

be lost for ever. Some of the most valuable racial curios are now actually unprocurable. The long straight swords of the Mishmi, in the extreme east, were formerly found among all the races north of the valley as far west as the Kuki, and are now a tradition only. The Noga "Kyep," hide cuirass, identical with that of the Niasi, west of Sumatra, are impossible to get hold of, though common here thirty years ago—firearms rendering them useless.

An organised army of intelligent workers is badly wanted to save the stores of unwritten history seen in *customs* among all these races. They are pre-Aryan races, and if but a tenth of the time and money now being lavished on the Aryan remains, here and at home, were devoted to these far older, and far more interesting races, the result would astonish home folk. The races of the Pacific, and Archipelago (Australia included), came from India, as Polynesian investigators well know, but cannot easily join the proofs across the Malayan region.

Can nothing be done to arouse attention to this matter? Some of the customs are of the greatest possible value in the elucidation of the development of early human institutions such as marriage; and in the *Journal* of the Asiatic Society of Bengal, vol. lxi, pt. ii., No. 3, 1892, pp. 246 to 269, I drew attention to one of them in "The communal barracks of primitive races," a vast subject, on which alone there is enough to occupy many experts for several years, as its ramifications extend from West Africa to Eastern Polynesia, and from the Himalaya to New Zealand.

There are many willing and capable workers in the East, but scattered over a vast area; a central "association" is needed, say at Singapore, to and from which communication is easy. An association of scattered students, rather than a new society, is wanted, and it would cost very little if the local branch of the Asiatic Society took the matter in hand as a branch of its work, charging those engaged in research a transmission fee on all that passes.

At the present moment I am most anxious to get in touch with some one in Formosa, so as to procure photos of the savages, their houses, &c., to compare with our Noga, who, I believe, are the same race stock, but I am not able to get the names and addresses of workers there; a central association at Singapore could very probably afford help in such matters.

The Anthropological Institute of Great Britain and Ireland is too far off to give this aid; besides, it is not a live society, or anthropology would not be in such a pitiable slough as we see it here. The collection of life-sized nude nondescript effigies in the Indian Museum reveals our state at a glance; they are to amuse the hundreds of natives who gape at them daily. The value of it as a collection is measured by the *numbers* who stare and get thoroughly mystified, and this is proudly published every week. As an ethnological collection it is enough to drive an expert mad.

S. E. PEAL.

Sibsagar, March 31.

#### A Curious Luminous Phenomenon.

THE phenomenon mentioned on p. 31 of NATURE (May 13), is undoubtedly subjective, and has to do with the fatigue of the retina.

I observed it very markedly in the case of an orange round which I was skating on the open-air ice-rinks in the Engadine; all the country about being white, and the ice, too, being dazzling.

The blue-violet margin to the orange was zero, or at a minimum, when I fixed my eye on a point on the orange. It was at a maximum when I glanced quickly round the orange, or when the orange rolled. In the latter case it was unsymmetrical and "trailed."

I satisfied myself, by the experiments that I tried, that the portion of the retina protected from the white glare by the image of the orange, received an impression of blue-violet light when the protection of this image was removed owing to the movement of the eye or of the object; but that this peculiar condition of the portion of the retina in question was very transitory.

It is possible that temperature affects the phenomenon indirectly; since the eye may be more unsteady, and wander more, when the temperature is low.

Experimenting in England with less white and dazzling ice and landscape I found the phenomenon less marked. It was very brilliant and beautiful in the Engadine.

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I feel sure that if any observer notices the effect of keeping his eye fixed on some point of the body so as to keep the image on a constant portion of the retina, he will come to the same conclusion as myself.

W. LARDEN.  
R. N. E. College, Devonport.

#### Röntgen Rays.

I HAVE had a focus-tube constructed, in which the distance between the electrodes can be varied, after Mr. Campbell Swinton's pattern, but in which the kathode is made the movable electrode, and the adjustment is made by magnetic control. This is effected by attaching a disc of soft iron to the sliding-rod of the kathode. The advantage of this arrangement is that the kathode can be moved up to, or away from, the anode while the tube is working, so that the best effect can be at once obtained. The resistance is, as Mr. Swinton has pointed out, greater when the electrodes are close together than when they are far apart. The best fluorescent effects are, however, obtained when the electrodes are so close together (about one millimetre apart) that a very bright arcing discharge occurs between them. The screen is now lighted up much more brilliantly than when they are at any other distance apart. The very bright fluorescence is only obtained when the arcing discharge occurs. If the electrodes are brought any nearer together, the platinum anode becomes red-hot, the fluorescence fails, and the resistance of the tube increases very rapidly. I do not remember having seen this noted before.

