning from the results of Hallock's observations (*Science*, xi. p. 152) and other data, he concluded that an increase of the pressure, already enormous, upon the magmas within the earth, only removed them further from crystallization, instead of producing it, as has been suggested by some petrographers.

At a considerable depth beneath the earth's surface the pressure upon the magma is so enormous, and the difficulty of moving the molecules among themselves so as to segregate those of a certain kind and arrange them in crystals is so great, that the crystallizing force, which has a comparatively small limit of strength, is unable to overcome the resistance, and crystallization is wholly prevented. Thus it would appear that the interior of the earth is maintained in an amorphous condition by pressure alone, and only a comparatively thin crust allowed to crystallize. It would follow from this view that the crystallization of the magma within the earth is rendered possible only by the relief of pressure; and the minerals which could crystallize first (and they are similar in all lavas) must be determined to a large extent by the relative strength of their crystallizing forces. As a consequence of the gradual relief of pressure, it would be expected that simple minerals such as the oxides, of which quartz is one, could crystallize before the more complex silicates. A further relief of pressure may enable the silicates to form, and, in the struggle for silica, the quartz is partially or wholly resorbed. If the rock cools slowly, and becomes holocrystalline, any silica that is left over after the bases in its neighborhood are satisfied will fill out the irregular spaces between the crystals of silicates, and form granitic quartz.

The production of twinning lamellæ in many minerals, of rocks which have been subjected to high pressure, was regarded as a step in the direction of reducing crystallized matter to an amorphous condition.

The full paper, which is only an abstract of a forthcoming bulletin of the United States Geological Survey, will probably be published in the "Proceedings of the Philosophical Society."

ETHNOLOGY.

The Man of Spy.

AT a recent meeting of the New York Academy of Sciences, Professor J. S. Newberry described the important finds of human remains in a cave at Spy in Belgium, which were made in 1887, and illustrated his lecture by interesting photographs of the crania and other portions of the find. Since the discovery of the Neanderthal man, no other discovery of equal importance has been made; the more so, as Messrs. Ed. van Beneden and Ch. van