Professor Ramsay said it gave him great pleasure to find himself on this side of the Atlantic, among his scientific friends; for he had made the acquaintance of many gentlemen there, who had been over in Great Britain attending the meetings of the British Association and similar objects. He had always found the most perfect brotherhood among scientific men. There was a unity in their objects—a complete single-hearted love of truth, which was their general characteristic. He should say that he regretted that the gentleman first deputed by the Geological Society to attend this meeting, Sir Roderick Murchison, had been prevented from doing so by feeble health. The choice of a substitute had fallen on him (Mr. R.) as he was about proceeding to Mont Blanc. But he at once gave up his contemplated trip, and prepared to set out on his mission to Canada, anticipating more pleasure and instruction from attending the meetings of this Association, than from his trip to Mont Blanc, and in this expectation he felt he would not be disappointed. (Cheers.)

Dr. SLEMIN, representative of the London Linnean Society, was next introduced, and addressed the meeting, expressing the sincere sympathy of that Society with the Association.

SECOND DAY.

ZODIACAL LIGHT.

Capt. CHAS. WILKES, of the U.S. Navy, read a paper on Zodiacal Light. He said it appeared to him that the cause of the Zodiacal Light was atmospherical, and its sources from within the tropics. The Sun's rays falling on the atmosphere perpendicularly were, it would seem, absorbed by the air, and this would account for the appearance of the phenomenon.

Rev. G. S. JONES next morning read a paper on the same subject. He had stayed eight months at Quito to make observations. He had made 123 and taken 115 sketches His deductions were—

First, That the substance giving out the Zodiacal Light formed a complete circle. Several of his observations carried it round in a single night. On the 26th and 27th December, for instance, he had taken five observations. The first of those traced the light to within 16 degrees of the setting sun, the last to within 18 degrees of the rising sun: thus forming a complete circle with the exception of 34 degrees. Secondly, It is a *great* circle in the heavens, forming an angle of 3 deg. 20 min. with the ecliptic. As seen from the earth, it has a width of about 28 deg. Thirdly, It is a geocentric circle; for if it were heliocentric the laws of the reflection of light would require that the portions next the sun should reflect less light than those near the zenith of the spectator. These appearances were not visible. Again, that portion of the light near the horizon showed an affinity to the spectator's motions as he approached towards, or receded from the ring. And this could only happen in case of a body not very far off.

VIBRATIONS OF WATER FALLS.

Professor SNELL read a paper on the vibrations of the fall over the dam at Holyoke, Massachusetts. He stated that this dam was 1,700 feet long, thirty feet high, with a thickness of water ranging from six inches to ten feet. An observer standing at either extremity of the sheet may perceive the air rushing in and out in puffs. In the case of some larger falls, as those of Niagara, two continuous currents may be perceived: one above going in—the other below coming out. Prof. Snell considered that the primary vibrating body at the Holyoke Dam is the body of air beneath the water—the space between the sheet and the dam acting as an immense organ-pipe, open at both ends.

MISCELLANEOUS.

The following papers were then read:—Notes on measurement of a base line on Epping Plains, Washington Co., Maine, by Prof. A. D. Bache, Superintendent of the U. S. Coast Survey; on the Solar Eclipse of March 14-15, 1858, by Thomas Hill; on Arithmetical Complements, by the same; on System of Co-ordinates in Analytic Geometry, by the same; a note on the Gyroscope, by Prof. B. Peirce, of Harvard; on the Divers Weights employed in modern coinage, by J. H. Gibbon, Esq.

STERNBERGIÆ.

Dr. DAWSON, in section B, read a paper on the varieties and state of preservation of the *Sternbergiæ*. From the examination of specimens of this fossil recently added to his collection, the lecturer had been led to believe that there was some analogy between them and trees of a coniferous structure. A similar view had been advanced by Prof. Williamson, of Manchester, and was more fully established by the specimens alluded to, several of which were exhibited and their nature explained. This result, which was of a nature unexpected by Botanists, was still further confirmed by the construction of certain living plants in which the nature of the pith was found to be of a similar character to that which is supposed to form the sternbergia fossil, although the present coniferous trees have no such structure.

The next paper was on the Flexures of the Strata in the Broad top Coal Field in Pennsylvania, by J. P. Lesley.

AZOIC ROCKS OF CANADA.

