

many months there are in the year does not exist, and in some cases the reckoning by moons is not even extended to the whole year. There is a time when nothing particular happens and nobody takes the trouble to observe or name the moons; such a period is, for instance, the depth of winter in the far north. It is next realised that the succession of seasons is intimately connected with the motion of the sun. In northern countries it is noticed by people having a fixed dwelling-place that as midsummer is drawing near the sun is rising further and further north until a limit is reached. In this way the date of the summer solstice; and similarly that of the winter solstice, are determined, and a rough idea of the length of the year is obtained, and is improved by observing the heliacal risings of

certain stars. It is thus found that the year is longer than twelve moons, and shorter than thirteen, and the next problem is how to make the lunar months fit into the solar year by the occasional interpolation or omission of a month. This is the beginning of scientific chronology as we see it arise and developed among the Babylonians and the Greeks.

Prof. Nilsson's valuable work was written by him in Swedish, and translated into English by a colleague in the University of Lund. The translator has followed the original closely, sometimes too closely, and he uses some curious expressions, such as "the phases of the stars," or the "shifting year" of the Egyptians (meaning their vague year). But these are trifling faults in an otherwise excellent book.

Obituary.

PROF. A. W. REINOLD, F.R.S.

ARNOLD WILLIAM REINOLD, who died on April 11, was born at Hull on June 19, 1843, and was the son of John Henry Arnold Reinold, a shipbroker at that place. He was educated at St. Peter's School, York, and matriculated at Brasenose College, Oxford, in 1863, as an open Somerset scholar. He had a distinguished career as a mathematician, obtaining the University junior and senior mathematical scholarships, first classes in mathematics, moderations, and finals, and in the School of Natural Science. In 1866 he was elected to a fellowship at Merton, and in 1869 became Lee's reader in physics and a senior student at Christ Church. He was the late Prof. Clifton's first demonstrator in the Clarendon Laboratory, being succeeded by A. W. Rucker.

In 1873 Reinold was appointed professor of physics at the Royal Naval College, Greenwich. His life-work was done here, as he held the post for thirty-five years, retiring in 1908 on reaching the age limit, and being made a C.B. in 1911. This professorship was a new appointment, so that a laboratory and courses of physics had to be organised; the laboratory buildings were part of the sick quarters of the old hospital, and finally occupied a considerable amount of space. Besides our own naval officers, gunnery and torpedo lieutenants, naval architects and engineers, etc., there were occasionally foreign students working here, and Reinold received a medal from the Emperor of China in recognition of work with Chinese students. It was at Greenwich that he collaborated with Rucker in a series of investigations on the properties of liquid films, the first paper appearing in the Proc. Roy. Soc. for 1877, and the final one in the Phil. Trans. for 1893, with several between. He was a lecturer at Guy's Hospital for most of his time at Greenwich, and a joint editor for several editions of Ganot's "Physics."

Reinold was signally devoid of any hobbies, and seemed to have no recreations. His interests

apart from his work were mainly in the Physical Society, of which he was an original member, if not one of the founders, acting as secretary from the beginning until 1888, when he became president for two years; and in the Royal Society, of which he became a fellow in 1883, and on the council of which he served for some years. He was a sensitive man with a charming manner, and was liked by all who came in contact with him, being always courteous and gentlemanly in the fullest sense. Reinold retained his activities, mental and otherwise, to the end, which occurred very suddenly; he had just undertaken to write an obituary notice for the Royal Society of his old chief, Prof. Clifton. Married about 1866 to Miss Marian Studly Owen, he leaves a family of one daughter and three sons.

W. N. S.

ROBERT ALLEN ROLFE.

SYSTEMATIC botanists, and especially orchidologists, have sustained a grievous loss by the death on April 13, after rather more than three months' illness, of Mr. R. A. Rolfe, who, for upwards of forty years, was an assistant in the Herbarium of the Royal Botanic Gardens, Kew. Mr. Rolfe was born at Ruddington, near Nottingham, on May 12, 1855. He joined the Kew Herbarium staff in 1880, as a result of a public competitive examination, having previously gained some experience among cultivated plants in the famous gardens at Welbeck Abbey, Notts, and at Kew. It was anticipated that he would retire from service next month, and a visit to Central America was projected, for which a grant in aid had actually been voted by the Government Grant Board of the Royal Society.

Mr. Rolfe's contributions to botanical literature have been numerous and important. For many years past he was the generally accepted authority in this country on the Orchidaceæ; it might truthfully be said that his reputation was world-wide. He founded the *Orchid Review* in 1893, and edited and wrote to a large extent the twenty-eight

annual volumes published. He paid attention to several widely different groups of plants, while he was keenly interested in the problems concerning hybridisation.

