

Stated Meeting, January 16.

Present, twenty-five members.

Dr. FRANKLIN BACHE, Vice-President, in the Chair.

Letters were read:—

From the Etat Major of the Corps of Mining Engineers of Russia, dated St. Petersburg, July 7, 1851; and from the Royal Academy of Sciences at Stockholm, dated Stockholm, Sept. 20, 1851, both accompanying donations to this Society:—

From the Geographical Society of London, dated Oct. 28, 1851; and from the Society of Antiquaries, dated Somerset House, 24th Nov. 1851, acknowledging the receipt of No. 46, of the Proceedings of this Society.

The following donations were announced:—

FOR THE LIBRARY.

Annales de l'Observatoire Physique Central de Russie: Publiés par ordre de sa Majesté l'Empereur Nicolas I. sous les auspices de M. le Comte Wrontchenko, Ministre des Finances et Chef du Corps des Ingénieurs des Mines. Par A. T. Kupffer, Directeur de l'Observatoire Physique Central. Année, 1848. Nos. 1, 2, 3. St. Petersburg, 1851. 4to.—*From the Etat Major of the Corps of Mining Engineers of Russia.*

Compte Rendu Annuel, adressé à M. le Comte Wrontchenko, Ministre des Finances. Par le Directeur de l'Observatoire Physique Central, A. T. Kupffer. Année, 1850. St. Petersburg, 1851. 4to.—*From the same.*

Kongl. Vetenskaps-Akademiens Handlingar för år 1849. Stockholm, 1851. 8vo.—*From the Royal Academy of Sciences, Stockholm.*

Ofversigt af Kongl. Vetenskaps-Akademiens Förhandlingar. Sjunde Årgången, 1850. Stockholm, 1851. 8vo.—*From the same.*

Årsberättelser om Botaniska Arbeten och Upptäckter för åren 1845, 1846, 1847 och 1848, till Kongl. Vetenskaps-Akademien afgifna den 31 Mars, åren 1846, 1847, 1848, 1849, af Joh. Em. Wikström. Förra Delen. Stockholm, 1850. 8vo.—*From the same.*

Årsberättelse om Framstegen i Insekternas, Myriapodernas och Arachnidernas Natural-historia, för 1847 och 1848, till Kongl. Vetenskaps-

- skaps-Akademien afgifven af C. H. Boheman. Stockholm, 1851. 8vo.—*From the same.*
- Årsberättelse om Technologiens Framsteg, till Kongl. Vetenskaps-Akademien, afgifven den 31 Mars, 1845, af G. E. Pasch. Stockholm, 1851. 8vo.—*From the same.*
- Berättelse om Framstegen i Fysik, under år 1849; afgifven till Kongl. Vetenskaps-Akademien af E. Edlund. Stockholm, 1851. 8vo.—*From the same.*
- Joh. Paul Thun's Neues Bücherverzeichniz; 1846, 7, 8. 12 vols. 8vo. Leipzig.—*From Dr. J. G. Flügel, U. S. Consul at Leipzig.*
- The African Repository. Vol. XXVIII. No. 1. January, 1852. Washington. 8vo.—*From the American Colonization Society.*
- Contributions to Conchology. No. 10. By Prof. C. B. Adams. Amherst College, Mass., Nov. 1851. 8vo.—*From the Author.*
- The American Journal of the Medical Sciences. No. XLV. New Series. January, 1852. Philadelphia. 8vo.—*From Dr. Isaac Hays, Editor.*
- The Medical News and Library. Vol. X. No. 109. January, 1852. Philadelphia. 8vo.—*From Blanchard & Lea.*

Dr. Franklin Bache announced the death of Professor Moses Stuart, of Andover, Massachusetts, a member of this Society, who died on the 4th of the present month, in the seventy-first year of his age.

Mr. Lea presented a Table of Meteorological Observations made at Napa-keang, Loo Choo Islands, in 1848, by Dr. Bettelheim, which was referred to a Committee, consisting of Prof. Frazer, Mr. R. A. Tilghman and Mr. Lea.

Prof. Frazer offered to the Society a Philological Paper, by Prof. Alexander, of Baltimore, entitled "*Glossarii Novi Anglicani Syngenesiaci Spicilegium,*" which was referred to a Committee, consisting of Mr. Trego, Dr. Demmé and Dr. Dunglison.

Mr. Lea read a paper by the late Richard C. Taylor, and remarked that it was the rough draft of a memoir intended for the Transactions of the Society, which Mr. Taylor was engaged in at the time of his death. As the article was not finished, nor the map referred to prepared, Mr. Lea proposed that the memoir in its unfinished state should be published in

the Proceedings, in precisely the state left by Mr. Taylor, except that the blank references to pages in the Transactions should be filled up. With the exception therefore of the references, the following is given from the manuscript as left by our deceased member.

On a Vein of Asphaltum at Hillsborough, in Albert County, Province of New Brunswick. By Richard C. Taylor.

On the 19th of August, 1836, I had the honour of communicating to the American Philosophical Society, a notice of certain veins of Asphaltum or Chapapote, in the Island of Cuba, together with some illustrative diagrams thereon. At that time, I believe no instance had been made known of the existence of true Asphaltum on the North American continent. Allusion has been slightly made to the occurrence of some soft variety of mineral pitch or petroleum in Texas, but no details have reached us.

