

of the American Museum of Natural History, New York. He was until lately professor of geology and zoology at Stellenbosch, South Africa, and keeper of fossil vertebrates in the South African Museum, Cape Town.

Prof. Dr. Viktor Christian, keeper of the Natural History Museum at Vienna: a distinguished authority on anthropology.

Dr. C. J. Davison, of the Bell Telephone Laboratories, New York. He is notable for his work on thermionics and electron physics; Dr. George A. Dorsey, of New York, an authority on physical anthropology and ethnology, and curator of anthropology in the Field Museum of Natural History in New York.

Prof. A. von Eiselsberg, professor of physiology at the University of Vienna. He attends the meeting as representing Gesellschaft Deutscher Naturforscher und Aerzte, which is the German counterpart of the British Association.

Prof. Dr. W. J. de Haas, Natuurkundig Laboratorium, Rijks-Universiteit, Leyden, Holland, well known for his work on electric conductivity; Dr. Jul. Hartman, of Copenhagen, one of the leading younger Danish physicists; Prof. Olaf Holtedahl, Geolog.-Palæontol. Inst., at the University of Oslo, Norway, one of the leading authorities in Scandinavia on the palæontological side of geology.

Dr. John af Klercker, of Skanor, Sweden, a generous and public-spirited Swede of high scientific attainments, the foremost authority on the ethnology of Sweden; Prof. Douglas W. Johnson, of Columbia University, New York, a distinguished geographer, working mainly on the physiographical side, surface movements, relief, coastal changes, etc.; Dr. H. Spencer Jones, H.M. Astronomer, Royal Observatory, Cape Town.

Prof. A. E. Kennelly, professor of electrical engineering in Harvard University. He is attending the meeting as representing the American Association for the Advancement of Science.

Dr. A. Loir, conservator of the Museum of Natural History at Le Havre. He is attending the meeting

as representing l'Association Française pour l'Avancement des Sciences; Prof. V. I. Lubimenko, of Leningrad.

Prof. C. E. McClung, professor of zoology at the University of Pennsylvania, Philadelphia, who is widely known for his work on chromosomes, and as the organiser of the service of *Biological Abstracts* designed to assist biologists in keeping abreast of new work; Dean S. Lailer Mathews, of the Divinity School, Chicago, one of the most eminent ecclesiastics in America with a European reputation; Prof. N. Maximow, of Leningrad, whose work on fungi and applied botany ranks high in scientific circles; Prof. Th. Mortensen, of the Zoological Museum, Copenhagen.

Prof. Y. Ogura, of Tokyo, distinguished by his work on fossil plants.

Prof. J. Reinke, emeritus professor of botany in the University of Kiel.

Prof. Johannes Schmidt, of the Carlsberg Museum, Copenhagen, whose researches on the life history of the eel are known to all biologists; Prof. O. Stern, of the Institut für physikalische Chemie, Hamburg, who has done important work in various branches of physical chemistry; Dr. F. L. Stevens, of the Department of Botany, University of Illinois, a distinguished economic botanist and an authority in plant pathology, diseases of food-plants, with special application to agriculture. He attends the meeting as representing the American Association for the Advancement of Science; Prof. F. E. Suess, of the Geological Institute, University of Vienna, famous for his work on tectonics, carrying on that of his father, the late Prof. Edouard Suess, whose work on "The Face of the Earth" is a standard classic.

Prof. Vuylsteke, of Brussels, who was formerly a professor at the University of Louvain. He became an honorary corresponding member of the British Association in 1886, having attended the meeting at Aberdeen in 1885.

Prof. P. Zeeman, of Amsterdam, whose work on magneto optics and related subjects is familiar to all students of physical science.

## Obituary.

DR. CHARLES CHREE, F.R.S.

CHARLES CHREE was the second son of the Rev. Charles Chree, D.D., minister of Lintrathen in Forfarshire, a country parish a few miles from Kirriemuir—Barrie's 'Thrums.' He was educated at the Grammar School, Old Aberdeen, and at the University of Aberdeen, where he was awarded the gold medal as the most distinguished graduate in arts of his year. Like many other Aberdeen students, he decided to complete his studies at Cambridge, but his scholarship was so wide that he had difficulty in making up his mind whether to pursue the study of mathematics and physics or to become a classical scholar, as he had taken a high place in classics at Aberdeen. He once told the present writer that what finally decided him was the fact that his mathematical rivals seemed less formidable than the classical ones.

Chree gained a mathematical scholarship at King's College, Cambridge, and rapidly came to the front as a leading mathematical physicist. His

degree of sixth wrangler in 1883, distinguished though it was, scarcely represented his ability. A serious illness originating in disease of the bone and necessitating amputation of a thumb prevented him from working for many months, and delayed his taking the Tripos as he had originally intended in the preceding year. He also took a first class in Part 2 of the Natural Sciences Tripos, taking geology as a subsidiary subject. His election to a fellowship at King's College followed in 1885, and in 1890 he was re-elected to a research fellowship.

