matter of fact, this constant when derived from the observed zenith distances of known stars is 40″, but this amount, of course, refers only to the difference of flexure at the eye and object-glass ends. Direct measurements have, however, been made of the deflection of either end. For this purpose a small telescope was attached to the cradle of the instrument, with which a scale placed at either end could be read, the instrument being in both a vertical and horizontal position. The result was that the object-glass dropped 5·48 mm., and the eye end 3·22 mm.; when all necessary corrections have been made, this gives a flexure of 34″, a satisfactory agreement with that obtained from observations of stars. This deflection from the straight line was observed at eight different angles with reference to the horizon, and the results are fairly represented by supposing the flexure to vary simply as the sine of the zenith distance.

As regards the light-collecting capacity, it may be mentioned that the satellite of Neptune can be observed in an illuminated field without difficulty, and that the satellites of Mars were observed on fifteen evenings in 1886, a year in which the opposition fell very unfavourably for their observation. Hyperion is visible on a feebly illuminated red field, while Enceladus and Mimas are visible till quite close to the planet's disk. That there are difficulties in the employment of such large telescopes goes without saying: it is, however, satisfactory to notice that the number of evenings on which the telescope cannot be used from bad definition or adverse meteorological conditions is not larger than in the case of the 15-inch equatorial. W. E. P.

SIR WARINGTON W. SMYTH, F.R.S.

MINING has suffered an irreparable loss by the death of Sir Warington Smyth, which occurred suddenly at his house in Inverness Terrace on the 19th inst. He was the eldest son of Admiral W. H. Smyth, F.R.S., and was born at Naples 73 years ago. He was educated at Westminster and Bedford Schools and at Trinity College, Cambridge, where he exhibited great skill as an oarsman, being one of the winning University crew on the Thames in 1839. In that year he graduated, and obtained a travelling fellowship which enabled him to devote more than four years to a journey through the chief mining districts of Europe, and thus to lay the foundation of that practical knowledge which subsequently made him the greatest British authority on mining matters. Continental travelling in 1839 was by no means the easy matter it is now, and his journey through the Harz, Saxony, Austria, Hungary, Turkey, and Asia Minor, was not devoid of risk and adventure. As a result of his travels through the European and Asiatic dominions of the Sultan, he published in 1854 a work entitled "A Year with the Turks." In subsequent years, he visited during his vacations the more important mines of France, Belgium, Spain, Italy, and Norway. His official career began in 1844, when he was appointed by Sir Henry De la Beche to a post on the Geological Survey, and while holding this position he explored and geologically mapped the metalliferous districts of Devon and Cornwall, North Wales, and Ireland, and the coal-fields of Lancashire and Yorkshire, North Staffordshire and Derbyshire. In 1845 he joined the Geological Society, and in 1866 was elected President of that body. For the last 17 years he has acted as foreign secretary, in which post his rare linguistic powers proved of great service to the Society. On the foundation of the Royal School of Mines in 1851, he was appointed the first lecturer on mining and mineralogy. On the reorganization of the School in 1881, he gave up the Chair of Mineralogy, but acted as Professor of Mining until his death. He held the office of inspector of the mines in the Duchy of Cornwall, and in 1857 he was also appointed comptroller of all the mineral properties belonging to the Crown. It would be tedious to enumerate the long list of Royal Commissions and International Exhibitions with which Sir Warington was prominently associated. His report as Secretary of the Jury on the mining industry at the Exhibition of 1862 is a model of what such a work should be, and to his energy on the Council of the Inventions Exhibition of 1885 the success of the mining section was largely due.

In 1879 a Royal Commission was appointed to inquire into accidents in mines and the possible means of preventing their occurrence and of limiting their disastrous consequences. Mr. Smyth was appointed Chairman, and, in order to secure time to attend to the duties of this arduous and honorary office, he resigned the post of Examiner to the Science and Art Department—an office he had held for several years. The Commission ended its work in 1886, and during the seven years it was in existence some thousands of experiments were made, and the Report, covering 858 pages, definitely settled many important questions bearing upon the diminution of accidents in mines.

To his scientific attainments, Sir Warington added singular literary skill. His early classical training enabled him to write with an elegance and vigour unfortunately rare in technical works. He spared no pains, and neglected no details. As a teacher he was very popular with his pupils, his success as a lecturer being due not only to his finished delivery, but also to his skill as a draughtsman, which enabled him to dispense with the aid of elaborate diagrams, and to rely merely on accurate blackboard sketches, which he drew with great rapidity in the presence of his class. His reputation as Professor attracted to the School of Mines students from all parts of the world, and no better evidence of the excellence of his teaching could be adduced than that afforded by the important positions so many of his pupils occupy in the mining world. Of his literary works, the most important is his "Rudimentary Treatise on Coal-Mining"—a standard work, bearing internal evidence of not being mere extracts of books, written in 1867, and now in its seventh edition. Besides this, he wrote the articles on mining for "Ure's Dictionary" and for Stanford's series of "British Manufacturing Industries," 1876.

For his labours on the Accidents in Mines Commission, and for his other public services, he received the somewhat tardy acknowledgment of knighthood on the occasion of Her Majesty's Jubilee. Throughout his life he refused the great pecuniary rewards offered by the commercial branches of mining, and preferred to devote the half-century during which he was engaged in business connected with mines to the service of science and of the State. Although he had been in ill-health for some time, he never neglected his official duties. He died in harness, with a partially corrected examination paper on the table before him. He was buried yesterday at St. Erth, in Cornwall, not far from his home at Marazion, in the centre of the mining district with which he was so long associated. B. H. B.

NOTES.

WITH the consent of the Prince of Wales, the President, the Council of the Society of Arts has awarded the Albert Medal to Dr. W. H. Perkin, F.R.S., "for his discovery of the method of obtaining colouring matter from coal tar, a discovery which led to the establishment of a new and important industry, and to the utilization of large quantities of a previously worthless material."

THE Essex Field Club and the subscribers to the Gilbert Club will hold a meeting at Colchester on Saturday, July 5, in memory of William Gilbert, the founder of the science of