

awarded a praise that was perhaps the least deserved, I think it would have been the humble individual who now has the honour of addressing you. As Americans, you are aware how very close is our association with the great man of science whose jubilee we now celebrate. He first became known to us through his work in connection with the Atlantic cable of 1858, a cable which, those of you who now can remember it, ceased after a week or two of rather intermittent activity. It is quite true that on that occasion his fame was temporarily eclipsed by that of the operator who sent the messages from the end in Newfoundland. The name of this operator ran from city to city throughout the country. It had never been heard of before; it filled the land for those few brief days, and when the cable ceased to send the current, it disappeared almost for ever. For an explanation we had to refer to one of our most eminent men of science, who has lived, I think, wherever the English language is spoken—the author of the “Autocrat of the Breakfast Table”—and who published a theory or explanation of the whole phenomenon. This man was a living product of the galvanic action of the cable, and when the current ceased to pass, there was nothing left in the room he occupied but a cloud of organic elements such as man is made of. On the subsequent occasion of laying the cable in 1866, our guest again became well known to us for his work in promoting that object. Also, in our naval service, to which I have the honour to belong, we are in many ways most indebted to him. I do not think the name of any man is more familiar to the officers of our navy anywhere than that of Lord Kelvin, first, by his work on magnetism, and for the navigation of ships, and by his deep-sea sounding apparatus, as well as by many others of his inventions which relate to navigation. There are certain features of his work which, as one so long intimately associated with him, it may not be amiss that I recall. The first, and perhaps most unique, feature is the combination of abstract results with practical application. It has been the general—I do not know but that it has been the almost universal—rule that the men who have by their studies and thought promoted our knowledge of nature have not been those who have applied that knowledge to the direct benefit of mankind by inventing means for its application. I am not sure but that Lord Kelvin is the single, solitary exception to this rule. The ground covered by his work is certainly remarkable in its extent. The first knowledge I had of him—probably the first that those who cultivate mathematics know of him—is in connection with a journal published back in the forties, and known under different names at different times as the *Cambridge, London, and Dublin Mathematical Journal*. For a period, I believe, he was associated in the editorship of that journal. Now, it is worthy of remark in this connection, that at the present time sets of this journal can command a price that is almost fabulous in the public market from the mathematicians of the day. Then at this point he diverged from the doctrine which was said to have been laid down by one of the most eminent workers in the words, “I thank Heaven that I cultivate a science which cannot be prostituted to any useful purpose.” In passing from the field of mathematics we come next to pure philosophy by saying that the theory of energy in its present form is, I think, very largely due to his work. This is, perhaps, the most far-reaching generalisation as to the laws of action that the world has seen; it enables us to see the beginning of the universe and to look forward towards its end. We all read discussions as to the age of the earth and the question whether the geologist has an indefinite bank of time on which he can draw cheques without limit. Yet another question of geology was that of the rigidity of the earth, in which I think his view is almost universally accepted. In this wide range of activity I think we may say that he has made few mistakes—perhaps we may say that he is almost unique in not having made any. I beg leave, on behalf of the foreign representatives, to thank you, my Lord Provost and the citizens of Glasgow for the very cordial reception we have met in coming here to present our congratulations to Lord Kelvin on this memorable occasion. We shall ever remember that reception, and I beg leave on behalf of all to again express the hope that our honoured guest of this evening may live for many years.

Prof. Story, at the suggestion of the Lord Provost, very gracefully proposed the health of Lady Kelvin, which was received with great applause. Lady Kelvin, who occupied a seat in the balcony, bowed her acknowledgments, and Lord Kelvin, replying for her, said—

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Prof. Story has said well that I owe a great deal to Lady Kelvin, but he does not know how much I owe. No person in the world except myself knows how much of any results for science that it has been possible for me to arrive at are due to her co-operation. I thank you warmly for the very kind manner in which you, Prof. Story, have proposed this toast, and with which the company have received it.