Edinburgh, May 10.

DAWSON TURNER.

#### THE ROYAL SOCIETY SELECTED CANDIDATES.

THE following are the names and qualifications of the fifteen candidates selected by the Council of the Royal Society, to be recommended for election into the Society this year:—

ROBERT BELL,

M.D., B.A.Sc., LL.D. Assistant Director of the Geological Survey of Canada. Has been actively engaged in the field work of the Survey for thirty-six years. Was concurrently Professor of Chemistry and Geology, Queen's University, Kingston, for five sessions, 1863-68; Naturalist and Medical Officer on the Government Expeditions to Hudson Bay, 1884-85; Royal Commissioner on the Mineral Resources of Ontario, 1888. Distinguished for his services to Canadian Geology, having worked over large sections of the Dominion east of the Rocky Mountains. Has made extensive researches among the Laurentian and Huronian Rocks, and in reference to Glacial phenomena. Has added materially to our knowledge of Zoology and Botany—more especially of the Forestry—of Canada. Has published nearly 100 reports and papers of a scientific character. They include upwards of twenty reports, some accompanied by maps of the Geological Survey, between 1857 and 1890, giving the results of geological and topographical surveys and explorations on both sides of Hudson Bay and Straits, along the principal waters between the upper Great Lakes and James Bay, and of those between the Winnipeg Basin and Hudson Bay, the first survey of Lake Nipigon, geological surveys of the Canadian Sudbury Mining Districts, the Gaspé District, the Lake Peninsula of Ontario, and in other parts of the extensive regions of Canada. Although much condensed, these Reports cover about 930 pp. royal 8vo. Among many additional publications may be mentioned "The Causes of the Fertility of the Land in the Canadian N.W. Territories," "The Petroleum Field of Ontario," "The Huronian System in Canada," "Glacial Phenomena in Canada," "The Geology of Ontario, with special reference to Economic Minerals," "The Laurentian and Huronian Systems North of Lake Huron," "The Origin of Gneiss," "The Forests of Canada," "The Forest Fires in Northern Canada."

*Supplementary Certificate.*—Since the date of the above certificate Mr. Bell has made further geological investigations of importance north of Lake Huron, and a survey of a large river previously unknown to geography in the country south-east of James Bay, besides a general geological and topographical exploration of an extensive area in that region. He has now been connected with the Geological Survey of Canada for forty years,

and has published 135 scientific papers, reports, &c., besides abstracts of 42 others read by the author. The titles of most of these are published in the *Transactions of the Royal Society of Canada for 1894*.

## SIR WILLIAM HENRY BROADBENT,

F.R.C.P. Physician in Ordinary to H.R.H. the Prince of Wales. Consulting Physician to St. Mary's Hospital, and to the London Fever Hospital. Late Lecturer on Medicine, St. Mary's Hospital. Late Senior-Censor of the Royal College of Physicians. Late President of the Harveian, Clinical, and Neurological Societies. Late Examiner in Medicine, University of Cambridge, University of London, and at the Royal College of Physicians of London. Is very eminently distinguished as a physician, and is the author of numerous important Memoirs bearing upon the Physiology and Pathology of the Nervous System and the Heart; and also upon scientific principles of Therapeutics. The following are some of his principal contributions:—"The Sensory Motor Ganglia and Association of Nerve Nuclei" (*Brit. and For. Med. Chir. Rev.*, 1866); "On the Structure of the Cerebral Hemispheres" (*Proc. Roy. Soc.*, 1869); "On the Cerebral Mechanism of Speech and Thought" (*Trans. Med. Chir. Soc.*, 1872); "An Attempt to apply Chemical Principles in Explanation of the Action of Remedies and Poisons" (London, 1869); a work "On the Pulse" (London, 1890); Lettsomian Lectures, before the Medical Society, on "Syphilitic Diseases of the Nervous System," 1874; Harveian Lectures, before the Harveian Society, on "Prognosis in Valvular Disease of the Heart," 1884; Croonian Lectures, before the Royal College of Physicians, on "The Pulse," 1887; Lumleian Lectures, before the Royal College of Physicians, on "Structural Diseases of the Heart," 1891. Numerous other papers have been published in the Medical Journals and Transactions of the Medical Societies.

