

S. A. SAUNDER.

It was with deep regret that we recorded briefly in our last issue the death on December 8 of Mr. Samuel Arthur Saunder, one of our original members, and President of the Association during the Sessions 1902-3 and 1903-4. In him our Association has lost one of its staunchest supporters and one of the most regular attendants at its meetings, in spite of the fact that his presence involved a long and tedious railway journey at the conclusion of the proceedings. Moreover, our meetings are held in that part of the year when a schoolmaster's duties allow but little spare time for hobbies.

Although it was to the Moon that, as an amateur astronomer, Mr. Saunder chiefly devoted his attention, his information regarding all branches of our science was extraordinarily extensive, and enabled him often to add some extremely apt comment when, as President, he rose to close a discussion. He was also

most ready to place his knowledge at the disposal of those who appealed to him for aid.

He chose for his work or, as he would have described it, for his recreation, a task which would have repelled anyone not possessed of his invincible industry. He determined to place our knowledge of selenography—that is, the delineation of the surface of the Moon—on the same kind of accurate foundation as lies at the basis of a terrestrial surveyor's work. In January 1900 he contributed a paper to the *Monthly Notices* of the Royal Astronomical Society, drawing attention to the great uncertainty that attached to our knowledge of the positions of lunar formations, maintaining that it was useless to measure positions from the limb and advocating the use as a datum point of Mösting A, whose position Prof. Franz had established with an uncertainty of less than 100 yards, while 5 miles was the order of uncertainty in points on the maps of the older selenographers. He also gave the first results of his own measurements both at the telescope and on photographic plates, and in Vol. XI. of our *Journal* he described his hopes as to the development of such work, adding valuable formulæ for the determination of the heights of lunar mountains. "I believe," he there writes, "that it will be possible to fix the positions of 5,000 points each with an error of less than a second of arc." Just ten years later this hope was fulfilled, except that rather less than 3,000 points could be well enough recognised for the purpose of such precise measurement, but the probable error of each position was about $0''\cdot1$; that is, about 200 yards on the surface of the Moon. The labour involved, not only in the preparation of the mathematical theory, but also in the tedious mechanical task of numerical reduction where every quantity was a decimal of five figures, is probably inconceivable to anyone who did not see him month after month devoting the leisure hardly won from his duties as a schoolmaster to driving the Brunsviga calculating-machine by which alone the computations could be carried out. The final results will be found in two volumes of the *Memoirs* of the Royal Astronomical Society, while the preliminary papers are contained in Vols. LX. to LXVI. of the *Monthly Notices*. Mr. Saunder's last work was to plot the positions on sheets on which Mr. Wesley is engaged in drawing the surrounding formations. When those sheets are published we shall be in possession of a lunar map, the accuracy of which is not likely to be surpassed for a century to come.

In 1907 he was selected as a member of an International Committee on Lunar Nomenclature, and his proposals were those first dealt with by that committee.

In 1909 he was appointed Gresham Professor of Astronomy; he delivered the last course of his lectures in October, though suffering acutely from the complaint which so soon afterwards caused his death.

It was natural that Mr. Saunder's two presidential addresses should be entirely occupied with the Moon. In the course of that of 1903 he gave a complete history of the mapping of the Moon, and devoted some little time to an exhaustive account of the evidence in favour of change having taken place on the

lunar surface, summing up decidedly in favour of the disappearance of a large crater in Linné. The address of 1904 was a monograph on the photography of the Moon. This was illustrated by a fine set of slides reproduced from the original photographs of which he spoke, covering the whole period from Draper's daguerreotypes to Ritchey's plates taken with the Yerkes 40-inch refractor, and he concluded with a valuable review of Prof. Shaler's book, A comparison of the features of the Earth and Moon.

Mr. Saunder was born in 1852 and educated at St. Paul's School, whence he passed with a scholarship to Trinity College, Cambridge. The state of his health during the tripos affected his success; he was bracketed 14th wrangler, but it was known among his contemporaries that his name might well have been found among the first three on the list. His mathematical attainments soon (1876) obtained for him an appointment as assistant master at Wellington College, even then flourishing though in its youth. Here it was that the main work of his life was accomplished; he instilled a love of science into many of his pupils, who look back with gratitude to the afternoons when he allowed them to use his telescope. More than one member of our Association would also own to a deep sense of the privilege of being permitted to work with him and for him in his *magnum opus*. Of his life at Wellington it was once written "that the esteem and respect in which he is universally held here is due to something deeper than the fact that he is our senior assistant master."

From this sphere of activity he retired in consequence of the age limit last July. He intended to devote his more leisured life to his favourite pursuit, and it adds a note of pathos to his death to think that he had already made arrangements for moving his observatory to Oxford in the early part of this year.

Mr. Saunder was elected a Fellow of the Royal Astronomical Society in 1894, and from 1906 to 1912 he was one of the secretaries, fulfilling the duties of that post, as a colleague once wrote, "with tact, good judgment, and devotion to duty." And it is, perhaps, these last words that strike the keynote of his life and by which he himself would have chosen to be remembered. All who knew him will recall how unsparing of himself he was in fulfilling all his duties and engagements; he was careful and businesslike in all that he did, level-headed, of sterling principles and almost incredible industry. Mr. Saunder was, perhaps, too reserved to have a wide circle of friends, but by all who knew him well he will be long and deeply regretted.

J. A. H.