Sir WILLIAM LOGAN read a paper on the division of Azoic Rocks of Canada, into Huronian and Laurentian. He said—The subsilurian Azoic Rocks of Canada occupy an area of nearly a quarter of a million of square miles. Independent of their stratification, the parallelism that can be shown to exist between their lithological character and that of metamorphic rocks of a later age, leave no doubt on my mind that they are a series of very ancient sedimentary deposits in an altered condition. The further they are investigated, the greater is the evidence that they must be of very great thickness, and the more strongly is the conviction forced upon me that they are capable of division into stratigraphical groups; the superposition of which will be ultimately demonstrated, while the volume each will be found to possess, and the importance of the economic materials by which some of them will be characterized, will render it proper and convenient that they should be recognized by distinct names, and represented by different colours on the geological map. So early as the year 1845, as will be found by my report on the Ottawa District for the subsequent year, a division was drawn between that portion which consists of gneiss and its subordinate masses, and that portion consisting of gneiss interstratified with important bands of crystalline limestone. In the same report is mentioned among the Azoic Rocks a formation occurring on Lake Temiscaming, and consisting of silicious slates and slate conglomerates overlaid by pale sea green and slightly greenish white sandstone with quartoze conglomerates. The slate conglomerates are described as holding pebbles and boulders (sometimes one foot in diameter) derived from the subjacent gneiss, the boulders displaying red feldspar, translucent quartz, green hornblende and black mica, arranged in parallel layers, which present decretions according with the altitude in which the boulders were accidentally enclosed. From this it is evident that the slate conglomerate was not deposited until the subjacent formation had been converted into gneiss, and very probably greatly disturbed, for while the dip of the gneiss, up to the immediate vicinity of the slate conglomerate, was usually at high angles, that of the latter did not exceed nine degrees, and the sandstone above it was nearly horizontal. In the report transmitted to the Canadian Government in 1848 on the North Shore of Lake Huron, similar rocks are described as constituting the group, which is rendered of such economic importance from its association with copper bodies. The group consists of the same silicious slate and slate conglomerate, holding pebbles of syenite instead of gneiss, similar sandstone, some of the polished green, and similar quartzose conglomerate, in which blood-red jasper pebbles become largely mingled with those of white quartz, and in great mountain masses predominate over them. But the series is here much intersected and interstratified with green stone trap, which was not observed on Lake Temiscaming. These rocks were traced along the north shore of Lake Huron, from the vicinity of Sault Ste. Marie for 120 miles, and Mr. Murray ascertained that their limit on the Lake Simcoe occurred near Shebahnahning, where they were succeeded by the underlying group. The position in which the group was met with on Lake Temiscaming is 130 miles to the north east of Shebahnahning, and last year, Mr. Murray, in exploring the White Fish River, was enabled to trace the outcrop of the group characterized by slates, sandstones, agglomerates, green stones, and copper lodes, for sixty-five miles from Shebahnahning to the junction of the Maskinonge and Sturgeon, rivers tributary to Lake Nipissing. The general bearing of the outcrop is N.E., and an equal additional distance in the same direction, would strike the exposure on Lake Temiscaming. In the portion which Mr. Murray examined last year, the dip appears to be about N.W., often at a high angle, while that of the subjacent gneiss is more generally S.E., sometimes at a low angle, and in some places nearly horizontal. To the eastward of this outcrop Canada has an area of 200,000 square miles. This has yet been but imperfectly examined, but in so far as the investigation has proceeded no similar series of rocks has been met with in it; and it may safely be asserted that none exists between the base of the Lower Silurian and the gneiss from Shebahnahning to the Mingan Islands, a distance of more than 1,000 miles, and probably still farther to Labrador. The group on Lake Huron we have computed to be about 10,000 feet thick, and from its volume, its distinct lithological character, its clearly marked date posterior to the gneiss, and its economic importance as a copper bearing formation, it appears to me to require a distinct appellation and a separate colour on the map. Indeed, the investigation of Canadian Geology could not be conveniently carried on without it. We have in consequence given to the series the title of Huronian. A distinctive name being given to this portion of the Azoic rocks, renders it necessary to apply one to the remaining portion. The only local one that would be appropriate in Canada, is that derived from the Laurentide range of mountains which is composed of it from Lake Huron to Labrador. We have, therefore, designated it as the Laurentian series These local names are, of course, only provisional, devised for the pur.