

seconds." After another 5 seconds, "There are still 90 seconds remaining." And so on.

A clever man can do this in a very encouraging way. The time counter should take care not to distract himself by losing sight of the face of the watch or chronometer; and it is to be impressed upon him that much of the success of the observations will depend on his undivided attention, as his statement of time in the case of parties with large instruments, is an order to individual observers to do certain work. Hence there should be two time counters, who should change over at the middle of the eclipse, care being taken that the counting is not interrupted. *The times at which any of the phenomena occur must be noted by another observer.*

Caution with regard to the use of Telescopes.

Observers equipped with telescopes, whether they be small instruments or equatorially mounted, must be very careful about not observing the sun before or after totality without the aid of dark glasses. For small hand-telescopes a dark glass will be found sufficiently safe; but with instruments of greater power, the dark glass should be supplemented by a solar or diagonal eye-piece. If one half of the reflecting surface of the glass be silvered and the glass be made to slide, it may be used during totality. In any case, *do not forget, immediately before totality, to remove the dark glasses.*

THE KELVIN JUBILEE.

WE are glad to be able to supplement our report of the celebration of Lord Kelvin's jubilee with the address presented by M. Mascart on behalf of the Institute of France. By such cordial expressions as those in which the Institute addressed our distinguished countryman, men of science are made to feel that they belong to a universal brotherhood, all the members of which have but one aim—the accumulation of scientific knowledge. The following is the address:—

MILORD ET CHER CONFRÈRE,—L'Académie des Sciences de Paris, dans laquelle vous êtes aujourd'hui le doyen des associés étrangers, a voulu se joindre aux savants de tous les pays du monde, à vos admirateurs, à vos amis, pour vous apporter des félicitations chaleureuses à l'occasion du cinquantenaire de votre arrivée comme professeur à l'Université de Glasgow que vous avez tant illustrée.

Il y a quelques mois, l'Institut de France célébrait le centième anniversaire de sa fondation, ou plutôt de la reconstitution des anciennes Académies sur des bases plus larges. Nous ne pouvons oublier l'élevation de langage avec laquelle le Président de la Société Royale de Londres vint alors traduire les sentiments de cordialité de cette grande et célèbre Institution.

Dans une autre réunion, où vous parliez en votre nom personnel, vous nous avez causé une profonde émotion en déclarant que vous aviez une dette de reconnaissance envers notre pays, que nos grands esprits tels que Fourier, Laplace et Sadi Carnot avaient été vos inspirateurs et que vous considériez la France comme l'"alma mater" de votre jeunesse scientifique.

Si la dette existe, vous l'avez payée avec usure. Dans la longue série de travaux et de découvertes qui jalonnent; votre admirable carrière, une des plus nobles que l'on puisse rêver, vous avez abordé toutes les questions de cette science à laquelle la littérature anglaise conserve le beau nom de "philosophie naturelle," soit pour contribuer aux progrès des conceptions théoriques, soit pour en déduire des applications utiles au développements de l'industrie et au bien de l'humanité.

Quoi que l'avenir réserve au génie inventif de l'esprit humain, votre nom restera comme ayant été le guide

le plus sûr dans une époque féconde, et le véritable éducateur de la génération actuelle dans le domaine de l'électricité.

Je suis particulièrement heureux que l'Académie des Sciences m'ait confié le soin de vous remettre une médaille d'or à l'effigie d'Arago, médaille qu'elle réserve pour rendre hommage aux services exceptionnels rendus à la science et qui porte cette devise, "Laudes damus posteris gloriam."

Vos confrères de l'Institut de France espèrent que vous voudrez bien considérer ce souvenir comme un témoignage de haute estime et de leurs sentiments les plus affectueux.

It is due to the Council of the Royal College of Science to state that they were not less desirous than the rest of the scientific world of doing honour to Lord Kelvin. An address was prepared and signed by every member of the Council of the College, with the exception of one who was temporarily out of reach. This address was presented to Lord Kelvin at the same time as the addresses from other Colleges in London, but mention of it was inadvertently omitted from our report. A congratulatory address was also sent by the Institute of Chemistry.

THE BRITISH ASSOCIATION MEETING IN LIVERPOOL.—LOCAL ARRANGEMENTS.