## CHARLES CHREE,

D.Sc., M.A. (Cantab.). Superintendent of the Kew Observatory. Author of the following Memoirs, and many others on analogous subjects:—(1) "Effects of Pressure on the Magnetisation of Cobalt" (*Phil. Trans.*, 1890); (2) "Stresses and Strains in Isotropic Elastic Solid Ellipsoids," &c. (*Proc. Roy. Soc.*, 1895); (3) "Conduction of Heat in Liquids" (*ibid.*, 1887); (4) "A Solution of the Equations for Equilibrium of Elastic Solids," &c. (*Camb. Phil. Trans.*, vol. xv.); (5) "On some Compound Vibrating Systems" (*ibid.*, vol. xv.); (6) "Changes in Dimensions of Solids due to given Systems of Forces" (*ibid.*, vol. xv.); (7) "The Isotropic Elastic Sphere and Spherical Shell" (*Camb. Phil. Trans.*, vol. xv.); (8) "Forced Vibrations in Isotropic Elastic Solid Spheres and Spherical Shells" (*ibid.*, vol. xvi.); (9) "Rotating Elastic Solid Cylinders of Elliptic Section" (*Phil. Mag.*, 1892); (10) "Contributions to the Theory of the Robinson Cup Anemometer" (*Phil. Mag.*, 1895); (11) "Longitudinal Vibrations of Acolotropic Bars with One Axis of Material Symmetry" (*Quart. Journ. Math.*, 1890); (12) "Isotropic Elastic Solids of nearly Spherical Form" (*Amer. Journ. Math.*, vol. xvi.).

## HENRY JOHN ELWES,

F.L.S., F.Z.S. President of the Entomological Society (1893-94). Vice-President of the Horticultural Society (1878-80). Late Captain, Scots Fusilier Guards. Has for many years devoted himself to the study of Ornithology and Entomology, and has travelled extensively with the view of investigating the migrations, variations, and geographical distribution of birds and certain classes of insects over large areas of the northern hemisphere. In pursuance of his researches he has visited India on four occasions (1870, 1876, 1880, 1886), extending his observations from Travancore to the Punjab, Assam and the loftiest Himalaya bordering on Tibet; the Eastern and Western United States, Canada, and Mexico (1888, 1893); Greece, Turkey, Asia Minor, and the Crimea (1869, 1874); Algeria (1882); and all parts of Europe. His collections and observations have yielded very important results, notably his paper "On the Geographical Distribution of Asiatic Birds" (*Proc. Zool. Soc.*, 1873), wherein the Himalayan and Chinese Avi-faunas are shown to be one. Other papers are: "On the Ornithology of the Cardamum Hills, Travancore" (*Ibis*, 1870); "On the Genus *Parnassius*" (*Proc. Zool. Soc.*, 1886); "On *Hemicurus*" (*Ibis*, 1872); "On the Papilionidæ of the Eastern Alps" (*Entom. Monthly Mag.*, 1880); and of

"The Sikkim Himalaya" (*Proc. Zool. Soc.*, 1882); and of "Amur-land, N. China and Japan" (*loc. cit.*, 1881); and of the "Naga and Karen Hills" (*loc. cit.*, 1891-92). Mr. Elwes is author of a valuable memoir on the genus *Lilium*, and has, during his travels, communicated many interesting plants to the Royal Gardens, Kew.

## JOHN SCOTT HALDANE,

M.D., M.A., M.R.C.P. (Edin.). Hon. M.A., Oxford. Lecturer in Physiology, University of Oxford. Author of the following and of other Memoirs:—"The Elimination of Aromatic Bodies in Fever" (*Journ. Physiol.*, vol. ix., 1888); "The Carbonic Acid, Organic Matter, and Micro-organisms in Air" (with Prof. Carnelley and Dr. Anderson), (*Phil. Trans.*, 1887); "The Air of Sewers" (with Prof. Carnelley), (*Proc. Roy. Soc.*, 1887); "The Air of Buildings and Sewers" (*Trans. Sanit. Inst.*, 1887); "The Accurate Determination of the Carbonic Acid and Moisture in Air" (with Mr. Pembrey), (*Phil. Mag.*, 1890); "A New Form of Apparatus for Measuring the Respiratory Exchange" (*Journ. Physiol.*, vol. xix., 1892); "The Physiological Effects of Air vitiated by Respiration" (with Mr. Lorrain Smith), (*Journ. of Pathol. and Bacteriol.*, 1892); "The Toxic Action of Expired Air" (with Mr. Smith), (*ibid.*, 1893); "An Improved Form of Animal Calorimeter" (with Drs. Hale White and Washbourn), (*Journ. Physiol.*, vol. xvi., 1894); "On Red Blood Corpuscles of Different Specific Oxygen Capacities" (with Mr. Smith), (*ibid.*, vol. xvi., 1894); "The Nature and Physiological Action of Black Damp" (*Proc. Roy. Soc.*, vol. lvii.); "Investigations on Composition, Occurrence, and Properties of Black Damp" (with Mr. W. N. Atkinson), (*Trans. Fed. Inst. Mining Eng.*, 1895); "The Relation of Carbonic Oxide to Oxygen Tension" (*Journ. Physiol.*, vol. xviii., 1889).

