

arsenical insecticides most generally used are Paris green, Scheele green, London purple, arsenious oxide, lead arsenate, white arsenoid, pink arsenoid, green arsenoid, and paragrene. These are adulterated in three ways: (1) By addition of some colored substance free from arsenic; (2) by addition of some inert material to increase weight; (3) by a decrease in the amount of combined arsenious oxide in the preparation. The methods for the determination of arsenious oxide in Paris and Scheele greens are compared and critically discussed.

## GEOLOGICAL AND MINERALOGICAL CHEMISTRY.

C. H. WARREN, REVIEWER.

**A New Meteorite from Oakley, Logan County, Kansas.** By H. L. PRESTON. *Am. J. Sci.*, 160, 410-412.—The meteorite, which is the eleventh one reported from Kansas, weighed 61 lbs., 10 oz., and was  $7\frac{1}{2} \times 10 \times 12$  in. in its greatest diameter. It consists of "olivine and enstatite chondrules imbedded in a very irregular ground mass of the same material, with numerous particles of iron and iron sulphides." An analysis gives its composition as follows: Metallic part, Fe, 12.76 per cent.; Ni+Co, 1.68 per cent.; silicates, 85.56 per cent.; total, 100 per cent.

**Silicious Calcites from the Bad Lands of South Dakota.** By S. L. PENFIELD AND W. E. FORD. *Am. J. Sci.*, 160, 352-354.—The crystals are rough in appearance but show with some distinctness characteristic calcite forms. In chemical composition the crystals resemble the silicious calcites from Fontainebleau, containing about 40 per cent. of calcite and 60 per cent. of sand. The sand grains at times attain the size of small pebbles. It appears that these crystals represent a phase of sand stone formation where the calcareous cement was able to crystallize and preserve its external crystalline form.

**Cambrian Silurian Limonited Ores of Pennsylvania.** By T. C. HOPKINS. *Bull. Geol. Soc. Am.*, 2, 475-502.—Extensive deposits of iron ores occur as irregular pocket-like deposits in the residual clays of the Cambro-Ordovician limestones and slates of Eastern and Central Pennsylvania. The ores consist of the hydrous oxides of iron, chiefly limonite, associated with manganese ores, wavellite, quartz, chert, and fluorite. The ores appear to have been derived from the original iron content of the limestones and slates, by a leaching and concentrating process in which carbonic and organic acids, together with oxygen took part. In position the ores favor the contact of the limestone and the underlying slate.

**Two New Occurrences of Corundum in North Carolina.** BY J. H. PRATT. *Am. J. Sci.*, 160, 295-298.—The first occurrence is in an amphibole schist, apparently a metamorphosed igneous rock of the gabbro type. The corundum is found in seams a few feet in width, and forms about 10 per cent. of the vein. The second is in a quartz schist, composed of biotite mica and quartz, in which the corundum is found along streaks or bands. It is thought that the excess of alumina contained in the original shales, which were afterwards metamorphosed into quartz schist, crystallized out along the planes of lamination.

**Chemical Composition of Sulphohalite.** BY S. L. PENFIELD. *Am. J. Sci.*, 160, 425-428.—Considerable doubt as to the existence of the mineral sulphohalite, recently described and assigned the formula  $3\text{Na}_2\text{SO}_4 \cdot 2\text{NaCl}$ , having arisen by reason of the failure of several investigators to make an artificial salt of like composition, the reinvestigation of the species described in this article was undertaken with the result that another constituent, fluorine, was discovered and the composition represented by the formula  $2\text{Na}_2\text{SO}_4 \cdot \text{NaCl} \cdot \text{NaF}$  assigned to the mineral. It is interesting to note that the sulphohalite is associated with another triple salt, the mineral hanksite,  $9\text{Na}_2\text{SO}_4 \cdot 2\text{Na}_2\text{CO}_3 \cdot \text{KCl}$ .

