three visitors were present. Messrs. Louis Bregy, and William Skinner were proposed for active membership.

Mr. Harry W. Trudell gave an interesting address on "*Some mineral localities of North Carolina and Virginia*" in which a trip to these states was described, illustrated with colored slides and specimens.

Mr. Samuel G. Gordon read a paper on "*Preliminary Notes on Vauxite and Paravauxite, two new minerals from Llallagua, Bolivia.*" Their characters follow:

VAUXITE, $4FeO.2Al_2O_3.3P_2O_5.24H_2O+3H_2O$. Triclinic.

Color: Sky-blue to venetian-blue; streak, white; luster, vitreous; transparent. Form: Aggregates of small tabular crystals. H=3.5; specific gravity=2.45. Optically+, $\alpha=1.551$, $\beta=1.555$, $\gamma=1.562$, all $\pm.003$; $2V=32°$; Bx_a emerges on sections parallel to b (010). Dispersion considerable, $\rho>\nu$. Strongly pleochroic, colorless to blue. Name: In honor of Mr. George Vaux, Jr., of Bryn Mawr, Penna.

PARAVAUXITE, $FeO.Al_2O_3.P_2O_5.6H_2O+5H_2O$. Triclinic.

Colorless; streak, white; luster, vitreous to pearly; transparent. Form: Small prismatic crystals. H=3; sp. gr.=2.30. Perfect cleavage parallel to b (010). Optically +; $\alpha=1.554$, $\beta=1.558$, $\gamma=1.573$; all $\pm.003$; Sections parallel to b (010) show emergence of an optic axis. Like vauxite, occurs on wavellite at the tin mines of Llallagua, Bolivia.

Fine specimens of andorite and zinkenite from Oruro, Bolivia, were exhibited.

Mr. Knabe reported on a trip to the Poorhouse quarry, exhibiting chesterlite. Mr. Hoadley reported on a trip to the Harlem ship canal. Mr. Frankenfield exhibited sillimanite from the vicinity of Moro Phillip's mine, Delaware County.

SAMUEL G. GORDON, *Secretary.*

NOTES AND NEWS

AN UNUSUAL ALTERATION PRODUCT FROM PARK CITY, UTAH—During the field season of 1920 the writer collected a number of ore specimens in the Daly-Judge Mine, Park City, Utah. These ores were polished and examined under the microscope at State College, Pa., and Dr. E. S. Moore has kindly permitted publication of the results of the investigation, which were incorporated in the writer's thesis.

The common lead, zinc and copper minerals with their accessories form the ore deposits of this district, galena being the principal ore mineral and it is found forming intergrowths with tetrahedrite.

An unusual series of alteration products was found in some galena specimens. The galena alters to a deep indigo-blue, massive product containing lead and copper sulfides. This alteration product begins to form along the fractures and cleavages of the galena and in some cases the alteration has proceeded until the galena has almost entirely changed to the blue product. This blue product on further alteration changes to anglesite which alters to cerussite. The blue mineral is found most frequently replacing the galena at the contact of galena with tetrahedrite in the intergrowths of the two minerals. It is thought that this mineral is either alisonite or cuproplumbite. According to Dana, it is not known whether these minerals represent definite homogeneous compounds or whether they are ill-defined alteration products. They may be represented by approximate formulæ as 3 $Cu_2S.PbS$ to

$Cu_2S.2PbS$. The chemical processes resulting in the formation of these products may be inferred as follows: Copper solutions derived from the breaking down of tetrahedrite permeate the galena along the cleavages and the lead sulfide is partially replaced by copper sulfide. After oxidation the copper sulfate is taken away in solution, since it is much more soluble than the lead sulfate.

W. H. NEWHOUSE.

Attention is called to the XIIIth Session of the International Geological Congress to be held in Brussels, Belgium, August 10-19, 1922. Excursions will be conducted before the opening of the Session, also during and at the close of the Session. Fellows or members of the Mineralogical Society of America who expect to attend this Congress are requested to send their names to Secretary Whitlock so that the selection of official representatives of the Society can be made by the Council.

On May 1st the American Museum of Natural History announced the opening of the Morgan Memorial Hall of Minerals and Gems. This collection was presented to the City of New York by George Fisher Baker in memory of his friend, John Pierpont Morgan. Many new display cases have been installed and the specimens have all been remounted on pale buff fiber-board. The gems have been mounted on glass supports designed by Curator Whitlock, who will describe them in this JOURNAL in the near future.

A new major subdivision has been created in the United States Geological Survey by raising the division of Alaskan mineral resources to the status of a branch. The work will continue under the direction of Colonel A. H. Brooks, whose title is chief Alaskan geologist.

Dr. Maximilian Weber of the Munich Polytechnikum has been appointed Professor of petrography at the University of Munich, succeeding the late Professor Ernst Weinschenk.

ABSTRACTS—CRYSTALLOGRAPHY

THE INTERFERENCE COLORS OF QUARTZ IN POLARIZED LIGHT. T. LIEBISCH AND A. WENZEL. *Sitzungsb. preuss. Akad. Wiss.*, **1917**, I, 3; thru *Neues Jahrb. Min. Geol.*, **1919**, Ref. 17-8.

This is an investigation of the intensity, tone and saturation of the interference colors, for various thicknesses, of quartz wedges. EDW. F. HOLDEN.

THE RECOGNITION OF WEAK DOUBLE REFRACTION BY THE USE OF SENSITIVE TINTS. A. WENZEL. *Phys. Z.*, **18**, 472-9, 1917; thru *Neues Jahrb. Min. Geol.*, **1919**, Ref. 18-9.

The most sensitive tint with gypsum is the purple obtained with a plate of 0.056 mm. thickness. Somewhat less sensitive is the brighter purple obtained with a quartz plate, cut parallel to the optic axis, with a thickness of 0.0575 mm.

E. F. H.

THE FORMATION OF LARGE CRYSTALS IN RODS AND WIRES OF ZINC. W. FRAENKEL. *Z. Elektrochem.*, **23**, 302-4, 1917; thru *Neues Jahrb. Min. Geol.*, **1919**, Ref. 122.

Zinc which has been mechanically worked recrystallizes with ease at high temperatures. E. F. H.