*Supplementary Certificate.*—Report to the Home Secretary on the Causes of Death in Colliery Explosions, 1896 (Parliamentary Paper); "The Nature and Sources of the Suffocation Gas met with in Wells" (*Trans. Fed. Inst. Mining Engineers*, vol. xi., p. 265); "Oxygen Fusion of Arterial Blood" (with Prof. Lorrain Smith), (*Journ. Physiol.*, in the Press).

## WILLIAM A. HASWELL,

M.A., D.Sc. (Edin.). F.L.S. Vice-President Linnean Society of New South Wales. Trustee of the Australian Museum. Corr. Memb. Royal Society of Tasmania. Memb. K. Leopold-Carol. Deutsche Akad., Halle. Challis Professor of Zoology, University of Sydney, N.S.W. Distinguished as a zoologist and comparative anatomist. Author of seventy-four papers, mainly morphological, including the following:—"Catalogue of the Australian Stalk and Sessile-eyed Crustacea," 1882; "On *Temnocephala*, an aberrant Monogenetic Trematode" (*Quart. Journ. Micros. Sci.*, 1888); "A Monograph of *Temnocephalæ*" (Macleay Memorial Volume, 1892); "A Monograph of the Australian Aphroditæ" (*Proc. Linn. Soc. N.S.W.*, 1882); "The Marine Annelides of the Order *Serpulea*" (*ibid.*, 1884); "On the Structure of the so-called Glandular Ventricle of *Syllis*" (*Quart. Journ. Micros. Sci.*, 1886); "On an apparently New Type of *Platyhelminthis*" (Macleay Memorial Volume, 1892); "A Revision of the Australian *Lamodipoda*" (*Proc. Linn. Soc. N.S.W.*, 1884); "A Revision of the Australian Isopoda" (*ibid.*); "Studies on the Elasmobranch Skeleton" (*ibid.*); "On the Structure of the Paired Fins of *Ceratodus*, &c." (*ibid.*, 1882); "Observations on the Early Stages in the Development of the Emu" (*ibid.*, 1887); "On *Polycercus*, a Proliferating Cistode Parasite of the Earthworms" (*ibid.*, 1893); "A Comparative Study of Striated Muscle" (*Quart. Journ. Micros. Sci.*, vol. xxx.), in conjunction with Mr. J. P. Hill.

## GEORGE BOND HOWES,

F.L.S., F.Z.S., Assistant Professor of Zoology in the Royal College of Science, London. Member of Council of the Linnean Society, and of the Anatomical Society. Examiner in Zoology, Victoria University, and for the University of New Zealand. Author of an "Atlas of Elementary Biology," and joint co-author of the revised and extended edition of "Huxley and Martin's Practical Biology." Author of numerous papers on Morphology, dealing especially with the Ichthyopsida and Mammalia, of which the following are the more important:—"On some points in the Anatomy of the Porpoise" (*Journ. Anat. and Phys.*, vol. xiv. p. 467); "Notes on the Cranio-Facial

Skeleton of the Sturgeon" (incorporated in Prof. W. K. Parker's monograph in *Phil. Trans.*, 1882, p. 171); "The Morphology of the Mammalian Coracoid" (*Journ. Anat. and Phys.*, vol. xxi. p. 190); "On the Skeleton and Affinities of the Paired Fins of *Ceratodus* and those of the Elasmobranchii" (*Proc. Zool. Soc.*, 1887, p. 3); "On a hitherto Unrecognised Feature in the Larynx of the Anourous Amphibia" (*ibid.*, p. 491); "Rabbit with an Intra-Narial Epiglottis, with a suggestion concerning the Phylogeny of the Mammalian Respiratory Apparatus" (*Journ. Anat. and Phys.*, vol. xxiii. p. 263); "Additional Observations upon Intra-Narial Epiglottis" (*ibid.*, p. 587); "Variation in the Kidney of *Rana clavata*; its Nature, Range, and probable Significance" (*ibid.*, vol. xxiv. p. 407); "On the Visceral Anatomy of the Australia Torpedo" (*ibid.*, p. 669); "Observations on the Pectoral Fin-Skeleton of Living Batoid Fishes, and of the Extinct Genus *Squaloraja*," &c. (*ibid.*, p. 675); "On some Hermaphrodite Genitalia in *Gadus Morrhuæ*," &c. (*Journ. Linn. Soc. Zoology*, vol. xxiii. p. 539); "On the Probable Existence of a Jacobson's Organ among the Crocodilia; with Observations upon the Skeleton of that organ in the Mammalia," &c. (*Proc. Zool. Soc.*, 1891, p. 148); "Notes on the Shoulder-Girdle of certain Dicynodont Reptiles" (*ibid.*, vol. xxvi. p. 403); "On the Affinities, Intra-relationships, and Systematic Position of the Marsipobranchiata" *Trans. Liverpool Biol. Soc.*, vol. vi. p. 122), &c.