**Chemical Composition of Turquoise.** S. L. PENFIELD. *Am. J. Sci.*, 160, 346-350.—The article records a reinvestigation regarding the chemical composition of turquoise. A new analysis was made on material exceptionally suitable for that purpose. From the results thus obtained the author shows conclusively that the mineral is to be regarded as a derivative of ortho-phosphoric acid in which the hydrogen atoms are largely replaced by the univalent, isomorphous radicals  $\text{Al}(\text{OH})^{1}_2$ ,  $\text{Fe}(\text{OH})^{1}_2$ , and  $\text{Cu}(\text{OH})^1$ . The formula may be written  $[\text{Al}(\text{OH})_2, \text{Fe}(\text{OH})_2, \text{Cu}(\text{OH}), \text{H}]_3\text{PO}_4$ . The radical  $\text{Al}(\text{OH})^{1}_2$  always predominates. A careful consideration of former analyses shows them to be in close agreement with the results just mentioned and wholly disprove's Clark's interpretation that turquoise is a mixture of the molecule  $\text{Al}_2\text{HPO}_4(\text{OH})_4$  with finely divided iron and copper phosphates as impurities.

**Scapolite Rocks from Alaska.** BY J. E. SPURR. *Am. J. Sci.*, 160, 310-315.—The first rock described is an andesine-oligoclase-scapolite-biotite rock of granitoid texture, occurring in the form of great dikes cutting through an older igneous rock of granite and diorite. The scapolite is considered the equivalent of a feldspar in the rock and the latter is placed parallel to the belugite group of feldspar rocks as a scapolite belugite. The name yentnite is suggested, and the type becomes a biotite yentnite. A local variation of this rock is described as microcline

scapolitic. The second rock, a light-colored dike rock cutting cretaceous shales and limestones, is described as a quartz-scapolite porphyry, and is placed parallel to the quartz monzonite group of feldspar rocks. It is given the name of Kuskite. The author is of the opinion that gases—chlorine, etc.—played an important part in the formation of the scapolite; but he considers the latter to be undoubtedly an original constituent and not of secondary origin, as is probably the case with the Norwegian scapolite rocks.

**Graftonite, a New Mineral from Grafton, N. H., and Its Intergrowth with Triphylite.** BY S. L. PENFIELD. *Am. J. Sci.*, 160, 20-32.—The new mineral occurs in a coarsely crystalline pegmatitic vein of quartz and feldspar. Its composition as shown by chemical analysis is represented by the formula  $R''_3P_2O_8$ , where  $R''$  represents the isomorphous elements—iron, manganese, and calcium—in varying proportions. This places it in the rare group of anhydrous, normal phosphates of which triphylite is also a member. The latter occurs in thin, dark layers, distinctly interlaminated with the light-colored graftonite. Microscopical examination brings out the interesting fact that the two minerals have a definite crystallographic orientation with respect to each other. Apparently, graftonite, which constitutes something over two-thirds of the whole mass, was in sufficient quantity to give its own monoclinic symmetry to the crystals and at the same time by reason of some similarity of molecular structure, has caused the laminæ of the orthorhombic triphylite to take a definite crystallographic orientation. These relations and the crystal habit are shown by appropriate drawings.

**The Action of Ammonium Chloride upon Natrolite, Scolecite, Prehnite, and Pectolite.** BY F. W. CLARKE AND GEORGE STEIGER. *Am. J. Sci.*, 160, 345-351.—The present paper is one of a series having for an object the study of the chemical constitution of certain silicates. The minerals were subjected to the action of ammonium chloride in sealed tubes at a temperature of  $350^\circ$ , and the resulting products analyzed. The action of a boiling 25 per cent. solution of sodium carbonate was also tried on them. Both natrolite and scolecite are unattacked by the sodium carbonate solution and yield with the ammonium chloride the same compound,  $(NH_4)_2Al_2Si_3O_{10}$ , which is a simple replacement of the bases and acid hydrogen of the minerals by the  $(NH_4)$  radical. From these facts and an entirely new and complete analysis it is concluded that the two minerals are salts of the same silicic acid,  $H_8Si_3O_{10}$ , and that their formulæ should be written  $Na_2Al_2Si_3O_{10} \cdot 2H_2O$  for natrolite, and  $CaAl_2Si_3O_{10} \cdot 3H_2O$  for scolecite, instead of the previously accepted orthosilicate formulæ

$\text{Al}_2(\text{ClO}_4)_3\text{Na}_2\text{H}_4$  and  $\text{Al}_2(\text{SiO}_4)\text{CaH}_4\cdot\text{H}_2\text{O}$ , respectively. Prehnite suffers no change when treated as above and is therefore of different structure. Pectolite, a metasilicate,  $\text{NaHCa}_2\text{Si}_3\text{O}_9$ , although attacked strongly by the chloride, did not yield results leading to any new or more definite conclusions as regards its structure.