During his stay at King's, Chree wrote many important papers, most of them on the somewhat abstruse subject of mathematical elasticity. The excellent work he did can be seen by looking up the many references to his name in Love's standard treatise on elasticity. He did good work at the Cavendish Laboratory, but at that time there were not many openings for research physicists, and the theory of elastic solids was not a subject which appealed to those who appointed university professors.

In 1893, Chree was elected Superintendent of Kew Observatory, and until he retired from this post in 1925, he devoted himself to the study of terrestrial magnetism, atmospheric electricity, and allied subjects. Under his direction Kew attained the leading position amongst the magnetic observatories of the world. Until the National Physical Laboratory took over the work, Chree was responsible for the testing of thousands of chronometers, watches, clinical thermometers, and similar instruments.

During recent years Chree was president of the Section for Terrestrial Magnetism and Atmospheric Electricity of the International Commission for Geodesy and Geophysics. The immense amount of work involved in studying the vast records of observations made for more than a hundred years can only be appreciated by few. Yet Chree never spared himself in his unflinching and unflinching search for truth. He always weighed evidence fairly, and never attempted to neglect those portions of it which failed to support the current theory. No one appreciated more than he did the vital importance of the researches now being made into the constitution of matter, and no one recognised more fully the futility of hoping ever to attain finality.

In his presidential address to the Physical Society in 1908, Chree mentioned the great practical utility of eminent men of science formulating theories on matters of general interest. For example, he mentioned Kelvin's theories of the internal heat of the earth and the age of the sun's heat. But he regarded these theories as scientific poetry, just as, in a somewhat similar way, Kelvin himself regarded Fourier's 'Theory of Heat' as a mathematical poem. It is the privilege of the young to dream dreams, and Lord Kelvin and many other scientists were always young.

In 1916, Chree gave the seventh Kelvin Lecture to the Institution of Electrical Engineers, taking as his subject "Terrestrial Magnetism"; atmospheric electricity had been discussed fully by Lodge in a preceding Kelvin lecture. Amongst other matters he discussed Maunder's recently enunciated 27-day period. He came to the conclusion that we are justified in saying that if a certain day is disturbed, then the days from 25 to 30 days later have more than the usual chance of being disturbed. The 27th day is that one on which the probability of disturbance is a maximum. A great deal has yet to be done in unravelling the exact nature of the relation between sunspots and magnetic phenomena; as he says in his monograph on "Terrestrial Magnetism" (1912): "We may perhaps at present be in the same position as medical science would be in if no distinction were recognised between small-pox, chicken-pox, and measles. In such circumstances the death-rate from eruptive diseases might well appear arbitrary. Astronomers presently may find it possible to recognise different types of sun-spots, and a magnetic relationship may then become conspicuous."

Chree was elected a fellow of the Royal Society in

1897. He received the degree of Sc.D. from Cambridge in 1895 and the Hon. LL.D. of Aberdeen in 1898. He was awarded the Hughes Medal of the Royal Society and a Watt Medal by the Institution of Civil Engineers. He was a past president of the Royal Meteorological Society and devoted a great amount of time to the various scientific societies to which he belonged. He was by far the most conscientious referee the present writer ever knew; no matter how long or how difficult the paper, he would referee it thoroughly.

To the staff at Kew Chree was *persona grata*; one of them, R. S. Whipple, who was with him for twelve years, was the son of Chree's predecessor, as was also his successor, F. J. W. Whipple. It would take many pages to make even a brief résumé of Chree's scientific work, which includes about a hundred and fifty valuable papers communicated to the *Philosophical Transactions* and *Proceedings of the Royal Society*, the *Philosophical Magazine*, the journals of many societies, etc.

In his domestic life Chree was happy, his sister presiding over his house in Richmond, and his brother, Dr. William Chree, K.C., a well-known member of the Scottish bar, accompanying them on holidays. At Cambridge Chree was a good tennis player, and he was fond of cycling and golf. He and his brother were trout fishers from their earliest days and had spent holidays fishing in Norway. When the last summons came early this year, Chree was in full bodily and mental vigour, and after finishing so far as possible the work on which he was engaged, he patiently and most bravely waited for the end, which came on Aug. 12. His work lives and will continue to live, and will make the path easier for coming generations. A. R.

#### BARON ANATOLE VON HÜGEL.

BARON ANATOLE VON HÜGEL was born at Florence on Sept. 29, 1854; he was the second son of Charles, Baron von Hügel, his mother being the daughter of General Farquharson. His father was a distinguished soldier, diplomat, and man of science, who was awarded the Patron's Medal of the Royal Geographical Society in 1849 for his travels in Kashmir; he was also a horticulturalist of European fame. Thus inheritance, example, and environment shaped Anatole's future life.

In 1874 Anatole von Hügel was sent by his doctor on a voyage to Australia, and while in Australia, New Zealand, and other islands he collected natural history specimens, and in 1875 went to Fiji to collect birds. Against advice he penetrated into the interior of Viti Levu, and though the natives were in a state of great unrest, he made friends with them and became much interested in what they did and made, winning their confidence and affection by his sweet, simple disposition. Sir Arthur Gordon (later Lord Stanmore) had just been appointed the first Governor of Fiji, and Alfred Maudslay was also there at that time. All three