rarely or never be made rigorous. Glaciers vary in their characteristics like other groups of phenomena. While those features which characterize them are present, there is no difficulty of recognition; but exceptional cases arise in which a portion only of the diagnostic features are present, and persons who desire extreme precision of language are then compelled to hesitate. The difficulty is probably best met by the use of qualifying terms.

NOTES AND NEWS.

FELLOWS of the American association for the advancement of science, who may desire to avail themselves of the privileges of honorary membership of the British association, and to attend the Montreal meeting, will be furnished with the usual 'travelling certificates' on application to Mr. J. D. Crawford, post-office box 147, Montreal, Canada. These certificates should enable the fellow to purchase conveyance for himself to and from Montreal at reduced rates.

— In regard to the phosphorescence of jelly-fish, R. Meldola writes to *Nature*, that the conclusions arrived at by Mr. Verrill (*Science*, July 4, p. 8) cannot fail to be of interest to all who have ever speculated on the significance of the luminosity displayed by so many Acalephae, Medusae, and other marine organisms. When in the tropics, in 1875, very similar ideas occurred to Mr. Meldola; and in an address on the phenomena of cyclical propagation, delivered to the Essex field-club on Jan. 28, 1882, he ventured to put forward the following views: "It was in the Bay of Bengal, when on the eclipse expedition of 1875, that I first saw shoals of Medusae in their full splendor. Speculating on the meaning of the vivid colors and brilliant phosphorescence of these creatures, I came to the conclusion that both these characters might be protective danger-signals of the same nature, and fulfilling the same function, as the bright colors of distasteful caterpillars according to Wallace's well-known theory, or the phosphorescence of the Lampyridae according to Thomas Belt ('Naturalist in Nicaragua,' p. 320). The 'urticating' powers of the jelly-fish would certainly make them unpleasant, if not absolutely dangerous to predatory fish, and their bright colors and luminosity at night may thus be true warning characters."

— A joint convention was recently held by the council and past presidents of the British institutions of civil engineers, mechanical engineers, and naval architects, and of the Iron and steel institute, and the Society of telegraph engineers and electricians, to take steps toward the erection of a memorial to the late Sir William Siemens. At a meeting held on June 28, it was reported that the authorities of Westminster Abbey would be pleased to permit the introduction of a memorial window in honor of the distinguished physicist and engineer. The cost was estimated at from seven hundred to eight hundred pounds. The proposal was accepted; and it was decided to limit subscriptions to one guinea each, and to receive them only from members of one of these five societies, of all of which the deceased was a member. Subscriptions are payable to Mr. James Forrest, secretary of the Institution of civil engineers.

— Dr. Asa Gray's 'Flora of North America,' part ii. (Caprifoliaceae–Compositae inclusive), is at length issued. It contains 474 pages, mainly devoted to Compositae, which number 1,610 species arranged in 237 genera. For the convenience of distant botanists, it is sent by mail, free of postage, to those who remit the price ($5), and order it of the curator of Harvard university herbarium, Cambridge, Mass.

— In September next a geographical professorship will be established at each of the Russian universities. In Germany, fourteen out of twenty-one universities have a chair of this sort.

— Lessar is again in the Seraks country, and will explore the middle part of the region watered by the Murghâb River, which has never been visited by Europeans.

— The international society for the cure of ophthalmia offers a gold medal for the best essay on diseases of the eye. The medal is designed by Hartzes of Berlin, and bears a portrait of Albrecht von Graefe.

— In Russia the statistics of the last thirty years show a great diminution in the forest-trees, but scantily replaced by the planting of firs, as there is no supervision of forests: there is said to be a consequent change for the worse in the climate, and diminution of fruitfulness, especially in the districts round Nishni Novgorod and Moscow. In the Moscow government, which used to be rich in fruit-bearing trees, apples and cherries have much decreased in number, and pears have wholly disappeared.

— A new fog-horn, invented by Mr. Bryceson, has recently been tried on the Thames by the representatives of the admiralty. It is in the form of a pump, and is worked by a strap fastened to the signalman's foot, and so worked as to produce short or long sounds, as required. The advantages of the invention are, the length of time to which the sound can be drawn out, its cheapness, and the fact that it can be heard for three-quarters of a nautical mile in stormy weather.

— The vertical camera, for use in photographing natural-history objects, is described in a pamphlet, "La photographie appliquée aux sciences biologiques et le physiographie universel," by Dr. A.-L. Donnadieu, and published at Lyon by J.-B. Carpentier.

