more complex than themselves, they cause either a distinct chemical change or set up undulations within the range of the visible spectrum.

May it be that there are similar oscillations in the sun, that the simpler materials out of which the photospheric clouds are condensed vibrate too quickly to give out visible light, but that their oscillations are rendered visible when they are absorbed and responded to by the more complex groupings of the condensed masses? A sun-spot, looked upon as a partial absence of clouds, would mean that the conditions which serve to screen us to a great extent from the rapid undulations have been somewhat modified.

Is it too much to suppose, in view of the close resemblances between many of the actions of light and electricity, and of the well-known electrical effects of ultra-violet light and of X-rays, that the breaking down of a dielectric which they can accomplish may, on a vastly larger scale, accompany an unusual exposure of the earth to similarly rapid undulations? Should there be anything in this suggestion, it may help to remove a part of the difficulty in relating the presence of sun-spots to those casual electrical disturbances with which they undoubtedly coincide in point of time.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

A NEW technical institute was opened at Wellingborough on Thursday last, by Sir Philip Magnus. The building has been erected by the Urban District Council at a cost of 3000*l.*, exclusive of the site, and it will be maintained out of the free library rate.

THE following donations are announced in *Science*:—Colonel Oliver W. Payne has given 1,500,000 dollars to the Cornell University Medical College; the late Mr. Rowland Hazard has bequeathed 100,000 dollars to Brown University; Mr. George A. Gardner has given 20,000 dollars to the Massachusetts Institute of Technology, to be added to the general endowment fund; Dr. D. K. Pearsons, of Chicago, has offered 50,000 dollars to Fairmount College, Wichita, Kans., on condition that 150,000 dollars can be raised; in connection with the Maryland Agricultural Experiment Station, the State Legislature has granted 14,000 dollars for the erection of a science hall, to be used jointly by the college and station. 10,000 dollars have also been granted for inaugurating State work in entomology and vegetable pathology, and an annual grant of 8000 dollars for maintenance has been made.

THE new Technical Institute and Public Library, erected by the West Ham Corporation, will be opened to-day by Mr. J. Passmore Edwards. The foundation-stone of a natural history museum, which will be built close by, will also be laid. The Technical Institute, the principal of which is Mr. A. E. Briscoe, will be wholly under the control of the municipality, and will be financed from municipal sources. Every department is well equipped, special attention being paid to the chemical laboratories and the engineering workshops. The buildings have cost 450,000*l.*, and a further 15,000*l.* has been spent on equipment and fittings. The money for the working has been created by the accumulation of the Excise duties grants, but the corporation have secured sanction to raise 35,000*l.*, and have power to levy a 1*d.* rate (which will produce about 3800*l.*) for technical instruction purposes. The new central library is wholly on the ground floor, and is fitted with all the modern appliances of such institutions. Towards the cost of the natural history museum Mr. Passmore Edwards has contributed 2500*l.* The Essex Field Club, who will have the scientific control of the museum, will house their large collection here.

IN the course of an address upon "Science and Education," delivered at Mason College on Tuesday, Sir Archibald Geikie remarked that there is no more pernicious doctrine than that which measures the commercial value of science by its immediate practical usefulness, and restricts its place in education to those only of its subdivisions which are of service to the industries of the present time. By all means let artisans know as much as could be taught them regarding the nature and laws of the scientific processes in which they are engaged. But it is not by mere technical instruction that the industrial and commercial greatness of the country will be maintained and extended. If we are not only to hold our own, but to widen the boundaries of applied science, to perfect our manufactures, and to bring new departments of nature into the service of man, it is by broad, thorough, untrammelled scientific research that the success must be achieved. The continued development of the faculty of prompt and accurate observation is a task on which students cannot bestow too much attention. Amongst the mental habits which education in science helps to foster are a few which specially deserve attention as worthy of most sedulous care all through life. In the first place should be put accuracy; in the next thoroughness, which is closely akin to accuracy; then breadth; then the habit of wide reading in scientific literature; and then patience. It is by failures as well as by successes that the true ideal of the man of science is reached.