It is only in recent times that a deposit of remarkably pure and brilliant asphaltic has attracted attention in the Province of New Brunswick. Like the Chapapote of Cuba, the New Brunswick mineral has been commonly spoken of as a species of coal, and has been shipped and sold at the ports of the United States and Nova Scotia, under that denomination. Some material differences of opinion have been maintained, even among men of acknowledged scientific acquirements, and while some have asserted its identity with bituminous coal, others place the substance among the purest variety of asphaltic. There are other circumstances, not directly essential to the object of the present communication, which await the decision of the legal tribunals of the provinces, but the principal fact which, in the first instance, was sought to be established, is the nature, character and properties of the mineral products found in the Hillsborough mine.

After a sufficient investigation of the mine, and of the geological circumstances under which it occurs, there appear to exist no grounds for denominating the mineral contents by any other name than Asphaltum.

The evidence from which this conclusion was formed, was detailed at some length in a printed document, originating at Halifax, N. S.*

* Supreme Court, Halifax, N. S. Abraham Gesner vs. Halifax Gas Light Company. Deposition of Richard C. Taylor, respecting the asphaltum mine at Hillsborough, in the County of Albert and Province of New Brunswick. Illustrated by a map and diagrams. Philadelphia, 1851.

On the present occasion we proceed to condense this description, seeing that the subject is replete with geological interest, and that it is apparently the first Asphaltum vein which has been described or even discovered on the North American continent.

The examination of the Hillsborough mine was made in conjunction with Professor James Robb, of Fredericton College, N. B., in May, 1851, and a joint report was made by us on that occasion.*

It was at once apparent that the mineral substance of the Hillsborough or Albert mine occurs at a very high angle, which varied from nearly perpendicular to within 10 to 20 degrees of verticality. Its position is in the midst of a formation which consists of highly bituminous calcareous or marley shale, in which several species of ganoid fossil fishes, of the genus *Palæoniscus*, abound. None of the usual varieties of coal vegetation were observed by us, but it was stated that a very few obscure traces had been noticed by others.

In the progress of the geological investigation, I was struck with the resemblance of this deposit to those of the Asphaltum or Chapapote in the Island of Cuba, described in Vol. VI. of the Transactions of this Society, and its general conformity to the configuration shown in the diagrams there given from admeasurements made on the spot.

The opposite sides or walls of the Hillsborough vein are very dissimilar at certain points, yet, at intervals, for short distances, they are parallel and conformable.

It is obvious that the two sides cannot be parallel, since the vein, like those near Havana, is in form of a wedge, whose thinnest edge is upwards, and enlarging from about a foot at the outcrop to 13 or 14 feet, at some 40 or 50 feet depth below the surface.

It has neither a true roof nor floor. It has no overlying nor underlying *fire clay*. It exhibits no coal plants, nor organic traces, as in coal seams. It possesses no conformable *lamination*, horizontally or longitudinally, as in coal and coal seams. Instead of this, the *divisional planes* are arranged *transversely*; i. e. at right angles to the sides of the vein, as we observed was the case in the Chapapote veins of Cuba.

The conclusion which we could not fail to arrive at from the consideration of these phenomena, was that the New Brunswick vein of Asphalte occupies a *line of dislocation*, an anticlinal axis in fact, which tilted off the bordering strata, in opposite directions to either side, for a considerable area; the amount of inclination being reduced

* Joint Geological Report.

or flattened in proportion to the increased distance from the central line of fracture.

It was ascertained, by instrumental observation, that this line of dislocation runs parallel with the Caledonia mountain range, which stretches for 80 miles, nearly in a S. W. direction, conformably to the northern coast of the Bay of Fundy. The Caledonia mountain range, it must be stated, is composed of trap, basalt, metamorphic slates, porphyry, sienite and other plutonic rocks.

An important feature in the Hillsborough vein must not be overlooked. It is the occasional tendency to throw off smaller branches, as in the Asphaltum veins of Cuba. One of the most remarkable instances is sketched, at Fig. 4, in the accompanying map; where the main vein, after ramifying and after receiving and giving off several small branches, reunites in one principal vein as before. The intermediate spaces between these branches are occupied by slates and worthless rock, which disturb the arrangements of the miners, and are called by them "*horses*."

Mr. Fraley referred to a prevalent opinion in the coal region of Schuylkill county, that the veins of white ash coal underlie the red ash veins, which has been confirmed by some recent explorations at St. Clair, in that county.

The Society next proceeded to the election of Librarian, and Mr. Trego was re-elected.

The following standing committees were elected.

Of Finance—Mr. Lea (Chairman), Mr. Wagner, Mr. Fraley.

On the Hall—Judge Kane (Chairman), Mr. F. Peale, Mr. Justice.

On the Library—Dr. Hays (Chairman), Mr. Campbell, Mr. Ord.

Of Publication—Mr. Lea (Chairman), Dr. Hays, Mr. J. Francis Fisher.

A list of the surviving members of the Society was read, from which it appears that the number on the first of January, 1852, was 361, of whom are resident in the United States 260, and in foreign countries 101.

The Society then proceeded to ballot for candidates for membership.

All the other business of the meeting having been disposed

of, the ballot boxes were opened, and the following named candidates were declared by the presiding officer to have been duly elected members of the Society:—

FRANCIS GURNEY SMITH, M.D., of Philadelphia.

JOHN FORSYTH MEIGS, M.D., of Philadelphia.

Hon. EDWARD KING, of Philadelphia.

Dr. GEORGE N. ECKERT, of Philadelphia.

Lieut. CHARLES HENRY DAVIS, U. S. Navy.

Prof. J. W. BAILEY, U. S. Mil. Acad. West Point.

MICHEL CHEVALIER, of Paris.

ALFRED STILLE, M.D., of Philadelphia.