research and speculation, it was in tracing the history of the younger formations that he did his best work and spent the chief part of his scientific career. Since the year 1864 he has been unweariedly engaged in investigating the history of the Pliocene and Post-pliocene deposits of the East of England. Taking up this subject in conjunction with Mr. Harman, he soon became convinced that no satisfactory progress could be made in it until the deposits in question had been actually mapped in some detail. Accordingly the two observers began to trace them on the one-inch Ordnance Map, Mr. Wood taking the southern half of the area, including Essex and nearly the whole of Suffolk. This survey, which for minuteness and accuracy has seldom been equalled by the work of any private workers, remains unpublished, though a reduction of it, on the scale of four miles to an inch, was issued in 1872. Mr. Wood eventually gave up his business, which was that of a solicitor, in order to devote himself with more uninterrupted zeal to the prosecution of his favourite science. The bodily feebleness which debarred him from much active work out of doors seemed only to quicken his energy for literary labours. Some of the best fruits of his life-long devotion were gathered into his two long memoirs on "The Newer Pliocene Period in England," published in 1880 and 1882 by the Geological Society. But his friends anticipated much useful work still to come from one who had pursued his studies with such intelligence and zeal, and who had only reached his prime. In his death, at the age of fifty-four, they mourn one who was ever ready cheerfully and helpfully to impart to others the knowledge he possessed himself, who never hesitated to admit an error when he recognised it, and who leaves behind him a notable example of quiet fortitude and enthusiasm.

A SUNSHINE RECORDER

ON June 28 of last year I had the honour of bringing before the Physical Society a preliminary notice of a new sunshine recorder,[1] and as we have now had more than six months' experience of its working, it is possible that some of your readers might be interested in hearing of the results obtained.

The apparatus is of simple construction. It consists of a glass sphere silvered inside and placed before the lens of a camera, the axis of the instrument being placed parallel to the polar axis of the earth. The whole arrangement will be readily understood by an inspection of Fig. 1. The light from the sun is reflected from the globe, and some of it, passing through the lens, forms an image on a piece of prepared paper within the camera. In consequence of the rotation of the earth, the image describes an arc of a circle on the paper, and when the sun is obscured, this arc is necessarily discontinuous. The image is not a point, but a line, and in certain relative positions of the sphere, lens, and paper, the line is radial and very thin, so that the obscuration of the sun for only one minute is indicated by a weakening of the image.

In the actual apparatus the sphere is an ordinary round-bottomed flask about 95 mm. in diameter, and the lens a simple double convex lens of about 90 mm. focal length. The sensitive paper employed is the ordinary ferro-prussiate paper now so much used by engineers for copying tracings. This was selected in consequence of the ease with which the impression is fixed, for the paper merely requires to be washed in a stream of water for six minutes, no chemicals being necessary. When the paper is dry, radial lines containing between them angles of 15° are drawn from the centre of the circular impression, and thus give the hour scale, the time of apparent noon being of course given by a line passing through the plane of the meridian. Fig. 2 is a copy of the record of June 27, 1884; in the morning the sun shone brightly, towards noon clouds began to form, and in the afternoon the sky was hazy. The field in which the instrument is placed is

FIG. 1.

surrounded by trees, so the ends of the trace are cut off sharply by shadows.

With the alteration of declination of the sun, the light

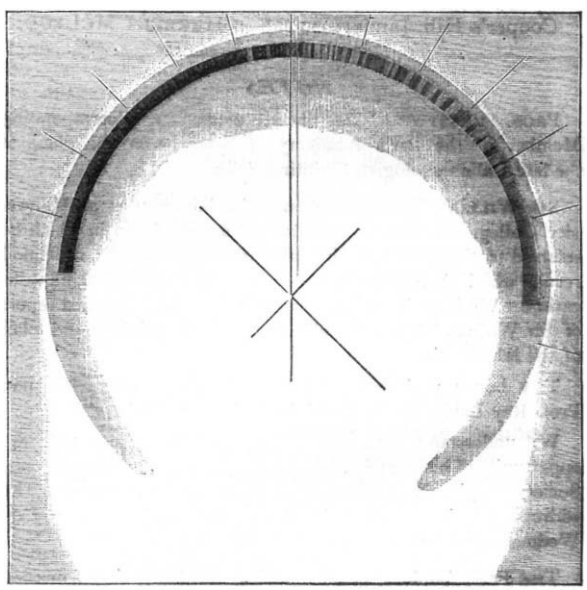

FIG. 2.

entering the camera is reflected from different portions of the sphere, and an alteration of the position of the focus results. This may be corrected in three ways: by moving

[1] *Proc. Phys. Soc.*, vi. 216; *Phil. Mag.*, August 1884, p. 141.

