hibited, as follows, in their order from south to north: the Gary moraine, the Antelope, Kiester, Elysian, Waconia, Dovre, Fergus Falls, Leaf Hills, Itasca, and Mesabi moraines. The last of these crosses the northern part of the state, from the head waters of the Mississippi River, to Grand Portage on the north shore of Lake Superior. —— Mr. C. F. Sidmer gave some account of the manufacture of the Chamberlain illuminating-gas, made of petroleum, water, and air, and called attention to some of its advantages.

NOTES AND NEWS.

THE following is a complete list of the papers read to the scientific sections of the Royal society of Canada, at its recent meeting in Ottawa, of which an account is given elsewhere in this number: — In the physical section: F. N. Gisborne, Electrical induction in underground and aerial metallic conductors; C. Baillargé, A particular case of the hydraulic ram, or water-hammer; R. Steckel, The form of the contracted liquid vein, affecting the present theory of the science of hydraulics; T. Sterry Hunt, The origin of crystalline rocks; J. G. MacGregor, The density and the thermal expansion of aqueous solutions of sulphate of copper; E. Haanel, Blowpipe re-actions on plaster-of-paris tablets; Description of apparatus for distinguishing flame-coloring constituents when occurring together in an assay; T. E. Hamel, Essai sur la constitution atomique de la matière; N. F. Dupuis, The algebraical development of certain functions; E. J. Chapman, Contributions to our knowledge of the iron ores of Ontario; J. C. K. Laflamme, Note sur une fait météorologique particulier à Quebec. In the geological and biological section: A. R. C. Selwyn, Note of observations, in 1883, on the geology of a part of the north shore of Lake Superior; George Lawson, Revision of the Canadian Ranunculaceae; J. W. Dawson, Geology and geological work in the old world, in their relation to Canada; T. S. Hunt, The Taconic question in geology; W. Saunders, Note on the occurrence of certain butterflies in Canada; E. J. Chapman, Some deposits of titaniferous iron ore in the counties of Haliburton and Hastings (Ontario); Mimetism in inorganic nature; T. J. W. Burgess and J. Macoun, A monograph of Canadian ferns; L. W. Bailey, Geological contacts and ancient erosion in the Province of New Brunswick; G. F. Matthew, Illustrations of the fauna of the St. John group (part iii., Conocoryphidae, with notes on the Paradoxidae); G. M. Dawson, The glacial deposits in the neighborhood of the Bow and Belly Rivers; R. Bell, The geology and economic minerals of Hudson's Bay and northern Canada; J. C. K. Laflamme, Note sur certains dépôts aurifères de la Beance; Découverte de l'emeraude au Saguenay; J. F. Whiteaves, A description of a supposed new ammonite from the upper cretaceous rocks of Fort St. John on the Peace River; On a new decapod crustacean from the Pierre shales of Highwood River, N.W.T.; E. Gilpin, Notes on the manganese ores of Nova Scotia; D. Honeyman, A revision of the geology of Antigonish county, Nova Scotia; S. Obalski, Notes sur la constitution géologique de l'apatite Canadienne.

— It is to be hoped that there will be no lack of papers from chemists on this side of the Atlantic before Section B of the British association, and that the titles will be sent in as early as possible to Prof. H. E. Roscoe, president of Section B, British association, P.O. box 147, Montreal. The subjects for special discussion, as already announced, are, 1°, The constitution of the elements; 2°, Chemical changes in relation to micro-organisms. The first will be introduced by Professor Dewar, probably on Friday, Aug. 29; the second, by Professor Frankland, on Monday, Sept. 1.