THE preparations for the British Association Meeting in Liverpool next September are now going on rapidly. A large and influential Local Committee of about 500 of the leading citizens, under the chairmanship of the Lord Mayor (the Earl of Derby), was appointed a couple of years ago. The smaller Executive Committee has broken up into Sub-Committees dealing with the subjects of—(1) Finance, (2) Hospitality, (3) Buildings, (4) Excursions, (5) Publications, and (6) Evening Entertainments. Most of these Sub-Committees have been actively at work for the last few months, and a report embodying the results of their deliberations has just been submitted to a meeting of the large Committee held in the Town Hall. The following is an outline of the arrangements completed so far:—

The reception room and the general offices will be at St. George's Hall, in the centre of the town, a few yards from Lime Street Station, the London and North-Western Terminus. One of the Sections (Geography) will occupy the concert room of St. George's Hall, and three other Sections (Geology, Anthropology, and Mechanical Science) have been allotted rooms in the closely adjoining Public Museum and Walker Art Gallery. The Section of Economics will be located in the Town Hall, opening on to the Exchange flags, and in the centre of the business life of the city; while the five remaining Sections (Physics, Chemistry, Zoology, Physiology, and Botany) will be placed in the laboratories and lecture theatres of University College, about 1050 yards from the reception room. A main artery, and tramway route, leads from Lime Street to Ashton Street, from which the College opens, and arrangements will be made for a constant service of convenient omnibuses in addition to the tram-cars. Permission to use these various buildings has been obtained from the Lord Mayor and the Corporation, and the Council of University College; and the Philharmonic Hall, which holds about 3000, has been engaged for three evenings, on the occasions of the President's address and the two evening discourses. The lecture to the working classes will be given in the Picton Lecture Hall. The first conversazione will be given by the Lord Mayor (Lord Derby) in the Town Hall, and the second by the Local Committee in the range of Corporation buildings occupied by the Public

Museum and the Walker Art Gallery. The autumn exhibition will be open in September, and the Arts Committee propose to admit members of the British Association to the galleries during the week of the meeting on presentation of their tickets of membership.

A new museum, given to the zoological department of University College by the late Mr. George Holt, has been rapidly hurried on with the special view of use at this meeting, and will be available for the exhibition of specimens, models, &c., brought in illustration of papers read before the Sections, or for other objects of scientific interest sent on loan.

A number of the owners of works of manufacturing and engineering interest have offered to open their buildings for inspection during the week. Several gentlemen have intimated their intention of giving garden parties, and a number of excursions to places of interest in the neighbourhood of Liverpool have now been arranged, including the following: Half-day excursions on Saturday, September 19—(1) River excursion with the Mersey Dock Board; (2) Overhead Electric Railway; (3) Speke Hall, Hale Hall, &c.; (4) Thurston, Storeton Quarry (where the reptilian footprints are found), and the Leasowe Submarine Forest; (5) Bidston Observatory; (6) Chester and Hawarden; (7) Dredging excursion with the Lancashire Sea-Fisheries Steamer. Whole-day excursions on Thursday, September 24—(1) Chester and Eaton Hall; (2) Rivington Water Works, &c.; (3) Llandudno and Beaumaris by sea; (4) Manchester Ship Canal, &c.; (5) Prestatyn, Tremerechion Caves, and Corwen; (6) Northwich, Weaver Navigation, and Delamere Forest.

At the end of the meeting there will be longer excursions, extending over several days, to the Vyrnwy Water Works in Wales and to the English lakes; and a specially scientific excursion to the Isle of Man, for which a separate programme has been prepared, covering five days—Thursday to Monday inclusive.

The Earl of Derby has invited a party to Knowsley, the Duke of Westminster has also invited a party to Eaton Hall, and Mr. Gladstone will receive another party at Hawarden. In connection with the Isle of Man excursion, the Governor of the island (Lord Henniker) has invited the members to a reception at Government House, and will preside at a dinner to be given on the concluding evening.

The Publications Sub-Committee have drawn up a scientific handbook to Liverpool and the neighbourhood, containing articles on the history and antiquities, the geology, the entomology, the marine biology, the botany, the vertebrate fauna, the climate, the river and the tides, the docks and other engineering works, the trade and commerce, and the chemical industries. A complete guide to the various excursions is also in course of preparation.

