

Horne's name will endure beside those of Lapworth and Judd as the men who, by their accuracy of insight and originality of conception, have left their mark most deeply on Scottish geology.

J. W. GREGORY.

MR. W. E. PLUMMER.

By the death, on May 22, of Mr. William Edward Plummer, Director of the Liverpool Observatory, at the age of seventy-nine, there passes an astronomer of a bygone generation who did his full share of work for the science. His work lay in various fields, and it was his fortune to be one of the earliest of those who practise the newer astronomy of the photographic plate and its measurement.

Greenwich Observatory has been the nursery of many who have proved to be competent astronomers and have held responsible positions in other British or Colonial observatories, and Plummer was one of these. In 1864, at the age of fifteen, he obtained employment as a computer in the Royal Observatory, and spent four years, doing the routine arithmetic known as reduction of observations, when he was recommended for a post then vacant in Mr. Bishop's observatory at Twickenham. This was a private observatory built by Mr. George Bishop, a successful business man, at his house in Regent's Park, London, made famous in the middle of last century by the labours of Dawes, Hind, and others, whose services he retained consecutively as observers, which on the death of the founder in 1861 was removed to Twickenham by his son George Bishop, junior. In 1853, Hind, who was then in charge and had been specially active in the discovery of minor planets, was appointed Superintendent of the *Nautical Almanac Office*, but he nevertheless continued to exercise a general superintendence of the observatory, the actual observers being in succession Pogson, Vogel, Marth, Talmage, and, after 1868, W. E. Plummer.

Though Hind was then acting in an advisory capacity, it seems evident that Plummer was responsible for the actual conduct of the observatory, and to him, therefore, must be given the credit for the results, though he always acknowledged his indebtedness to Hind for whatever skill he had as an observer. It was an avowed principle of the elder Mr. Bishop that the observatory "should do something," and during Plummer's tenure of office the subject selected was apparently cometary astronomy, and so early as 1870 a paper was contributed to the *Monthly Notices of the Royal Astronomical Society*, "On the Orbit of the Comet of 1683," that Plummer had recomputed from Flamsteed's observations at Hind's suggestion. This was followed by other papers of similar kind, and though the preparation and publication of engraved charts of the stars within 3° of the ecliptic, which had been a staple work of the observatory, was continued, the computation of elements of orbits of comets, ephemerides, and other cometary investigations, formed a large part of Plummer's work during the six years he was at Twickenham.

Mr. Bishop's observatory was closed at the end of 1876, but in 1874, Plummer had been chosen by the Rev. Charles Pritchard, Savilian professor of astronomy at Oxford, as his assistant in the University Observatory which was then being built, his appointment dating from September 1874, though he began to give help on the completion of the establishment earlier. His work at Oxford was naturally the carrying out of the researches initiated and organised by the professor; measures of photographs of the moon, wedge photometry that was used for the determination of the magnitudes of all naked-eye stars from N.P.D. 0° to 100° , which was published as the "*Uranometria Nova Oxoniensis*," and photographic stellar parallaxes, all of which were pieces of work of a novel kind requiring skill and resource in their prosecution. The last named may be the first research of the modern type which depends on the measurement of photographic plates. He represented the Oxford University Observatory at the meeting of the Permanent Committee of the Astrogographic Chart in Paris in 1891, when decisive points for beginning the work were settled.

There is ample evidence of the esteem in which Plummer was held by Prof. Pritchard and how much his work was appreciated. The University of Oxford recognised the value of his services by bestowing on him the honorary degree of M.A. Two rather extensive investigations were made by him and published under his own name whilst at Oxford; in the *Monthly Notices* for February 1881 he discussed the motion of the Companion of Sirius, comparing its observed positions with those given by the orbit predicted from the variations in the position of the primary, and arrived at the conclusion, before suggested, that the small star observed may not be actually the perturbing body; the other was a determination of the solar motion from stellar proper motions, published in vol. 47 of the *Memoirs R.A.S.*, which modified previous results similarly obtained only slightly.

In 1892, the year before Pritchard died, Plummer was invited by the Mersey Docks and Harbour Board to be Director of its observatory at Bidston, Birkenhead, and here he remained until the end of his life. The duties of the post are mainly connected with the needs of the port, and include the determination of time, the testing and rating of chronometers for the mercantile marine, the keeping of meteorological records, and attention to a seismograph. But besides the instruments that these tasks require, the observatory possesses an 8-inch equatorial, and for many years this was used for the observation of comets as they appeared, of occultations of stars, and for other purposes, but circumstances of the War and Plummer's advanced age prevented such observations recently. He contributed the annual report on cometary astronomy to the *Monthly Notices* up to the year 1912, and wrote papers on the same subject for the local astronomical society, in which he took much interest, being its president for several years. He held the honorary position of reader in astronomy in the University of Liverpool, and

his efforts in the cause of local scientific education received recognition by the award to him of the Kingsley Medal by the Chester Literary and Philosophical Society.