— The land-office maps of the United States, and of certain of the states and territories, give a fair outline of our horizontal topography, with rough mountain shading, and, in addition to this, present various details — concerning public lands and land-offices; Indian, military, naval, and lighthouse reservations; railroad and large private grants, confirmed and unconfirmed — not to be found in our ordinary atlases. The latest edition, issued under the direction of Hon. N. C. McFarland, commissioner, includes the general map of the country, six and a half by four feet, dated 1883, on a scale of 40 miles to an inch; Alabama, 1882, 12 miles to an inch; Arizona, 1883, 15 miles; Colorado, 1881, 15 miles; Dakota, 1882, 18 miles; Florida, 1883, 12 miles; Idaho, 1883, 16 miles; Indian Territory, 1883, 12 miles; Louisiana, 1879, 14 miles; Minnesota, 1884, 15 miles; Montana, 1883, 18 miles; New Mexico, 1882, 16 miles; Utah, 1884, 15 miles; Washington, 1883, 15 miles; Wyoming, 1883, 15 miles. These state maps have the coasts, river-lines, townships, lettering, etc., in black; water-areas in blue; and reservations in red or green. Although we have to lament the lack of adequate representation of the relief of the land, the maps cannot be adversely criticised on account of this want; for the measurement of the vertical element of our topography has never been undertaken by the land-office: its work has been simply to measure off the public lands for sale, and to present such maps of the surveyed districts as shall serve to locate the various townships and sections. In the western mountainous region, the land-surveys follow only the lower country, and the adjacent mountains are merely roughly sketched; indeed, in some cases so roughly as to lose all of their characteristic form. But, on the other hand, some of the open country is shown in finer, or at least in *more*, detail than on any other maps yet published. Thus we find the lake districts of Florida and Minnesota well illustrated; and the number of lakes and ponds dotted over the plains of Colorado gives a clew to a peculiar chapter in their physical history. So, also, the branching and meandering of rivers in the Mississippi valley are drawn with greater variety of form, and hence, we may suppose, with a nearer approach to precision, than in our common atlases.

The post-office department also has a series of post-route maps, grouped in areas of several states together, and prepared especially for office use. The

latest edition consists of sixty-one sheets, dated 1884, with manuscript corrections to April 1, published by order of postmaster-general W. Q. Gresham, under the direction of C. Roeser, jun., topographer, post-office department. They are printed in black outline, on a scale varying from six to fifteen miles to an inch, with state and county boundaries tinted red, and show all cities, towns, and villages having post-offices, with many more besides; all post-routes, whether by rail, boat, or stage, with the distance between offices; and a conventional coloring to designate the frequency of the mail-service. Rivers and the larger streams and lakes are represented, but often without name; mountains are not shown, except on a few of the newer western sheets. Apart from their original use, these maps, therefore, serve simply as a basis for additional work, and are best adapted to studies of a statistical character.

— The new journal of astronomy, *Bulletin astronomique*, lately reviewed in *Science*, begins, in its third number (March, 1884), an interesting series of articles relating to the observatories of France. Stephan, director of the observatory at Marseilles, gives a brief description of the astronomical establishment at that place, with statements as to the nature of the work done since he was appointed director, in 1866. The construction of the observatory was begun in 1862, and terminated in 1878. The *personnel* includes, in addition to the director, Borelly and Coggia, adjunct astronomers; Herse, student in astronomy; and Lubrano and Maitre, computers. Eighteen small planets have been discovered (one by Stephan, one by Cottenot, four by Coggia, and twelve by Borelly), and eleven comets (six by Borelly, and five by Coggia). Magnetic and meteorological observations form a part of the regular work. About seven hundred nebulae have been discovered by Stephan.

— The physicist, as well as the astronomer, will find points of interest in a popular article on the theory of heliostats, by Radau, in the *Bulletin astronomique* for March. The paper is illustrated with engravings of the siderostat and heliostat of Foucault, as well as the modified forms of Silbermann and Littrow. A tolerably full bibliography of the subject concludes the article.

— Small planet (236), discovered by Dr. J. Palisa at Vienna, April 26, has been named 'Honoria' by the discoverer. It is a faint object, being of about the thirteenth magnitude.