THE following entrance and other scholarships have been awarded at London Medical Schools:—London Hospital Medical College: Price Scholarship, value 120*l.*, Mr. F. W. Jones; Epsom Scholarship, value 126*l.*, Mr. Colmer; Price University Scholarship, value 60*l.*, Mr. Bousfield; Science Scholarship, value 60*l.*, Mr. J. W. Fox; Science Scholarship, value 30*l.*, Mr. Rainforth.—Charing-cross Hospital Medical School: Livingstone Scholarship (100 guineas) to Mr. G. E. Bellamy; Huxley Scholarship (55 guineas) to Mr. B. R. Bickford; Universities Scholarships (each 60 guineas) to Mr. H. G. Gabb and Mr. B. G. Fiddian. Entrance scholarships have also been awarded to Mr. R. H. Cooper (60 guineas), Mr. D. M. Davies (40 guineas), and Mr. T. Law (30 guineas); and exhibitions of 30 guineas each to Mr. A. C. Ingram, Mr. G. O. Lambert, and Mr. B. R. Lloyd.—Guy's Hospital Medical School: Scholarships for University students: H. S. French, Christ Church, Oxford, 50*l.*; Open Science Scholarship, E. H. B. Milsom, Guy's Hospital Medical School, 150*l.*; F. Rogerson, Guy's Hospital Medical School, and N. J. Spriggs, private study (equal), 30*l.* each.—St. Thomas's Hospital Medical School: Entrance Scholarships in Natural Sciences: 150*l.*, Chas. Michael Roberts; 60*l.*, Harry Mellor Woodcock; 20*l.*, Charles Hugh Latham.—University College, London, Medical Entrance Scholarships: 131 guineas, Mr. H. A. Haig; 55 guineas, Mr. M. Stewart Smith; 55 guineas, Mr. W. M. Sadler.—The first and second entrance scholarships of the Middlesex Hospital Medical School have been awarded to Mr. W. Cameron Macaulay and Mr. William Gordon Taylor, respectively.

THE Secondary Education Bill introduced into the House of Commons by Colonel Lockwood, proposes to separate technical from secondary education. For this and other reasons the Council of the Association of Technical Institutions has entered a protest against the Bill. It is pointed out that the proposed separation of technical and secondary education is an entire reversal of previous educational policy, and if it were carried into effect it would be detrimental to the education of this country. The power which Colonel Lockwood's Bill gives for the creation of a new local authority to deal specially with secondary education is also objected to, the multiplication of local authorities for the purposes of education beyond the elementary stage being regarded as a retrograde step. Other defects which the Bill possesses are: (1) The proposal to provide for the financial needs of secondary education by taking away from technical education part of the money assigned for instruction in science and art, and of the money available under the Local Taxation Act. (2) The proposal that the limits of secondary and technical education shall be settled on the basis of the opinions expressed by an advisory Council on which secondary schools and teachers shall be very largely represented, but which shall not contain a single representative of technical institutions. (3) No provision is made for the registration of teachers in technical institutions. (4) The proposal that a local secondary education authority shall not provide or have the management of any secondary school. The Council desires that steps should speedily be taken to organise secondary education in this country, and is willing to aid any statesmanlike attempt to accomplish this, but Colonel Lockwood's Bill would, it is pointed out, do mischief by creating a distinction between technical and secondary education, and setting up a purely artificial barrier between the two. It is not expected that the Bill will pass, but as the manner in which it is received may influence the Government to incorporate the proposals contained in it in the Secondary Education Bill to be produced next session, it behoves those interested in technical education to show unmistakably that such provisions as those in Colonel Lockwood's Bill are not generally acceptable.