*Supplementary Certificate.*—Professor of Zoology, Royal College of Science, Treasurer Anatomical Society of Great Britain, and President of the Malacological Society of London; Zoological Secretary of the Linnean Society; Memb. Council Zoological Society. Has continued work on "The Morphology of Coracoid of Terrestrial Vertebrata" (*Proc. Zool. Soc.*, 1893, p. 385), and published papers dealing, among other subjects, with:—"Morphology of Pelvic Girdle of Mammalia" (*Journ. Anat. Phys.*, vol. xxvii. p. 543); "Variation and Development of the Vertebral and Limb-Skeleton of Amphibia" (*Proc. Zool. Soc.*, 1893, p. 268); "Synostosis and Curvature of the Spine in Fishes" (*ibid.*, 1894, p. 95); "Types of Modification of Mammalian Hyoid" (*Journ. Anat. Phys.*, vol. xxx. p. 513). Has edited and annotated English translation of Wiedersheim's "Bau des Menschen."

#### F. STANLEY KIPPING,

D.Sc. (Lond.), Ph.D. (Munich). Lecturer and Chief Assistant in the Chemical Department of the City and Guilds of London Institute, Central Technical College. Distinguished as an original and very skilful and persistent worker in Chemistry. Author of sixteen papers published in the *Transactions of the Chemical Society*, and of others in the *Journal of the German Chemical Society*, the following being the titles of several of these:—"The Synthetical Formation of Closed Carbon Chains in the Aromatic Series"; "Action of Phosphoric Anhydride on Fatty Acids" (3 parts); "Hydrindone and its Derivatives"; "Formation of the Hydrocarbon *Truxene*"; (in conjunction with Dr. Perkin) "Diacetylpentane and Dibenzoylpentane"; "Derivatives of Phenylhexamethylene"; "Synthesis of Dimethyldihydroxyhepamethylene," &c.; (in conjunction with Dr. Armstrong) "The Formation of Ketones from Camphor"; (in conjunction with Mr. Pope) "Sulphonic Derivatives of Camphor."

#### GEORGE BALLARD MATHEWS,

M.A., Professor of Mathematics in the University College of North Wales. Late Fellow of St. John's College, Cambridge; Fellow of University College, London. Eminent Mathematician. Author of the following works of merit in connection with Mathematics:—"Theory of Numbers" (1892); "Complex Multiplication Moduli of Elliptic Functions for the Determinants - 53 and - 61" (*Proc. Lond. Math. Soc.*, vol. xxi.); "On Class Invariants" (*ibid.*, vol. xxi.); "Note on Dirichlet's Formula for the Number of Classes of Binary Quadratic Forms for a Complex Determinant" (*ibid.*, vol. xxiii.); "On Binary Quadratic Forms with Complex Coefficients" (*Quart. Journ. Math.*, vol. xxv.); "On the Classification of Symmetric Functions" (*ibid.*); "On the Expansion of the Coordinates of a Point upon a Tortuous Curve in terms of the Arc" (*ibid.*, vol. xxvi.); "Irregular Determinants and Sub-triplicate Forms" (*Mess. Math.*, vol. xx.); and others, a list of which is sent.

