THE

AMERICAN NATURALIST,

AN ILLUSTRATED MAGAZINE

OF

NATURAL HISTORY.

EDITED BY

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VOLUME XVI.

PHILADELPHIA:
PRESS OF McCALLA & STAVELY,
NOS. 237 AND 239 DOCK STREET.
1882.

of which an abstract is given in the October, 1881, Geological Magazine of London.——The Bulletin of the Geological Society of France for 1881, contains many important memoirs, principally relating to the geology of France, Algiers and Belgium.——An analysis of the structure and age of the formations about Lake Champlain is given in the same periodical, by Professor Marcou. ——Dr. Lemoine has added many important discoveries to those he has previously made in the Lower Eocene near Reims, France. He has procured almost perfect skeletons of the Mammalian genera *Heteroborus*, *Pleuraspidotherium*, *Pachynolophus;* of the bird *Gastornis*, and the reptile *Champsosaurus*. He has also discovered a number of the Marsupial family *Plagiaulacidæ*, which is probably nearly allied to the *Ptilodus*, described from New Mexico in the November, 1881, NATURALIST.——Professor Newberry criticizes adversely Professor Spencer's view on the Ancient outlet of Lake Erie, published by the American Philosophical Society.

MINERALOGY.[1]

SYSTEMATIC MINERALOGY.—Bauerman. (Appleton & Co., New York, 1881.) The latest number of that excellent series known as the "Text-books of Science" consists of the first volume of a Text-book of Systematic Mineralogy, by H. Bauerman. The introduction states the two-fold object of the work to be that it should form (1) a guide to general students; (2) an elementary introduction to larger text-books. The greater part of the volume deals with the principles of crystallography. Not only are the simple and compound forms of the different systems fully described and illustrated, but by means of shaded figures, the origin of the hemihedral and tetartohedral modifications is explained. The optical properties of crystals are considered at length in some well written chapters, and the volume concludes with an elementary review of the physical and chemical characters of minerals. The descriptive portion of the work is not yet issued. We cannot help thinking that this work does not quite attain the object for which it was written. While not sufficiently thorough for the advanced student, the method of treatment is not such as would recommend it for the beginner. The language employed in a large portion of the book is by no means simple, and the practical performance of mineralogical work is but slightly considered.

LIME CRYSTALS IN A LIME-KILN.—Several years ago, Brugelmann succeeded in obtaining artificially microscopic cubes of

[1] Edited by Professor HENRY CARVILL LEWIS, Academy of Natural Sciences, Philadelphia. The Mineralogical Editor requests short original communications for publication in this department. Early copies of mineralogical papers printed elsewhere are also solicited for review.

lime by heating calcium nitrate. Recently Levalois and Meunier[1] have observed in the inner walls of a lime-kiln cubes of lime 5 centimeters in diameter. The crystals were sharp on the edges, and had the specific gravity of 3.3. Analysis showed that the crystals were composed of nearly pure anhydrous lime. They dissolved slowly in cold, but energetically in warm acids, giving out considerable heat. The crystals were formed upon the limestone walls of the kiln, which, with the exception of a few days, had been kept at a temperature of 1200°–1300° C. for over two years.

NITROBARITE.—Groth[2] describes a natural nitrate of Baryta from Chili. It occurs as small colorless octahedral crystals, with tetartohedral characters, belonging to the isometric system. Artificial crystals of nitrate of Baryta have a similar form. An appropriate mineralogical name for this mineral would be *Nitrobarite*.

VANADIUM MINERALS.—Within the last few years special attention has been directed to the natural occurrence of Vanadium and its compounds. It has been shown that Vanadium, formerly regarded as one of the rarest elements, is of widespread diffusion, and that it almost universally accompanies Titanium in the older geological formations. This fact acquires a cosmical importance when taken in connection with the observation of Lockyer that Vanadium exists with Titanium in the innermost portions of the photosphere of the sun.

Among recent investigations upon Vanadium minerals, those of Rammelsberg[3] are of great importance. He gives several new analyses, and after reviewing the Vanadium minerals, gives the following table of the natural vanadates:

Simple Vanadate	Dechenite $Pb\ V^2\ O^6$
Half Vanadate	Lead Vanadate from Wicklow and Wanlockhead $Pb^3\ V^2\ O^7$
Third Vanadates	Eusynchite $(Pb, Zn)^3\ V^2\ O^8$
	Arâoxene $(Pb, Zn)^3\ (V, As)^2\ O^8$
	Vanadinite $Pb\ Cl^2 + 3\ Pb^3\ V^2\ O^8$
	Pucherite $Bi^2\ V^2\ O^8$
Quarter Vanadates	Descloizite $(Pb, Zn)^4\ V^2\ O^9 + aq$
	Volborthite (Friedrichsrohe) $(Cu, Ca)^4\ V^2\ O^9 + aq$
Of uncertain composition	Psittacinite $(Pb, Cu)^5\ V^4\ O^{19} + 9\ aq$
	Mottramite $(Cu, Pb, Ca)^6\ V^2\ O^{11} + 2\ aq$
	Volborthite (Perm) $R^8\ V^2\ O^{19} + 24\ aq$

Websky[4] and Urba[5] have investigated the crystalline forms of Descloizite and Vanadinite. Websky describes pseudomorphs of Vanadinite after Anglesite.

[1] Compt. Rend., 90, 1566, June, 1880.
[2] Zeits. f. Kryst., 1881. VI, 195.
[3] On the composition of Descloizite and the natural Vanadium compounds. Monatsber. d. k. Ak. Wiss. Berlin, July, 1880, p. 652.
[4] Monatsb. d. k. Ak. Wiss. Berlin, July, 1880, p. 672. Oct., 1880.
[5] Zeits. f. Kryst., 1880, p. 353.

