

the archæologist can hope to solve the problems of early human cultures not only in Africa but also elsewhere.

In conclusion, I would like to express my great indebtedness to Mr. Webber and to Messrs. R. W. Hardy and Larsen, who put themselves, their discoveries and vast knowledge of the 'diggings'

entirely at our disposal. To Mr. and Mrs. Hardy we are deeply indebted for hospitality during a particularly inclement week.

¹ Van Riet Lowe, C., "Fresh Light on the Prehistoric Archaeology of South Africa", *Bantu Studies*, 3, No. 4, 388; 1929.

² "The Prehistory of South Africa in Relation to that of Western Europe", *South African J. Sci.*, 29, 756; 1929.

³ Van Riet Lowe, C., "Notes on the Archaeology of Sheppard Island", *Ann. South African Mus.*, 27, 235; 1929.

Tercentenary of Robert Hooke, 1635-1703

OF all the scientific worthies of the seventeenth century, none will be remembered longer than Robert Hooke, whose views and activities influenced the progress of scientific thought and practical physics in an incalculable degree. Somewhat younger than Boyle, Wilkins, Wren, Mariotte, von Guericke and Huygens, but the senior of Flamsteed, Newton, Leibniz and Halley, he belonged to an age in which, in the words of Macaulay, "it was almost necessary to the character of a fine gentleman to have something to say about air-pumps and telescopes". Born when James I was king, Hooke was a schoolboy in Westminster when Charles I was beheaded, a scholar at Oxford when Cromwell was Protector and an assistant to Boyle at the time of the Restoration. As curator, and sometime secretary, he faithfully served the Royal Society during practically all the reigns of Charles II, James II and William and Mary, and died a year after Anne ascended the throne. Affairs of State and Church, however, made little difference to Hooke, and in the main his life was taken up with writing, lecturing and experiment. In the records of the first forty years of the Royal Society, no name is more frequently met with than his, and in his various capacities of curator, Gresham professor of geometry and Cutlerian lecturer on mechanics, he probably delivered more scientific discourses and made more experiments than any other man of his day. His influence was felt both at home and abroad, and the story of his life belongs to the history of our race in the same way as those of his contemporaries Dryden, Locke, Evelyn and Pepys.

Hooke was the son of the Rev. John Hooke, a curate of Freshwater, Isle of Wight, where he was born on July 18, 1635. He was a somewhat delicate child, and was kept at home until his father's death in 1648, when, after a short time with Lely, the portrait painter, he entered Westminster School and thus came under the famous Dr. Busby. Studious and inventive far beyond the average, at eighteen years of age he became a chorister and servitor at Christ Church, Oxford,

and during the next eight or nine years gained the friendship of Wilkins, Ward, Willis, Petty, Boyle and other men of science, whose meetings at Oxford had much to do with the inauguration of the Royal Society in 1660.

The turning point in Hooke's career came in 1662 when, as the Journal Book of the Royal Society records, "Nov. 12, 1662. Sir Robert Moray proposed Mr. Hooke as a curator of experiments to the Society . . . and that Mr. Hooke should come and sit amongst them, and both bring in every day of the meeting three or four experiments of his own, and take care of such others, as should be mentioned to him by the Society". His connexion with the Society was strengthened next year by his election as a fellow, and in 1665 by his appointment to the chair of geometry in Gresham College, where the Society at that time met, and where Hooke lived for the rest of his life. He had already in 1664 been appointed to the lectureship founded by a city merchant, Sir John Cutler, Bt., and thus at thirty years of age Hooke found himself established in surroundings which must have appeared to him as congenial as those at the Royal Institution did to Faraday a century and a half later.

Of Hooke's versatility, originality and inventiveness ample evidence is to be found in his writings, but new and valuable information as to his activities in early middle life is contained in the "Diary", the recent publication of which we owe to Mr. H. W. Robinson and Mr. W. Adams. This diary covers the years 1672-80, when, in addition to his other appointments, Hooke was one of the surveyors of the City of London. The biographical index to the diary contains several hundreds of names, among them most of his scientific contemporaries.

