

study the problem of conserving fuel oil for the navy and providing facilities for storing fuel.

Recent experiments conducted at the U. S. Bureau of Standards show that by saturating a sandstone for several hours in melted sulphur and then cooling it the strength of the stone is increased from 200 to 300 per cent. The crushing strength of the ordinary sandstone is about 8000 pounds per square inch, but after the sulphur immersion the crushing strength reaches approximately 30,000 pounds, or equal to that of the best granite. Investigations are still in progress to determine the weathering qualities of the treated sandstone.

Dr. Grubenmann, professor of geology and mineralogy at the University of Zurich and at the Federal Polytechnic Institute, has died at the age of seventy-four years.

Dr. William Nicol, professor of mineralogy at Queen's University, Kingston, Ontario, from 1893 to 1915, died at his home in Kingston, February 24th.

A new method for the production of phosphoric acid has been perfected by the Bureau of Soils of the U. S. Department of Agriculture. It consists in smelting phosphate rock after it has been briquetted with silica and carbon. The phosphorus is volatilized as phosphoric anhydride and then condensed. This concentrated product can be shipped in lead-lined or wooden containers and upon reaching its destination can be diluted and reduced in strength to that required for utilization by crops.

Dr. W. Ch. Brögger, professor of mineralogy in the University of Christiania, has been elected corresponding member of the Prussian Academy of Sciences in the physical-mathematical section.

Due to some error in the mailing of the March issue, a number of subscribers have been overlooked. If those who have not received the March number will kindly make this fact known to the editor copies of this issue will be forwarded at once.

Mineral collectors and dealers will be interested in a pamphlet recently published by Frederick A. Canfield of Dover, New Jersey, entitled "The Final Disposition of some American Collections of Minerals." The pamphlet contains in concise form statements concerning 172 collections.

Dr. R. C. Wallace, professor of geology in the University of Manitoba, has been elected president of the Canadian Institute of Mining and Metallurgy.

ABSTRACTS

A NEW OCCURRENCE OF VANADINITE IN THE MARICO DISTRICT, TRANSVAAL. P. A. WAGNER. *Trans. Geol. Soc. S. Africa*, **23**, 59-63, (1921); thru *Chem. Abstr.*, **16**, 2653.

Vanadinite is associated with galena and cerussite in an ore deposit near Otsohoop. The crystals of vanadinite are tabular on (0001). An analysis is given.

E. F. H.

DESCRIPTION OF MINERALS FROM BELGIAN CONGO. H. BUTTGENBACH. *Mem. Acad. royale Belgique*, [2], 6, no. 8, 33 pages, (1921).

In addition to "katangite" which has already been abstracted (*Am. Min.* 8, 39, 1923) the following are described: Diamond in dodecatetrahedrons up to 0.8 carat. Native copper, in masses up to 6 kg. Bornite in grains in white calcite; when the latter is cleaved away, these are rough octahedrons with bright cube faces; chalcopyrite is sometimes present in the interior, and native copper on the surface; analysis is given, which seems to correspond to $\text{Cu}_{12}\text{Fe}_3\text{S}_8$, but the material analyzed was presumably a mixture. Pyrite occurs in crystals which are briefly described. Cuprite is found with the copper, and with it a black powder containing copper and cobalt oxides. Corundum and cymophane are found in sands. A tabular crystal of octahedrite is briefly described. The crystallography of the malachite is presented in detail, with figures; the common prism is (323), and one new form $\lambda = (423)$ is announced. Crystallographic, chemical and optical data are given for a diopside. Dioptase is described crystallographically and an analysis given. Planchéite frequently accompanies the dioptase; it is asbestiform in character. Crystallographic data are given for cyanite, epidote, tourmaline, and staurolite. Finally, attention is called to the presence of pitchblende and its alteration products. E. T. W.

DIOPTASE AND PLANCHÉITE AT GUCHAB, SOUTH WEST AFRICA. M. HENGLEIN. *Z. prakt. Geol.*, 53-6, (1921).

An analysis of the dioptase is given. It occurs in various associations with quartz, calcite, dolomite, malachite, planchéite, and chalcocite. E. F. H.

THE ISOMORPHIC RELATIONS OF THE SULPHO-SALTS OF LEAD AND COPPER. WM. F. FOSHAG. *Am. J. Sci.*, 1, 444-6, (1921).

Pb, on one hand, and Ag and Cu on the other, are not isomorphous in relationship and do not form mixed crystals. Ag-Pb and Cu-Pb sulpho-salts are double salts. E. F. H.

A CONTRIBUTION TO THE THEORY OF SOLID SOLUTIONS, MIXED CRYSTAL FORMATION AND ISOMORPHISM. J. JAKOB. *Z. Krist.*, 56, 295-304, (1921).

On the basis of highly complex coördinate formulas of some of the silicate minerals which show solid solution relations it is concluded that solid solution depends upon (1) similar spacial arrangement of molecules and (2) pure solution phenomena. E. T. W.

ADDITIONAL NOTES ON THE CRYSTALLOGRAPHY AND COMPOSITION OF BOULANGERITE. EARL V. SHANNON. *Am. J. Sci.*, 1, 423-6, (1921).

Boulangerite crystals from the Wood River district, Idaho, were measured. They are tabular parallel to a , and have a cleavage on that plane. The forms are: $a(100)$, $N(450)$, $n(120)$, $g(130)$, $\mu(140)$, $k(180)$, $r(210)$, $t(310)$, $\rho(5.12.0)$, $z(124)$. A new det'n of axial ratios gave: $a:b:c = .5038:1:.6862$. E. F. H.