Plummer took an early interest in seismology, and was for many years a member of the Seismological Committee of the British Association. Before the beginning of his final illness, he co-operated actively in the foundation of the Tidal Institute, the work of which is already proving to be of importance.

Mr. Plummer leaves a family of two sons and a daughter: the elder son, Prof. H. C. Plummer, was Royal Astronomer of Ireland in the years 1912-21, and is now professor of mathematics in the Military College of Science, Woolwich.

DR. EDGAR WILLIAM WILLETT, who died at Hartfield, Sussex, on April 12, aged seventy-two years, was a son of the late Mr. Henry Willett of Brighton, and inherited his father's interest in geology. In 1881 he explored the mammal deposit in the Purbeck Beds at Swanage, and read a paper on a jaw of *Triconodon* to the Geological Society. In 1901 he investigated the occurrence of glossy flint implements in a gravel pit in Savernake Park, and read a paper on the subject to the Royal Anthropological Institute.

WE regret to announce the following deaths:

Mr. Cyrus C. Adams, of New York, geographer and formerly associate editor of the *Bulletin* of the American Geographical Society, aged seventy-eight years.

Dr. Bird T. Baldwin, head of the Iowa Child Welfare Research Station at the University of Iowa, and a past secretary and chairman of Section Q of the American Association for the Advancement of Science, on May 12, aged fifty-three years.

Prof. Gaetano Lanza, Cavaliere dell' Ordine dei Santi Maurizio e Lazzaro, emeritus professor of theoretical and applied mechanics at the Massachusetts Institute of Technology, on Mar. 21, aged seventy-nine years.

Prof. R. Lepetit, president of the Italian Society of Chemical Industry, known for his work on the synthesis of indigo and for the production of 'Italian green,' on Mar. 27, aged sixty-two years.

Prof. I. P. Roberts, formerly professor of agriculture, dean of the New York State College of Agriculture, on Mar. 17, aged ninety-four years.

Dr. Joseph Nelson Rose, associate curator of botany in the U.S. National Museum, an authority on the Cactaceae and other Mexican and South American plants, on May 4, aged sixty-six years.

Prof. Arthur Schönfliess, of the University of Frankfurt on Main, the well-known mathematician, author with Prof. Nernst of "Einführung in die mathematische Behandlung der Naturwissenschaften," which has run into ten editions, on May 27, at the age of seventy-five years.

News and Views.

THE physical inheritance of man having been placed in proper relation to its animal ancestry, Sir Arthur Keith turns to man's mental attributes, and at the University of Manchester on May 9 delivered what may be regarded as a supplement to his British Association address at Leeds. The spiritual characteristics of mankind have always proved the most obstinate to be enrolled under the banner of evolution, and Sir Arthur's frank statement of his conclusions has given rise to much newspaper controversy, some of which scarcely did justice to his views. The Manchester lecture appears under the title "Implications of Darwinism" in the *English Review* for June; but the title might as well have been "The Uniqueness of Man's Spiritual Attributes," for care is taken to show that the crude mental inheritance derived from his animal ancestry is overlaid in man by a more perfected control. It comes to this: that while man's brain, and with it man's mentality, are grounded upon those of his ancestral apes, the balance has been altered by the expansion and finer development of the brain matter, so that what are looked upon as higher centres predominate over the lower or crude animal centres.

SOME of the specific points made by Sir Arthur Keith may be instanced. He rejects duality in the brain: there is here no compound of substance and spirit, but a living organ and its essential manifestation—"mind, spirit, soul are the manifestations of a living brain just as flame is the manifest spirit of a burning candle." Human nature is in its basis animal. There is the same sort of drive induced by

the primary instincts of hunger or sex, and the more primitive the race of mankind the more bestial is the response to the urge. But repression is the normal means of human progress, and the higher the stage of civilisation the more the elemental instincts are held in control by the development of the higher powers of reason. Yet a complete rationalising of mankind is impossible and undesirable, since a complete subordination of the primary instincts would mean race suicide. "Our aim should be not to eradicate the animal propensities within us, but to bend them so as to serve best the interests of both individual and country."

ALTHOUGH the British School of Archaeology in Jerusalem was established in 1919 only, it has already done much valuable work in archaeological exploration. The discovery of the Galilee skull is alone of sufficient importance to justify its existence. It has, however, done much more. As the headquarters of British students and in some sort a centre of British society in Palestine, it has both served science well and also enhanced British prestige among the people in a way that is difficult for those unacquainted with conditions in the Near East to appreciate. Under the Directorship of Prof. John Garstang, the School was also responsible for the functions of a department of antiquities, but the double duties were made distinct in 1926, when a separate organisation for the record and preservation of archaeological remains was set up. In the following year the Government grant of £500, upon which the School had been largely dependent, was discontinued. Now, therefore, the School is entirely dependent upon