AT a Congregation of Cambridge University held on Saturday, Dr. Hill, the retiring Vice-Chancellor, delivered a valedictory address, in the course of which he made the following remarks:—"The admirable and central sites which have been purchased by the University during the last three years are still entirely unoccupied, although many departments of the University are either overcrowded or most inadequately housed; but, at the desire of our Chancellor, steps have been taken which may, it is hoped, bring in the funds necessary for the erection of the buildings which are so urgently required. A very influential committee of University men has been formed for the purpose of organising a 'Cambridge University Association,' the members of which will be kept informed of, and will be pledged to make known, the needs of the University. It is hoped that through the influence of this association the University may be placed in possession of the means of maintaining her position in the ever-widening and ever-changing educational life of the nation. The legal and medical schools, feeling that it is impossible to wait until the general resources of the University allow of the provision of new buildings, have opened subscription lists on their own account, and it is significant of their sense of the pressing need for such accommodation that of the 6000*l.* already subscribed a large proportion has been given by the teachers of law and medicine and other residents in the University. Among gifts to the University during the past year were a very valuable collection of minerals given by the Rev. T. Wiltshire, Professor of Geology and Mineralogy in King's College, London, a collection of polyzoa given by Miss E. C. Jelly, a skeleton of the elephant seal given by Sir W. L Buller, K.C.M.G., a MS. of *de proprietatibus rerum* of Bartholomaeus Anglicus given by Lieut. Archibald Stirling, and a collection of Malay native objects given by W. W. Skeat. The University has also received a bequest of 10,000*l.* under the will of the late A. W. G. Allen for the establishment of a scholarship or prize in memory of the Right Rev. Joseph Allen, formerly Bishop of Ely, and grandfather of the donor. Not a few gifts for the foundation of scholarships and prizes have been received by the University during recent years. Such gifts are always acceptable; but at the present time there is a greater need for the endowment of teaching posts and the provision of buildings for University purposes than for the encouragement and stimulation of students." Dr. Hill was re-elected Vice-Chancellor for the ensuing year.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, September 26.—M. van Tieghem in the chair.—On the changes occurring in the large nebula in the belt of Andromeda, by M. G. Rayet. The brilliant point announced by M. Seraphimoff is probably the central point of the nebula, the brightness of which is variable, and is now temporarily increased. The position of the point does not coincide with that of the temporary star whose position was measured by M. Bigourdan in 1885.—On a geometrical theory of the marine compass, by M. S. L. Ravier.—On the convergence of some *réduites* of the exponential function, by M. H. Padé. The term *réduite* is applied to a function (regular in the neighbourhood of the origin) of the rational fractions which, near this point, represent this function with close approximation.—Action of lime and chalk upon certain natural humic materials, by M. G. André. The earths were heated at 100° for fifteen hours with lime, chalk, or water, and determinations made of the nitrogen volatilised as ammonia, the nitrogen rendered soluble, and the ammonia present in the filtrate.—On the composition of œolosomine, by M. A. B. Griffiths. Œolosomine is the name given to a colouring matter, green in acid, purple in alkaline solutions, found in *Œolosoma tenebrarum*.—Chlorophyll assimilation in plants growing by the sea-shore, by M. Ed. Griffon. The leaves of maritime plants under the influence of sea-salt undergo a reduction of chlorophyll, acquiring by way of compensation a greater thickness and a more marked development of the assimilating tissues. But this modification of structure, although having a tendency to compensate the injurious action of the salt, is insufficient, since the assimilation per unit of surface is always less for the leaves of a maritime species than for comparable leaves of the same species growing inland.—Observations of an aurora borealis at Göttingen (Hanover) on September 9, by M. B. Violle.—On an observation of the green ray at sunrise, by M. H. de Maubeuge: The phenomenon was noticed from the steamer *Ernest Simons*, by several people simultaneously, over Mt. Sinai.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Arithmetical Chemistry: C. J. Woodward, Part 1. new edition (Simpkin).—The Campaign in Tirah: Colonel H. D. Hutchinson (Macmillan).—The Telephone: Prof. W. J. Hopkins (Longmans).—An Introduction to Practical Quantitative Analysis: H. P. Highton (Rivingtons).—Diet and Food: Dr. A. Haig (Churchill).—Beiträge zur Physiologie des Centralnervensystems: Prof. Max Verworn, Erster Theil (Jena, Fischer).—The Living Organism: A. Earl (Macmillan).—Catalogue of Chemical and Physical Apparatus and Chemicals (Leeds, Reynolds and Branson).—Eclipses of the Moon in India: R. Sewell (Sonnenschein).—Cape of Good Hope: Report of the Marine Biologist, 1897 (Cape Town, Richards).—The Gold Coast, Past and Present: G. Macdonald (Longmans).—Psychology in the Schoolroom: T. F. G. Dexter and A. H. Garlick (Longmans).

PAMPHLETS.—The Witness of Science to Linguistic Anarchy: Lady Welby (Grantham, Clarke).—Glasgow and West of Scotland Technical College: Reports on Experiments on the Manuring of Oats, Hay, and Turnips and Potatoes (Glasgow).—The Wanton Mutilation of Animals: Dr. G. Fleming (Bell).

SERIALS.—Chambers's Journal, October (Chambers).—Good Words, October (Isbister).—Sunday Magazine, October (Isbister).—Longman's Magazine, October (Longmans).—Monthly Weather Review, June (Washington).—National Geographic Magazine, September (Washington).—Century Magazine, October (Macmillan).—Humanitarian, October (Duckworth).—Contemporary Review, October (Isbister).—Fortnightly Review, October (Chapman).—Reliquary, &c., October (Bemrose).—Himmel und Erde, September (Berlin, Paetel).—Janus, July-August (Williams).—Journal of the Royal Agricultural Society of England, Vol. 9, Part 3 (Murray).—Proceedings of the Geologists' Association, August (Stanford).—National Review, October (Arnold).—Knowledge, October (Holborn).—Observatory, October (Taylor).

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