The Hospitality Sub-Committee have invited as guests a large number of distinguished scientific men from the continent and America, and although many have not yet been able to give, at this early date, a decided answer, a considerable number have already definitely accepted. These include, amongst others, Prof. van Rijckevorsel (Rotterdam), M. J. Violle (Paris), Prof. V. Bjerknes (Stockholm), Prof. Lenard (Aachen), M. L. de la Rive (Geneva), Prof. Knorr (Jena), Dr. Credner (Leipzig), Prof. Renard (Gand), Prof. Mœbius (Berlin), Prof. Julin (Liège), Prof. Gilson (Louvain), Prof. Minot (Boston), Prof. Le Conte (Berkeley), Graf von Pfeil (Vienna), Prof. Cohn (Göttingen), Prof. Stainier (Gembloux), Prof. Schröter (Munich), Prof. Topinard (Paris), Dr. E. Dubois (Hague), Prof. C. Bohr (Copenhagen), Prof. Goldmann (Freiburg), Prof. Schimper (Bonn), Prof. Zacharias (Hamburg), and M. C. de Candolle (Geneva). As a number of others are still uncertain, and answers are now coming in every day, this can only be regarded as a provisional list. Probably the attendance of foreigners at this meeting will be unusually large. The Hospitality Sub-Committee is now busily engaged in arranging private

hospitality for the foreign guests, and also for as many as possible of the home members of the Association who have intimated their intention of being present at the meeting.

W. A. HERDMAN.

THE DAVY-FARADAY RESEARCH LABORATORY.

SCIENTIFIC investigators have long needed a central laboratory where researches can be carried on without interruption, and have urged the establishment of a national physical laboratory for the United Kingdom. Twenty years ago the Duke of Devonshire's Commission recognised the advantages which our national industries would derive from physical and chemical investigations, and pointed out the need of a more generous recognition of such research by the State. Since then the Physikalische Reichsanstalt, at Charlottenburg, has been established, and, through the facilities it offers, Germany is reaping a rich harvest of natural knowledge; but, so far as State recognition is concerned, we have made little advancement. True, a Committee of the British Association has considered the question of a national physical laboratory, and another Committee is now reconsidering it; but there is no immediate prospect that any recommendations they might make will induce the Government to give a substantial grant, either for the extension of an existing institution in the direction of facilities for research, or for the establishment of an institution on the lines of the Reichsanstalt. For the perspicacity which sees in pure scientific research a means of developing industries, and which is content with knowledge accumulated, whether the practical bearings are apparent or not, we have to go to Germany, where many of our national industries have gone as a consequence of neglect by our Government.

Fortunately for British science, individuals occasionally arise who see how severely investigation is handicapped on account of the lack of organisation and encouragement by the State. One such benefactor is Dr. Ludwig Mond, whose munificent gift to the Royal Institution of a laboratory for physical and chemical research was warmly announced in these columns two years ago. We are now able to state that on June 12 Dr. Mond formally transferred to the managers of the Royal Institution the freehold of No. 20 Albemarle Street, adjoining that Institution, for the purpose of the laboratory of research in pure and physical chemistry referred to in our announcement, to be known as the Davy-Faraday Research Laboratory of the Royal Institution. In order to make the building suitable for this purpose, Dr. Mond has carried out very extensive alterations. He has also equipped the laboratory with the necessary apparatus, appliances, &c., for carrying on delicate investigations in physical and chemical science. An idea of the generous nature of Dr. Mond's endowment may be obtained from a statement of rooms included in the new institute.

The Laboratory contains:—

On the Basement.—A room for thermochemical research; a room for pyrochemical research; mechanics' workshop; room for electrical work; battery of twenty-five accumulators; constant temperature vaults; boiler-house and store-rooms.

On the Ground Floor.—A room for research in organic chemistry; a room for research in inorganic chemistry; a fire-proof room for experiments in sealed tubes; a balance room; entrance hall and cloak-room.

On the First Floor.—The Honorary Secretary's room; a large double library connected with the library of the Royal Institution.

On the Second Floor.—A museum of apparatus.

On the Third Floor.—Seven rooms for research in physical chemistry.