#### GEORGE ROBERT MILNE MURRAY,

F.L.S., F.R.S.E. Assistant (First Class), Department of Botany, British Museum. Naturalist to the Solar Eclipse Ex-

pedition to Grenada, 1886. Examiner in Botany, Glasgow University, 1887-92; Victoria University, 1889-92. Lecturer on Botany at the Royal Veterinary College, London. Author of numerous papers on the structure, classification, and distribution of Cryptogams, of which the following are the more important:—"Investigations into the Infection of Fishes with *Saprolegnia ferax*" (*Reports of the Inspector of Fisheries*, 1883-85); "On the Outer Peridium of *Broomeia*" (*Journ. Linn. Soc.*, 1882); "On two New Species of *Lentinus*, one of them growing on a large Sclerotium" (*Journ. Linn. Soc.*, 1886); "On a New Species of *Rhipilia*" (*ibid.*); "On *Boodlea*, a New Genus of *Siphonocladaceæ*" (*Journ. Linn. Soc.*, 1890); "The Distribution of Marine Algæ in Space and Time" (*Trans. Biol. Soc. Liverpool*, 1891); "On a Fossil Alga belonging to the Genus *Caulerpa*, from the Oolite" (*Phycological Memoirs*, 1892); "On a New Species of *Caulerpa*, with Observations on the Position of the Genus" (*Trans. Linn. Soc.*, 1891); "On the Structure of *Dictyosphaeria*" (*Phycological Memoirs*, 1892); "A Comparison of the Marine Floras of the warm Atlantic, the Cape of Good Hope, and the Indian Ocean" (*ibid.*); "On *Halicystis* and *Valonia*" (*ibid.*). Author of several articles in the "Encyclopædia Britannica," including "Fungi" and "Vegetable Parasitism." Joint author, with Mr. A. W. Bennett, M.A., of "A Handbook of Cryptogamic Botany," 1889; with Mr. Boodle, of Memoirs on "The Structure of *Spongocladia*" (*Annals of Botany*, 1888); "A Structural and Systematic Account of *Struvea*" (*ibid.*); "A Systematic and Structural Account of *Avrainvillea*" (*Journ. Bot.*, 1889); and, with Miss Barton, "The Structure and Systematic Position of *Chautransia*" (*Linn. Soc.*, 1891).

*Supplementary Certificate.*—Keeper of Botany, British Museum (Natural History). Author of "A Comparison of the Arctic and Antarctic Marine Floras" (with Miss Barton) (*Phycological Memoirs*, part iii.); "A New Part of *Pachythea*" (*ibid.*); "On the Reproduction of some Marine Diatoms" (*Proc. Roy. Soc. Edin.*, 1897); "Introduction to the Study of Seaweeds," 1895.

#### FRANCIS HENRY NEVILLE,

M.A., College Lecturer. Fellow and Lecturer in Natural Science, Sidney College. Fifteenth Wrangler, 1871. Author of "Recent Progress in the Study of Alloys" (*Science Progress*, vol. iv. Nos. 20, 21); joint author with Mr. C. T. Heycock of the following:—"On a Simplified Form of Apparatus for Determining the Density of Ozone" (*Proc. Camb. Phil. Soc.*, vol. v.); "Lowering of the Freezing Point of Tin by the Addition of other Metals" (*Proc. Chem. Soc.*, No. 65, 1889); "Lowering of the Freezing Point of Sodium by the Addition of other Metals" (*Trans. Chem. Soc.*, vol. lv., 1889); "Molecular Weights of Metals when in Solution" (*ibid.*, vol. lvii.); "Freezing Point of Triple Alloys of Gold, Cadmium, and Tin" (*ibid.*, vol. lix.); "Lowering of the Freezing Points of Cadmium, Bismuth, and Lead, when alloyed with other Metals" (*ibid.*, vol. lxi.); "Isolation of a Compound of Gold and Cadmium" (*ibid.*); "Freezing Point of Alloys, in which Thallium is the Solvent" (*ibid.*, 1894); "Freezing Point of Triple Alloys" (*ibid.*); "On the Determination of High Temperatures by means of the Platinum Resistance Pyrometers" (*ibid.*, 1895).

#### H. ALLEYNE NICHOLSON,

M.D. (Edin.), D.Sc., Ph.D., F.G.S. Regius Professor of Natural History in the University of Aberdeen. Swiney Lecturer on Geology in the British Museum, 1877-81, 1890-94. Formerly Professor of Natural History in the University of Toronto, 1871-74; afterwards in the University of St. Andrews, 1875-82. Has devoted himself specially to the study of Palæontology. The following are the titles of some of the more important of his numerous published contributions:—"Manual of Palæontology" (third edition); "Invertebrata," 1889; "Monograph of the British Stromatoporoids," 4to, 234 pp., 28 plates, 1885-92; "The British Graptolitidæ," 1872; "The Palæozoic Tabulate Corals," 1879; "On Monticulipora and its Subgenera," 1881; "Reports on Palæontology of the Province of Ontario," 1874-75; "Silurian Fossils of Girvan," 1881 (jointly with R. Etheridge, jun.); "Bibliography of N. American Invertebrate Palæontology" (with Prof. C. A. White), 1878; "Report on Silurian and Devonian Fossils of State of Ohio," 1875. He has also published numerous separate memoirs on the Graptolitidæ, the Stromatoporoids, the Palæozoic Corals, the Monticuliporoids, the Palæozoic Polyzoa, and certain obscure