Hooke himself was at once a physicist, an astronomer, an inventor, a mechanician and an architect. To horologists he is known for his application of the balance spring and the invention of the anchor escapement; by engineers he is remembered for his universal joint and his views

on elasticity; as an instrument maker he made improvements in thermometers, barometers, air pumps and microscopes, and he devised sounding apparatus for sailors and calculating machines. He was the first to describe the cellular structure of plants and the first to suggest the use that might be made of fossils in revealing the history of the earth. He had advanced views on gravity, colours and light, respiration, combustion and the nature of heat. His "Micrographia", published when he was thirty years of age, was the first major treatise on the microscope and microscopy. His "Attempt to prove the motion of the Earth" was published in 1674; his "Description of Helioscopes" in 1676; his "Cometa" in 1679. Many of his lectures and writings, however, were only published after his death. They are all full of pregnant suggestions, and as Dr. Singer says: "No Englishman of science has outlined so many and so variously important discoveries".

It was the Great Fire of London in 1666 which led Hooke to become an architect. While the ruins of the city were still smouldering, he produced a plan for rebuilding it. Although his plan was approved by the Royal Society, it was not adopted; but on October 4, 1666, the City made him one of its surveyors. Henceforth much of his time was taken up in attending committees, superintending the rebuilding of houses and designing structures such as the Bethlehem Hospital, Moorfields, Montagu House, which stood on a site now covered by the British Museum, the Merchant Taylors' Hall, and numerous churches and private residences. It was from this work that he accumulated the large sum of money which he intended to bequeath for the purpose of erecting a library, repository and laboratory for the Royal Society, a project which, however, came to nothing owing to his failure to make a will.

"There is a peculiar fascination," said Lord Oxford, "in trying to pierce through the gloom which veils the life-history of some of the most famous of our race." In endeavouring to do this in the case of Hooke, the newly-published "Diary" will be of the greatest interest. Hitherto opinion has been largely influenced by the remark of his biographer, Richard Waller, who said that "his temper was melancholy, mistrustful and jealous, which more increased upon him with his years". Always somewhat of a valetudinarian, Hooke had his share of troubles, and the picture of him as a lonely old bachelor in his somewhat neglected apartments in Gresham's decaying mansion in Bishopsgate Street no doubt is a true one. But in the "Diary" he is seen as a man of forty, mixing freely with his fellows, meeting at many coffee-houses and taverns, discussing a hundred different matters. His friend John Aubrey, the antiquarian, writing about this time, said of him: "He is of middling stature, somewhat crooked, pale faced; and his face but little belowe, but his head is large; his eie is full and popping, and not quick; a grey eie. He has a delicate head of haire, browne, and of an excellent moist curl. He is and ever was very temperate and moderate in dyet, etc. As he is of prodigious inventive head so he is a person of great vertue and goodness."

There is, unfortunately, no portrait of Hooke. Neither is there any monument to him. He died in Gresham College on March 3, 1703, and a day or two later, in the presence of the fellows of the Royal Society, was carried across Bishopsgate Street to St. Helen's and there laid to rest in the chancel. The exact site of his grave is not known, but at the west end of the Nun's Choir of the church is a window of five lights to ten Worthies of St. Helen's, among the names of whom is that of Robert Hooke.

Obituary

Prof. Alice Werner, C.B.E.

WE regret to record the death, which took place at Welwyn Garden City on June 9 at the age of seventy-five years, of Prof. Alice Werner, emeritus professor of Swahili and Bantu languages in the University of London.

If the study of questions relating to the African in Great Britain has been determined largely by the influence of Mary Kingsley, the study of the Bantu languages and mentality as an academic subject owes no less to Prof. Werner. She was born at Trieste on June 26, 1859, and educated at Newnham College. An unusual gift for languages and an

absorbing interest in certain aspects of the mentality of the less-sophisticated peoples drew her to Africa. From 1893 onward, she lived there for some time at first with the Scottish Mission at Blantyre in Nyasaland, and afterwards in South Africa, where she was deeply influenced during her study of the Zulu language and people by the Misses Colenso, the daughters of the famous Bishop of Natal, and laid the foundation for that sympathetic understanding of the Bantu peoples which was such an outstanding feature in her academic and literary work. A second visit to Africa took place in 1911, when she spent two years as Mary Ewart travelling scholar of