

the Depth of Water in a Well" was also read. The Author gave the weekly measurements of the depth of water in a well 101 feet deep at Further Barton, Cirencester, compared with the weekly rainfall for the years 1903-1906. The results were very interesting, as they included the remarkably wet year 1903 and the droughty summer and autumn 1906.

*Mr. Walter Child* exhibited his "Step" anemometer, an instrument which he had designed to obviate the "sheltering" error of the Robinson's cups.

*Alexander Stewart Herschel.*

ASTRONOMERS in general will have heard with regret of the death of Prof. Alexander Herschel, a member of the famous family happily not yet extinct, whose traditions are being worthily sustained by its present representatives. Those who are in the habit of attending Meetings of the Royal Astronomical Society and similar gatherings will miss a familiar and striking figure, and we of this Magazine have to regret the loss of a valued contributor, whom we shall always remember for his willingness to help when called upon, for his modesty in volunteering contributions, and for his punctilious courtesy in correspondence and in affairs generally. Though apparently reserved in manner, he appears to have made many friends in passing through life, and for this *in memoriam* article it has seemed well to ask some of these to speak in turn of our late friend in the period during which they knew him. Prof. Lebour's paragraph carries the history to the year 1886. Since that time Prof. Herschel lived in the family house at Slough, occupying himself in observing meteors, in occasional literary work of an astronomical kind, and in attending scientific meetings. The paragraph of dates and events is a copy of the Professor's own handwriting, made by his nephew, Rev. J. C. W. Herschel, to whom we are indebted for this and other help, and who writes about his uncle:—

"He was always a most kindly man, so thoughtful for others, invariably bringing some small token on his visits to give away, especially to children, and averse to receiving any himself. Witness the legacy which someone left him, and which he at once spent anonymously on Durham University."

HE was clever with his head and skilful with his hands, and as a boy he was fond of Natural History and such things and was clever at stuffing and setting up birds. He was athletic and active and a good swimmer. As was the case with his two brothers, he was sent to the Clapham Grammar School kept by the late Prof. Pritchard, and distinguished himself in mathematics. He then went to Trinity College, Cambridge. While at Cambridge he was

always busy and active, but his interests were numerous, and his mathematical reading was of too desultory a nature and too little directed to "paying" subjects to permit of his taking a degree at all corresponding to his capacity and ability: he came out as 20th Wrangler in the Tripos of 1859. His taste for Natural History was exhibited by keeping for a few days loose in his College rooms a dozen Death's Head Moths, to test their habit of uttering a sharp cry when touched. His taste for models and experiments was shown in many ways: at one time he hung a box of dry sand from the ceiling of his room, the sand dropping through a hole in the bottom and tracing curves on the floor, to illustrate problems connected with the rotation of the Earth: this experiment occupied 2 or 3 days, during which time he lived in another man's rooms. He helped Prof. Maxwell very much in his well-known experiment with "The Devil on Two Sticks"—a double cone, which was whirled into a violent condition of rotation by means of a cord and two sticks. Herschel made the model and worked it with great effect in the Great Court. The double cone was taken off the cord, while rotating, by a short loop of string passed round a nail at one end, and the cone then stood out horizontally and turned slowly round a vertical axis in illustration of the Law of Precession. His passion for experiments and models in illustration of the meaning of equations remained with him all his life. After leaving Cambridge he was appointed a Professor at Newcastle.

A very pleasant feature in Herschel's character was his readiness to help others with his knowledge and skill. A large part of his lifetime was taken up in working problems for other people out of sheer good-nature, and frequently problems in which he took no particular interest.

He took up the Meteor observations and speculations at an early date, certainly as early as 1860, for in that year I assisted him by observing Meteors on Ipswich Racecourse, and kept up his observations and speculations concerning them all the rest of his life. But he was a very modest man, and the amount of work which he gave to the Meteors as well as to Science generally is I think, very little appreciated. And in whatever he took up he helped himself most cleverly with models and simple instruments which he made for himself.

W. AIRY.

As my contribution to the notice in memory of my old friend Alexander Herschel, it will, I trust, be sufficient to refer to his extraordinary enthusiasm and tireless devotion to work during the whole of his residence at Newcastle, from the foundation of the Durham College of Science in 1871 to 1886, when he finally left for the South.

He was provided with probably the worst Physical Laboratory that any Professor of Physics has ever been asked to work in. This, however, he fitted with apparatus of all kinds, much of it of

VOL. XXX.

2 B

historical interest, and much of it made with his own hands—stowed away in every conceivable receptacle, for space was altogether inadequate, and here he worked all day and every day, and generally far into the night, preparing experiments for the next day's lectures and demonstrations. He was not by any means averse to society, and frequently went out to dinner, &c., but after such functions were over he usually finished the night alone in his laboratory. Indeed, nothing more strenuous than his work in those years can be imagined. He left the North before the College migrated to the new buildings, which have only recently been finished, but he left the apparatus which he had accumulated from all sources as a gift behind him, and the new Physical Laboratory of Armstrong College is named the "Herschel" after him. I can bear witness to his delight when, on the occasion of the King's visit last July, he examined the details of the Department he had founded. There was not a grain of selfishness or jealousy in Herschel, and he rejoiced in the luxurious housing of his successor, quite forgetful of the discomforts of his own times.

Besides his regular work as Professor of Physics, Prof. Herschel, whilst in the North, kept up a constant and very large correspondence with observers of meteorites all over the world, the results of which are (only partly, however) to be found in the Reports of the British Association Meteorite Committee, of which he was Secretary. He also carried out long series of experiments on fluorescence, on the conductivity for heat of many rocks, on electrical storage, on films for photography, on filaments for incandescent electric lamps, and in many other directions. Most of the above-mentioned investigations have borne fruit, but some, I am afraid, never reached publication. He spent as much time as he could spare in the late Mr. R. S. Newall's Observatory at Gateshead (and at that of the Rev. J. M. Perry at Alnwick, I believe), where the best telescopes and other astronomical appliances were always placed at his disposal by his friends.