— In the *Monthly notices* of the Royal astronomical society for May, appears a paper by Professor Hall, upon the motion of Hyperion, the satellite of Saturn just outside of Titan, and whose motion is greatly perturbed by the latter, both on account of its mass, and the nearness and eccentricity of Hyperion's orbit. The mean motion of Hyperion is still somewhat uncertain, from the fact that there are no systematic observations of it since those of Lassel in 1852, until Professor Hall took up the systematic observation of

Saturn's satellites in 1875, upon taking charge of the great Washington refractor. This ignorance of the exact value of the mean motion is especially unfortunate in the case of Hyperion, from the fact that four times this motion very nearly equals three times that of its disturbing giant neighbor, Titan; in which case the perturbations become very large, or, in case this relation is an exact one, the theory of their motions is very greatly modified. Until, then, the lapse of time and continued observation shall show how much the quantity $4n-3n'$ differs from zero, it is Professor Hall's opinion that it will be useless to attempt the complete theory of Hyperion's motion.

To show something of the rapid changes in the elements of the orbit due to the great perturbations going on, Professor Hall has discussed the observations of each year separately, assuming a value of the inclination and longitude of node determined beforehand from his earlier observations, — which quantities are very little disturbed, — and by least squares has deduced for each year, including Lassel's 1852 observations, values of the semi-major axis, eccentricity, and longitude of peri-Saturnium for Hyperion. The most remarkable feature of the results is the rapid retrograde motion of the peri-Saturnium, amounting to about 20° per year for the epoch 1875-77, but apparently diminishing quite rapidly. This motion is comparable with the rapid retrogression of the moon's nodes; but it would seem to be rather irregular, unless the printed annual values of P are liable to considerable uncertainty. Professor Hall calls attention to the desirability and importance of re-reducing Lassel's observations, and publishing them more in detail.

— *Insecten-börse* is the title of an advertising fortnightly sheet just started in Leipzig for the benefit of collectors, dealers, and amateurs in entomology. The first number, composed of four quarto pages, contains a surprising variety and number of objects for sale.

— A blue grotto, similar to that of Capri, has been found on the Island of Busi, off the coast of Dalmatia. It is formed by three connected grottos, which can only be approached from the sea. It is highly vaulted, and is only lighted through an opening under the sea; this causing the glorious reflected blue light.

— It is proposed to hold a special American exhibition in London in May, 1886, at which the products, manufactures, and varied phases of life in the United States, will be represented.

— We learn from *Nature* that Prof. R. S. Ball has accepted an invitation from the Lowell institute, Boston, to give a course of six lectures on 'Chapters in modern astronomy' next October.

— A German expedition has been despatched to Cape Town in the corvette Elizabeth. It is fitted out by the firm of Lüderitz of Bremen, and will afterwards proceed to Angra Pequena. The leader of the expedition is Lieut. Siegmund Israels, a Hamburger, who served in the English army during the Ashantee war. An engineer has been engaged from Düsseldorf, who will use his experience in the service of a Westphalian firm of iron founders.

— We learn from Germany, that the Italian geologists have written to the president of the international geological congress at Berlin, asking that the intended meeting of September next be postponed to another year, on account of the cholera, and the quarantine imposed at the boundary of several kingdoms in Europe. Later information is, that the congress will be postponed to September, 1885, not only on account of the cholera, but also on account of the number of members drawn off to America by the meeting of the British association. It is also stated that the reports of several of the committees could not be ready this year.

— A hypsometric chart of European Russia, prepared by Gen. Tillo, has been published at the expense of the ministry of public works. The altitudes of more than 18,000 points are indicated on this chart, of which 12,000 were trigonometrically fixed, 4,000 determined by levelling, and only 400 rest upon barometric observations. More than 1,500 mean heights for the level of the water at points on various rivers are also included. The chart is accompanied by an explanatory memoir.

— Prof. George H. Darwin of Trinity college, Cambridge, is now in this country, and has lately married a Philadelphia lady, Miss Maud Dupuy. He returns to England after the conclusion of the meeting of the British association for the advancement of science at Montreal.

— *Apropos* of the distinction which has lately fallen to Professor Roscoe of Manchester, — a knighthood conferred by the queen in consideration of his services in connection with the technical education commission, — the London *Academy* calls to mind the fact that he affords a fine example of the union of the qualities needed by the successful investigator with those of a good man of business; and that his popular sympathies have won him the warm regard of the Lancashire workingmen, among whom the study of science is more common than might be supposed.

— According to the *Personal-verzeichniss der Universität Leipzig für das summer semester*, 1884, there are, in all, 3,160 students at the university, of whom 608 are studying medicine, 99 pharmacy, 232 natural science (*naturwissenschaften*), and 137 mathematics. There are 41 Americans at the university, of whom 7 are studying science. Three of the whole number of students were matriculated as early as 1878, and 33 more in 1879. Dr. Caspar Renè Gregory of Philadelphia has just been appointed privat-docent in the theological faculty in recognition of his researches in textual criticism.

— The following societies will be represented at Philadelphia, in addition to those already mentioned (*Science*, iv. 140): Geological survey of India, Theo. Hughes Hughes (deputy superintendent); Belfast natural-history and philosophical society, Messrs. James Musgrave, Henry Musgrave; Linnean society, Messrs. John Ball, A. W. Bennett, W. Carruthers, C. Delaune, Howard Saunders, and Dr. James Murie.