organisms which contribute largely to form some palæozoic limestones. He has likewise contributed largely to our knowledge of the structure and fossils of the palæozoic rocks of the Lake District of the North of England by his "Essay on the Geology of Cumberland and Westmoreland," 1868; "On the Strata and their Fossil Contents between the Borrowdale Series and the Coniston Flags" (*Quart. Journ. Geol. Soc.*, 1867), jointly with Prof. Harkness; "Additional Observations on the Geology of the Lake District" (*ibid.*, 1866); "Relations between the Skiddaw Slates and the Green Slates and Porphyries of the Lake District" (*Geol. Mag.*, 1869); "On the Lower Portion of the Green Slates and Porphyries of the Lake District" (*Quart. Journ. Geol. Soc.*, 1871); "On the Occurrence of a New Fossiliferous Horizon in the Ordovician Rocks of the Lake District" (*Geol. Mag.*, 1888, conjointly with J. E. Marr); "On the Stockdale Series of the Lake District" (*Quart. Journ. Geol. Soc.*, 1888, conjointly with J. E. Marr); "On the Cross Fell Inlier" (*ibid.*, 1891, jointly with J. E. Marr). Prof. Nicholson was awarded the Lyell Medal by the Council of the Geological Society in 1888, "as a mark of appreciation of his valuable researches among the older palæozoic rocks, both in the Old and the New World, and of his continued and patient investigations into the organisation of some of those obscure forms of life which abounded at the period of the deposition of those rocks" . . . "his researches have given him a high place among Paleontologists," whilst as a teacher and lecturer he is most successful.

#### JOHN MILLAR THOMSON,

F.R.S.E., F.I.C. Secretary of the Chemical Society. Professor of Chemistry and Lecturer on Photography, King's College. Professor of Chemistry, Queen's College, London. Author of the following original papers:—"The Composition and Properties of Ancient Glass from Tombs in Cyprus" (*Proc. Phil. Soc.*, Glasgow, 1870); "The Composition of certain Double Salts of Nickel and Cobalt in their relation to Dichroism" (*Brit. Assoc. Rept.*, 1877); "Action of Isomorphous Salts on Supersaturated Solutions of other Salts" (*Journ. Chem. Soc.*, 1879); "Action of Constituent Salts on Supersaturated Solutions of Double Salts and Mixtures" (*ibid.*, 1882). Author of the following published lectures and papers:—"The Position of Chemistry in a Technical Education" (*Journ. Soc. of Arts*, 1878); "Solution and Crystallisation" (Glasgow Science Lecture Association, 1879); "The Composition and Properties of certain Pigments" (Cantor Lectures, *Journ. Soc. of Arts*, 1885); "Suspended Crystallisation" (*Proc. Roy. Inst.*, 1886); "The Chemistry of Putrefaction and Antiseptics" (Cantor Lectures, *Journ. Soc. of Arts*, 1887). Distinguished as a lecturer and teacher in Chemistry.

#### FREDERICK THOMAS TROUTON,

Sc.D. (Dubl.), M.A. Assistant to Erasmus Smith's Professor of Natural Philosophy in the University of Dublin. Teacher of Experimental Physics. Discovered the law connecting the latent heat of vaporisation and molecular weights of bodies known as "Trouton's law" and experimentally determined the directions of vibration of electric and magnetic force in plane polarised light. He has made other important observations on the phase of secondary waves and on the influence of the size of the reflector in Hertz's experiment. Author of:—"On Molecular Latent Heat" (*Phil. Mag.*, vol. xviii.); "Repetition of Hertz's Experiments and Determination of the Direction of the Vibrations of Light" (*NATURE*, vol. xxxix.); "Experiments on Electromagnetic Radiation, including some on the Phase of Secondary Waves" (*NATURE*, vol. xl.); "Multiple Resonance obtained with Hertz's vibrations" (*NATURE*, vol. xli.); "On the Acceleration of Secondary Electromagnetic Waves" (*Phil. Mag.*, vol. xxix.); "The Influence of the Size of Reflector in Hertz's Experiment" (*Phil. Mag.*, vol. xxxii.); "Some Experiments to Determine Wave Velocity in certain Dielectrics" (*Rept. Brit. Assoc.*, 1890); "On Thermo-Electric Currents in Single Conductors" (*Proc. Roy. Dubl. Soc.*, 1886); "On Temporary Thermo-currents in Iron" (*Rept. Brit. Assoc.*, 1889); "On the Motion under Gravity of Fluid Bubbles through Vertical Columns of Liquid of a Different Density" (*Proc. Roy. Soc.*, vol. liv.); "On the Motion of a Body near Points of Unstable Equilibrium and on the same when capable of Internal Vibration" (*Proc. Roy. Dubl. Soc.*, 1888); "On a convenient Method of obtaining any required Electrical Potential for Use in Laboratory Teaching" (*ibid.*); "On the Control Supply Pipes