He took frequent part in the discussions at the Meetings of the North of England Institute of Mining Engineers, of which he was Honorary Member, and constantly helped in the scientific work of that Association. He was an active Member of several of its Special Committees, and much labour was spent by him in making experiments for them on fans for mine ventilation, in designing apparatus for registering earth-tremors, and on many other subjects of applied science.

Altogether I should say that no man ever worked more incessantly or *gave away* his work more readily to anyone who could, or thought he could, make use of it; and no one did so more generously or with a more utter indifference to thanks. If Herschel had patented one-hundredth of the inventions or improvements he was constantly making or contriving for others, he would have been a rich man indeed. But no man ever cared less to make money than he. He was a thoroughly open-hearted

man, kind to a fault, and one whose great worth was largely withheld from public ken by the absolute modesty and under-estimation of himself, which were among his many personal charms. That he was somewhat eccentric in many small matters was obvious on very slight acquaintance, and only those who had the privilege of knowing him long and intimately could realize what great gifts of heart and intellect and what amazing courage were hidden beneath his mere outward characteristics. G. A. LEBOUR.

METEORIC astronomy has indeed lost an ardent, able, and experienced student in Prof. Herschel. During a very long series of years he not only made observations himself but collected, compared, and discussed the results of others.

Prof. Herschel was a prolific writer and a correspondent of exceptional kind, his letters being exceedingly long and highly interesting. His desire for the truth often led him to enter minutely into details. In the observation of meteor-flights he attained a high degree of accuracy, and in the calculation of the real paths of Fireballs he probably stood alone, for no one could deal so well with discordant observations and treat them as effectively, often getting very satisfactory results from apparently incongruous data. Though Prof. Herschel did not habitually employ a telescope in astronomical observation, nor systematically sweep the firmament for interesting objects as his father and grandfather had done before him, he yet accomplished very meritorious work with the unaided eye, and meteoric astronomers will ever be deeply indebted to him for the extent and valuable character of his labours. W. F. D.

[*In a letter to Miss Herschel from a friend of the family.*]

I TRUST that he died without pain, and I feel sure, from his well regulated career, that his mind accepted the inevitable with submission and peaceful trust. I have been told that he willingly lent his valuable mathematical aid to foreigners, astronomers and others, quite regardless, so long as the lamp of knowledge was handed on, that it should be known by whose hand it was transmitted. This is a rare quality amongst gifted men, and I think no one could meet the Professor without being struck with the fact that one who knew so much should be so simple and unassuming.

JOHN W. SHEER.

ALEXANDER STEWART HERSCHEL, second son of the late Sir John Herschel, Bart. Born in Cape Colony in 1836, and educated at Clapham Grammar School, 1851-55, and at Trinity Coll., Camb., 1855-59, and at the Royal School of Mines, London [1861-? 65]. B.A.Camb., 1859; M.A.Camb. and (*ad eundem*) Durham, 1877; Hon.D.C.L.Durham, 1886. F.R.A.S., 1867; F.R.S., 1884.

Was Lecturer on Natur. Philosophy and Professor of

2 B 2

Mechanical and Experimental Physics in the Andersonian University of Glasgow, 1866-71; and Professor of Physics and Experimental Philosophy in the Univers. of Durham College of Science, Newcastle-on-Tyne, 1871-86, and Honorary Professor of that Institute since 1886.

Writer of the Reports to the British Association on Luminous Meteors and on the Thermal Conductivities of Rocks, 1861-81; and of various papers relating to Meteors, Meteorology, and Physics in Societies' Proceedings and in Scientific Journals since 1860. (*Ipse scripsit*, September 14, 1893. Signed, A.S. HERSCHEL.)

He died on June 18, 1907, and was buried in Upton Churchyard next his sister, Isabella Herschel.

### *The Sun-spots of 1907 March.*

MARCH showed a distinct falling-off in the solar activity as compared with January and February, but its record was not without some features of interest. During the first four or five days of the month the Sun's surface appeared strewn with numerous groups of spots, none large or remarkable in themselves, but indicating by their number and diffusion a general condition of agitation. On March 3 Groups 6135 and 6136, together making up a fine stream, began to show themselves at the eastern limb of the Sun, and they were followed by a yet finer stream on March 5, consisting of Groups 6139 and 6140. These two streams, with some smaller groups in the same latitude, made up a striking procession in the southern hemisphere, and remained in sight until March 17, when they passed off at the western limb. After this there was very little to call for notice. A pretty but by no means large stream—Group 6150—ran its course in the northern hemisphere from March 16 to March 25, and another—Group 6155—in the southern from March 21 to March 29; but these were the only two groups of any importance until, on the last day of the month, two new groups—Groups 6158 and 6159—were seen in the northern hemisphere just coming into view at the east limb. Some theoretical interest attaches to Group 6154, a small round spot observed from March 17 to March 21, and now in its third apparition, as it was almost exactly on the solar equator, where spots do not frequently form except during the decline of the Sun's activity.

Rotation 715 began 1907 March 7<sup>d</sup>.65.

### *Notes on the Principal Spot-Groups.*

Group 6134.—A large regular spot. Area on March 6 about 200.

Group 6136.—Return of Group 6103. Third apparition. A large regular spot, closely following Group 6135. The group changed much after March 8. Area on March 8 about 360.