(1) the paper, (2) the lens, or (3) the sphere. In the present apparatus the first method has been adopted, and now the camera is about twice as long as it was in June. As a consequence the circular image is enlarged, and the light therefore weakened, and that at a time of year when it can least be spared. If the focus is altered by moving the lens, the winter circle is small and the summer circle is much larger. This would perhaps be too much to the advantage of the winter sun. If, however, the lens and paper are maintained at a constant distance, and the sphere alone moved, the circles are more nearly of the same diameter throughout the year, the winter one still remaining the smallest. This seems, therefore, to be the most advantageous arrangement, and the one that will be adopted in future. It may be possible also to find positions for the sphere, lens, and paper such that the intensity of the image is a true measure of the intensity of the sun's light; at present, however, this has not been done, the want of sunlight and the press of official work having prevented the carrying out of the necessary experiments. A more sensitive paper might also be used with advantage, and in observatories where photographic processes are carried on daily there would be no difficulty on this score, but my principal object was to devise some economical instrument requiring only easy manipulation, so that at a considerable number of places the instruments might be set up, giving a more useful average of the duration of sunshine than can be obtained from only a few stations. The instrument also gives a record when the sun is shining through light clouds; in this case the image is somewhat blurred and naturally weakened, and it may be difficult or impossible to employ any scale for measuring the intensity under such conditions, but it must be remembered that, even when the sun is shining in this imperfect manner, it is really doing work on the vegetation of the earth, and deserves to be recorded.

It may be well to say that the instrument is in no way protected. Some friends, whose opinion I highly value, urged me to patent it; but as I strongly hold the view that the work of all students of science should be given freely to the world, the apparatus was described at the Physical Society a few hours after the advice was given, lest the greed of filthy lucre should, on further deliberation, cause me to act contrary to my principles.

Cooper's Hill, January 20 HERBERT MCLEOD

NOTES

PROF. PRESTWICH has been elected a Corresponding Member of the Paris Academy of Sciences in the place of the late Italian geologist, Quintino Sella.

SIR WILLIAM THOMSON opened the laboratories at University College, Bangor, on Monday, with an address, in which he referred to the spread of the laboratory system and the good results which thereby had accrued to science and scientific education. We hope in an early number to give a detailed report of Sir William Thomson's address, with a description and plan of the laboratories.

THE honorary degreee of LL.D. has been conferred upon Prof. Ray Lankester by the University of St. Andrew's.

WE understand that Dr. Dallinger, F.R.S., will take the opportunity of his presidential address to the Royal Microscopical Society to give an account of a new septic organism. The address, which will be fully illustrated, will be delivered on Wednesday next at 8 p.m.

THE Paris Academy of Sciences has decided to send a mission to explore the districts in the south of Spain where the recent earthquakes took place. M. Fouqué, Professor of Geology in the Collège de France, is appointed chief of the mission, which was to leave Paris last week. The other members are M. Lévy, mining engineer and sub-director of the geological laboratory of the College of France; M. Bertrand, mining engineer; M. Barrois, of the Faculty of Sciences at Lille; and MM. Killian and Oppret, of the College of France.

AMONGST the honorary members elected to the Italian Society of Geography at its meeting of the 25th ultimo was Mr. Joseph Thomson.

A MEETING of much interest was held at the Rooms of the Asiatic Society on Monday in connection with the establishment of a British School of Archæology at Athens. Already Germany, France, and the United States have been in the field for some time; but though the Greek Government has presented to the English Society a choice site of considerable extent for a school, funds are lacking wherewith to erect the building and carry on the work. We need not insist on the value of archæology in historical research,—all the speakers on Monday were agreed as to that; for a scientific knowledge of the past, it bears the same relation to academical study as the researches carried on by the Naples station do to the home study of biology. At present only 4000*l.* are in the hands of the Committee, but four or five times that amount is required ere the School can start with any hope of efficient work. There are several learned societies with ample means, interested in the varied work which would be carried on by such an institution, and to these, and to individuals who have money to spare and wish to put it to a good use, we commend the scheme. The treasurer is Mr. Walter Leaf, Old Change, E.C.

WE regret to learn of the death of M. Dupuy de Lôme at the age of sixty-eight years. M. de Lôme was well known as a naval engineer, and his name is intimately associated with modern ballooning.

THE Council of the Royal Meteorological Society have arranged to hold, at 25, Great George Street, S.W. (by permission of the President and Council of the Institution of Civil Engineers), on the evenings of March 18 and 19 next, an Exhibition of Sunshine Recorders and Solar and Terrestrial Radiation Instruments. The Exhibition Committee invite the co-operation of those interested, as they are anxious to obtain as large a collection as possible of such instruments. The Committee will also be glad to show any new meteorological apparatus invented or first constructed since last March; as well as photographs and drawings possessing meteorological interest.

IN his inaugural address as Lord Rector at St. Andrew's last week, Lord Reay stated very forcibly his ideas of what a university should be at the present day, encouraging every form of culture and research. Referring to science, Lord Reay asked: "Are we to have a separate Faculty of Science? I should say certainly. Just look at the field covered by a Faculty of Science. It is preparatory for medical science, and our engineers, our manufacturers, our analysts, our botanists, our zoologists, our astronomers, our naval constructors, our geologists, our biologists, our physiologists, our mineralogists, our agriculturists, should obtain scientific degrees. I do not see why a faculty having such an immense area should remain linked with another which has quite different objects to pursue. The same work done by the French École Polytechnique I wish to see done at the universities; and if the Germans have lately spent 340,000*l.* on a new college for technical education at Berlin, I should like to ask what possible reason can be adduced for stinting science-teaching in Scotland at a moment when the report on technical instruction has pointed out that 'theoretical knowledge and scientific training are of pre-eminent importance, as in the case of the manufacturer of fine chemicals, or in that of the metallurgical chemist, or the electrical engineer, and that to these the higher technical instruction may with advantage be extended to the age of twenty and twenty-two.' Here, then, is a clear case even for a