have on Reeds" (*ibid.*); "A Coefficient of Abrasion as an Absolute Standard of Hardness" (*Rept. Brit. Assoc.*, 1880); "On the Use of a Permanently Magnetised Core in a Telephone" (*Phil. Mag.*, vol. xxxiv.); "On Ohm's Law in Electrolytes" (*Rept. Brit. Assoc.*, 1887-88), jointly with Prof. Fitzgerald; "A Method of Determining the Specific Induction Capacity of Dielectrics" (*Phil. Mag.*, vol. xxxiii.), jointly with Mr. W. E. Lilly.

#### HERBERT HALL TURNER,

M.A., B.Sc. Formerly Fellow of Trinity College, Cambridge. Savilian Professor of Astronomy, Oxford. Secretary to the Royal Astronomical Society. Late Chief Assistant at the Royal Observatory, Greenwich, 1884-94. Author of various papers, among which may be mentioned: "On the Correction of the Equilibrium Theory of Tides for the Continents" (with Prof. G. H. Darwin) (*Proc. Roy. Soc.*, vol. l.); "Report of Observations of the Total Solar Eclipse of August 29, 1886" (*Phil. Trans.*); "On Mr. Edgeworth's Method of Reducing Observations relating to Several Quantities" (*Phil. Mag.*, vol. xxiv.); "On Mr. Marth's Intersects" (*Monthly Notices*, vol. xvi.); "Observations for Coincidence of Collimator at Royal Observatory, Greenwich" (*ibid.*, vols. xvi. and liii.); "On the Variations of Level and Azimuth of the Transit Circle at Royal Observatory, Greenwich" (*ibid.*, vol. xvii.); "On the Longitude of Paris" (*ibid.*, vol. li.); "On Stellar Photography" (*ibid.*, vols. xlix. and lix.); "On the R.-D. Discordance" (*ibid.*, vols. liii., liv., and *Memoirs Roy. Astron. Soc.*, vol. li.); "On New Forms of Levels" (*Monthly Notices*, vol. lii.); "Comparison of the Cape (1880) and Greenwich (1880) Star Catalogues" (*Memoirs Roy. Astron. Soc.*, vol. li.); "On the Reduction of Measures of Photographic Plates" (*Monthly Notices*, vol. liv.).

#### EDWARD JAMES STONE, F.R.S.

THE distinguished astronomer, whose name stands at the head of this notice, and whose loss will be regretted in many scientific circles, played a very prominent part in the history of astronomy during the last forty years. Although he took an active, and often a foremost, place in all the astronomical problems that have aroused attention during this period, he was more conspicuously attached to the astronomy of position, and it was by his devotion to meridian observations that his reputation was mainly won. The early training which he received under Airy, at Greenwich, whither he went on leaving Cambridge in 1860, contributed to this choice. At that time the results obtainable by photography and spectroscopy were quite undeveloped, and the lines on which the Greenwich Observatory then worked were such as to ensure a devotion to accuracy, and the appreciation of the value of star catalogues. All who have since had occasion to use the star places which Mr. Stone published, whether from the Cape, or from the Radcliffe Observatory, have reason to be grateful for that training, which, resulting in his adherence to the methods that he early acquired, led to the production of such admirable work.

In connection with his meridian observations, Mr. Stone had, from time to time, published memoirs on the value of the constants of nutation and refraction, which, though they have not displaced the values assigned by other astronomers, have yet testified to his industry and illustrated his power of conducting a searching discussion into large masses of observations, possessing varying degrees of accuracy. He also largely identified himself with inquiries into the proper motions of stars, the systematic differences between stellar catalogues, the motion of the solar system in space—all questions which demand long numerical calculations, and the values of whose final results depend upon the maintenance of rigorous accuracy in the computations.

In striving to estimate the loss to science caused by the death of the Radcliffe Observer, we give prominence to his meridian work. We recognise the fact that the old