In America, our knowledge of Vanadium minerals has been largely increased by the important papers of Genth.[1] Vanadium has been shown by the editor to occur in the Philadelphia gneisses.[2] More recently Silliman[3] has announced the discovery of two important localities for Vanadium minerals in Arizona. He states that very beautiful and perfect orange-red and yellow crystals of Vanadinite have been found in that State. He also describes Vanadium minerals which he believes to be Descloizite and Volborthite. Chileite and Mottramite are also suspected. It is to be hoped that a more exact chemical and crystallographic examination may be made upon these interesting minerals.

MICROLITE FROM VIRIGNIA.—Very fine and large crystals of this rare mineral have been found in Amelia Co., Virginia.[4] The crystals are octahedrons modified by cubic, dodecahedral and sometimes also trapezohedral planes. Some of these crystals which have been brought to Philadelphia are several inches in diameter, and we have seen masses of the mineral weighing as much as thirty pounds; a circumstance rendering the name of the mineral an inappropriate one. The mineral is of a wax yellow or brown color, and has a resinous lustre and conchoidal fracture.

Amelia county has become a remarkable mineral locality. It has yielded also Beryl, Fluorite, Columbite, Amethyst, Apatite, and Tourmaline. We have seen a beryl from there which was a perfect hexagon with sharp edges, measuring nine inches in diameter by over two and a half feet in length. The interesting variety of quartz which occurs in the Amelia county muscovite as minute circular plates composed of radiating fibres is already known to microscopists as a most beautiful object for the polariscope.

DIADOCHITE, a phosphato-sulphate of iron has been found in some French anthracite coal mines. It occurs as amorphous brown crusts of resinous lustre. It should be looked for in the coal mines of this country.

VIVIANITE has been produced artificially by fusing a salt of iron with bone black.

ROSTERITE is a variety of beryl from Elba, of a light rose red color. It occurs in short hexagonal tables.

URANOTHORITE is a Thorite from the Lake Champlain Iron district, containing much Uranic oxide.

BEAUXITE, according to Fischer, is a mixture of oxide of iron and red clay.

[1] Amer. Journ. Sc., July, 1876, p. 32. Proc. Amer. Philos. Soc., XVII, 113.
[2] Proc. Acad. Nat. Sc., Phila., 1880, 256.
[3] Amer. Jour. Sc. XXII. 198. Sep. 1881.
[4] Dunnington. Amer. Chem. Journ., III, 2. 130.

BERGAMASKITE.—A variety of amphibole. Lucchetti[1] describes under this name a variety of hornblende from Italy, which contains almost no magnesia. It occurs in green acicular crystals with the following composition: SiO_2 36.8 FeO 22.9 Fe_2O_3 14.5 Al_2O_3 15.1 CaO 5.1 MgO 0.9 Na_2O 4. K_2O 0.4.

NEW BISMUTH MINERALS.—Domeyko[2] has described a large number of interesting Bismuth minerals from South America. Among them are *Bolivite*, an oxysulphide of bismuth ($Bi^2S^2 + Bi^2O^3$) and *Taznite*, a chloro-arseniate and chloro-antimoniate of Bismuth. Bolivite occurs crystallized. Taznite is amorphous and sometimes imperfectly fibrous.

THE OPTICAL PROPERTIES OF PYROMORPHITE AND MIMETITE.—Jannetez and Michel[3] in a paper comparing the optical and chemical properties of pyromorphite and the mimetite find that these minerals can be divided into four types; (1) pure pyromorphite, uniaxial, (2) pure mimetite, biaxial, (3) mixtures showing pyromorphite in the centre, surrounded by mimetite, part uniaxial, part biaxial, (4) groups of crystals having their axes inclined to one another, biaxial appearance.

CHALCOCITE ON AN OLD COIN.—Upon some bronze Roman coins found at the bottom of a French lake, Daubree[4] has observed an incrustation, 2^{mm} in thickness, of chalcocite. The chalcocite forms hexagonal plates like the cupreine of Breithaupt. Some chalcopyrite and malachite were also formed. While similar incrustations are common in thermal springs and mineral waters, the present case is interesting in that the water was cold and pure.

NOVA SCOTIA MINERALS.—Among other minerals found in the trap of Nova Scotia, Gilpin[5] mentions Chlorophœite, Delessite, Acadialite, Mordenite, Louisite, Ledererite, Gyrolite, Centrallasite, Cyanolite, Steelite, etc. He regards Louisite as a variety of Okenite, and Steelite as a variety of Mordenite.

GEOGRAPHY AND TRAVELS.[6]

M. DE BRAZZA'S JOURNEY FROM THE OGOWE TO THE CONGO.—Some further details of M. de Brazza's journey are given in the Royal Geographical Society's *Proceedings* for November, 1881. "After leaving his station at Francheville in July, 1880, the traveler saw the sources of the Passa affluent of the Upper Ogowé, and crossed the River Lekéti (an affluent of the Alima, the Kunia

[1] Mem. Ac. Sci. Bologna, 1881, 2, 397.
[2] Ann. d. Min., XVIII, 538.
[3] Bull. Soc. Min. de France, 1881, 196.
[4] Comp. Rend., XCIII. 572. Oct., 1881.
[5] Proc. and Trans. N. S. Inst. Nat. Sc., v, 283.
[6] Edited by ELLIS H. YARNALL, Philadelphia.