— The opening of the new archeological museum in connection with the Fitzwilliam museum took place May 6. The new museum will be an institution for the study of archeology, and the exhibition of objects of antiquity. By its opening, Cambridge is the first in the field of universities in the United Kingdom to provide the necessary facilities for archeological study. The classical section will be second only to the famous institution at Berlin, whose collection of antiques is the finest in the world. Cambridge will thus enjoy a unique position in the United Kingdom; for though Oxford has resolved upon following the example of its sister university, and establishing a similar school, it must — as the project has only recently been decided upon — be some time before it can be brought to maturity. The general direction will be in the hands of Dr. Waldstein, whilst the curatorship of the South-Sea Island department will be undertaken by Baron von Hügel, who, together with Sir Arthur Gordon and Mr. Maudsley, has contributed largely to the magnificent collection of South-Sea Island antiquities.

— The Kentucky pharmaceutical association held its annual meeting at Louisville on the 21st, 22d, and 23d of May. The attendance was an unusually large one, and much interest was shown in the progress of pharmacy and the collateral sciences. Various papers were read, bearing, however, mostly on pharmacy proper; but one of more general scientific interest was reported. It was a paper devoted to the elaboration of a method for the determination of iron by the decoloration of the ferric sulphocyanide by the aid of a definite solution of either mercuric or stannous chloride. The method gave, apparently, very satisfactory results, and has the great advantage of easy application. This paper was by Mr. J. A. Flexuer.

— The programme of the Antwerp exhibition for 1885 is published. It will be under the patronage of the king of the Belgians, and will be opened in May. All industrial products will be included, all goods that are the subject of trade, all materials and tools that in any way concern shipping. The exhibition building will be on the site of the old citadel, near the Scheldt and the new quays, on which space will be allotted for the unloading and shipping of exhibits; the southern railway-station being arranged as a gallery for machinery. There will also be an art-exhibition, a special department for electricity, and one for gardening.

— The Belgian government has sent to the German fisheries department for two hundred and fifty thousand young trout, and fifty thousand young salmon, for the Belgian rivers, and intends to continue their cultivation. Arrangements are being made to allow the salmon to pass through the lochs of the River Maas.

— At a recent meeting of the Electro-chemical society of Berlin there were exhibited specimens of a vegetable carbon, made conductive and incombustible by being strongly heated, either *in vacuo* or in a neutral atmosphere. This artificial graphite does not assume the crystalline structure of the native mineral. We have long known that graphite could be formed by the influence of high temperature, under special conditions. It is now shown by Dr. Aron, that, by the same influence, soot can be rendered as good a conductor as graphite.

— A report on the progress of the devastations caused by Phylloxera in Hungary has been issued by the Ministry of agriculture and commerce. The report states, that, at the end of 1882, there were eighty-two districts found to have been invaded by the pest, irrespective of the smitten districts in Croatia. In May, last year, the examination of all the

vine-growing districts of the monarchy was resumed, with the result, that, by the end of the year, twenty-nine new districts were found to have been invaded. Measures have been adopted in conformity with the law of February, last year, to combat the evil.

— A recent number of the *Comptes rendus* contains an account of some very remarkable observations of the planets Saturn and Uranus, made by Thollon, Perrotin, and Lockyer, at the Nice observatory, under an extraordinarily favorable condition of the atmosphere. On March 16 the outer of the three rings of Saturn was seen to be made up of three separate rings, of slightly greater breadth toward the ball of the planet; and all of these rings appeared at times to be marked with striae, as if there were indefinite subdivisions. Uranus was observed under similar conditions on March 18, and its general appearance is described as similar to that of Mars; that is, dark spots near the central portions of the disk, and on the limb of the planet, at position-angle 380°, a white spot resembling that seen at the Martial poles. The observers, having taken care to eliminate a possible deception by the position of their instrument, also recorded a difference of tint of the two hemispheres, — dark toward the north-west, and toward the south-east, bluish white.