Mr. Rolfe was elected an associate of the Linnean Society in 1885. He received many distinctions. In February last he was awarded the Victoria medal of the Royal Horticultural Society and the gold medal of the Veitch Memorial Trust Fund. Mr. Rolfe's work was well done. He was esteemed by all who knew him, and his many amiable qualities won for him the affectionate regard of his numerous colleagues and friends.

PROF. ISAO IJIMA, who died of apoplexy in Tokyo on March 14, was born in 1861, and received his training as a zoologist in Tokyo from Prof. C. O. Whitman; and his first papers, on the leech *Nepheleis*, were contributed to the *Quarterly Journal of Microscopical Science* and *Zoologischer Anzeiger* (1882). Continuing the study of various worms, he was attracted to the laboratory of Leuckart; but after his return to Japan, about 1890, he began a long series of researches on the

beautiful Hexactinellid sponges of the neighbouring seas. In a series of papers published in the *Journal of the College of Science of Tokyo University*, Ijima threw light on the structure and development of many of these siliceous sponges. On the death of Mitsukuri, Ijima became senior professor of zoology at Tokyo University. Though administrative duties checked the flow of papers, he had prepared the manuscript of a large monograph on the Hexactinellidæ, which, it is to be hoped, will soon see the light. Ijima was a good shot, a keen fisherman, an all-round naturalist, and a charming companion. He leaves many friends and a succession of distinguished pupils.

THE death is announced, in *Science* of April 8, of DR. JOHN IRIDELLE DILLARD HINDS, at the age of seventy-three years. Dr. Hinds was one of the founders of the American Chemical Society, and for forty years acted as professor of chemistry, first in Cumberland University and later in the University of Nashville and Peabody College. At the time of his death he was chemist to the Geological Survey of Tennessee.

Notes.

THE first of the two annual soirées of the Royal Society will be held at Burlington House on Wednesday, May 11.

In consequence of industrial disturbances, the Congress of Radiology, fixed for April 14 and following days, has been postponed until the spring of 1922.

It is announced that the King has approved the conferment of the honour of knighthood on Dr. James Craig, King's professor of medicine at Trinity College, Dublin, and president of the Royal College of Physicians of Ireland.

THE *British Medical Journal* for April 16 states that the Government of Panama has assigned the sum of 10,000,000 dollars for the erection in Panama of the proposed Institute for Tropical Diseases in memory of the late Surg.-Gen. Gorgas.

NOTICE is given by the Ministry of Agriculture and Fisheries that applications for grants in aid of scientific investigations bearing on agriculture will be received until May 15 next. Copies of form A.230/I., giving particulars of the conditions under which the grants will be made, are obtainable from the Secretary of the Ministry of Agriculture and Fisheries, Whitehall Place, S.W.1.

It is announced in *Science* for March 25 that the American Engineering Council has joined with the National Association of Manufacturers, the American Patent Law Association, the American Chemical Society, and the National Research Council in a movement to bring about reforms in the United States Patent Office. A committee on patents has been appointed which is representative of mechanical, electrical, civil, mining, and metallurgical engineers in the United States in order to deal with this subject.

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THE subjects for discussion at the seventh International Fisheries Congress, which will be held at Santander, in Spain, on July 31-August 8, are:—

(1) Oceanography, physical, biological, and meteorological; (2) technique of sea- and river-fishing; (3) fish, oyster, and mussel culture; (4) the industrial exploitation of the produce of the fisheries; (5) social problems; and (6) statistics and legislation. Papers for consideration ought to be sent to the Secretary-General of the Congress (*via* the Ministry of Agriculture and Fisheries) before June 1. The British Fisheries Society (which expects to be in being very shortly) is opening a subscription for the purchase of medals (six at 45s. each and six at 21s. each), and it is proposed that these should be awarded by the society for the two best papers in each of the above sections of the congress. The society invites British writers to submit papers.

THE Faraday Society is organising a general discussion on physico-chemical problems relating to the soil to be held during the afternoon and evening of May 31 in the rooms of the Chemical Society, London, and presided over by Sir Daniel Hall, Chief Scientific Adviser to the Board of Agriculture. The discussion will be opened by Dr. E. J. Russell, director of the Rothamsted Experimental Station, who will give a general survey of the subject. A series of papers dealing with soil moisture, organic constituents, adsorption, and colloidal phenomena will then be put forward as a basis for discussion. It is expected that among those present will be Prof. Sven Oden, of the University of Upsala. Further particulars of the meeting may be obtained from the Secretary of the Faraday Society, 10 Essex Street, London, W.C.2.