— We learn from M. Veniukoff, that a general convention or council of the authorities, directing geodetic, hydrographic, and other surveys in Russia, has been held for the purpose of agreeing upon a uniform system of conducting the details of such work, for which the government annually expends nearly a million of dollars. At present a universal disaccord prevails in methods of measurement and procedure. Messrs. Struve, Tillo, Faddeieff, Pustchin, and others are members of the board, and the Geographical society is represented by several of its members.

— The *Mittheilungen* of the Verein für erdkunde at Halle, for 1883, contains an extensive bibliography of descriptive literature relating to North Thuringia, the Hartz, and the portion of the North German lowlands appertaining to Saxon Anhalt. This bibliography is the collective work of members of the society, and covers a hundred and seventy-three octavo pages. The same number contains an interesting map, showing the boundaries of the middle and low German dialects from Hedemünde on the Werra, to Stassfurt on the Bode River.

— The much talked of literary undertaking of the Austrian crown prince, 'The Austro-Hungarian monarchy in word and view,' is progressing, and will appear in a popular edition. The first volume will give an abridged view of the physical features and historical development and organization of the country. The first section gives in a series of numbers the provinces represented in the *Reichsrath;* the second relates to the Hungarian provinces; the third section is one volume on the occupied provinces; the concluding section gives a view of the agricultural and economical relations of the different branches of the empire, the dynasty, the army, the home and foreign missions, and political situation, followed by an index of collaborators and references. Each division of the monarchy will find its history, language, literature, customs, and art separately reviewed. The editorship of the Austrian part will be undertaken by Herr Weilen; the Hungarian part, by the poet Moritz Jokai. The expenses will be paid by the emperor. Two subjects in the Austrian part will be undertaken by Prince Rudolph, and one in the Hungarian part. The work will be illustrated with etchings.

— A plant named kappe was shown at last year's Amsterdam exhibition. It is indigenous to Java; and, when its fibres are carefully prepared, they resemble wool, and, when curled, at a moderate cost they can be used for stuffing mattresses. It can also be spun and dyed; but the fibrous appearance it retains shows that a radical improvement in the method of treating it has still to be discovered. All who examined the fibre at Amsterdam were satisfied of its contingent improvement as a textile material.

— The March general meeting of the Russian geographical society was occupied by a communication from Dr. Dybowsky on the Commander Islands, famous for their seal-hunting. Special attention was devoted to the zoölogy. Dr. Dybowsky is the well-known explorer of the fauna of Lake Baikal, and was at St. Petersburg on his way to Lvoff (Lemberg), to occupy there a chair of zoölogy. The April meeting was occupied by an account, by the mining-engineer Tvasroff, on the Pamir expedition of 1883, in which he took part with Capt. Putiata and Benderski. The more is known about this expedition, the more admiration must be felt for the explorers, who did so much under such difficult circumstances. Two more meetings are to be devoted to this expedition, — the May general meeting to the ethnography, and one of the sectional meetings to the physical geography, geology, etc.

— In our last issue we were in error in stating that the board of managers of the Yale college observatory had been abolished. The president of the college has been added to the board, but no decided change in the organization of the observatory will be made till he has become personally acquainted with the needs of the institution.

— The scientific society of Alais, the native place of Dumas, proposes to erect a statue of the famous chemist, and desires subscriptions from all those who felt respect for his name.

— Alphonse Lavallée, the most accomplished dendrologist of our day, died on the 2d of May, at his chateau of Segrez. This is a great and most unexpected loss. A comparatively young man, of apparently robust health, the inheritor of a fine estate not far from Paris, he had devoted his means and his talents to the formation of an arboretum and fruticetum at Segrez, which had already become the best private collection in the world, and to the critical study and illustration of hardy trees and shrubs, with a zeal and ability which inspired the highest hopes, — now, alas! frustrated by untimely death.