After the toasts of the University and City of Glasgow, proposed by the Earl of Rosse, D.C.L., F.R.S., and the Lord Provost, proposed by Sir Henry Roscoe, F.R.S., had been duly honoured and replied to, the company joined in singing “God Save the Queen,” and afterwards, on the request of Lord Kelvin, in singing “Auld Lang Syne.”

Thus closed the celebration proper, a celebration almost unique in the experience of every one present for its grand simplicity, splendid enthusiasm, and entire success in every detail of arrangement. For the latter characteristic the Jubilee Committee deserve the highest credit, and its Secretaries, and others, among whom are the Rev. Professor Stewart, D.D., Clerk of Senate, Mr. Allen Baird, and members of the Senatus, who had charge of the University arrangements, may well be proud of the result of their labours.

Nothing in Lord Kelvin's reply to the toast of his health at the banquet was more characteristic of the man than his humble confession of failure to penetrate the mystery of the constitution of matter and of ether. It is no doubt true, as Lord Kelvin remarked, that the nature of electric and magnetic force, and the relation between ether, electricity, and ponderable matter, are still unknown to us; but Lord Kelvin's researches have been the means of enabling himself and others to unravel many of their phenomena, to connect these phenomena by general laws, and to marshal the forces of science for still further assaults on the unknown. The *certaminis gaudia* is not after all in this case mere joy of conflict, but the pleasure of obtaining by strenuous endeavour some view first of the very innermost secrets of nature, and what is of very great consequence and may in time include everything, an accurate conception of her method of working, and of the dynamical laws which govern her operations.

A number of delegates and others left Glasgow on Wednesday morning, but many remained and accepted the invitation of the Senatus to a special excursion on the Firth of Clyde. A special train was run from St. Enoch's station to Greenock, where the steamer *Glen Sannox* awaited the party. The morning was wet, but the ample saloon accommodation of the splendid steamer, with an awning erected on deck, provided sufficient shelter. The steamer headed down the Clyde instead of proceeding up Loch Long, where it was likely to be raining still more heavily, and proceeded past Largs, saluting Nether Hall, Lord Kelvin's country house at Largs, in passing, thence between the Cumbræes to the mouth of Loch Fyne, then round the Kyles of Bute, and back to Greenock in time to allow Glasgow to be reached before the departure of the limited mail train in the evening. Luncheon and tea were served on board. The weather cleared about midday, and the excursion proved most enjoyable to all, and there were many who ventured to go. Lord and Lady Kelvin with their party were present, and, it was gratifying to observe, seemed to be in excellent health and spirits in spite of the excitement and fatigues of the previous days.

A. GRAY.

INTERNATIONAL CATALOGUE OF SCIENCE.

THE approaching International Conference arranged by the Royal Society to consider proposals for an International Catalogue of Scientific Literature will be formally opened at the apartments of the Society in Burlington House on the morning of Tuesday, July 14. A reception of the delegates will be held by the

President of the Royal Society on the previous evening at Burlington House, and they will be entertained at dinner by the Society on the evening of the 14th at the Hôtel Métropole. On the 15th the delegates will be received by the Lord Mayor at the Mansion House, and on the afternoon of the 16th they will be entertained by Dr. Ludwig Mond, F.R.S., at a garden party at his house in Avenue Road. The total number of delegates appointed to attend the Conference amounts to forty, including representatives of the principal colonies of the Empire and the principal Governments of the world.

The following is a list of the delegates appointed to attend the Conference.

AUSTRIA.—Prof. Dr. Edmund Weiss; Prof. Dr. Ernst Mach.

BELGIUM.—Chevalier Descamps-David (President Institut International de Bibliographie); M. de Wulf (Member Institut International de Bibliographie); M. Paul Otlet (Member Institut International de Bibliographie).

BRAZIL.—Dr. João Ribeiro (Professor "Gymnasio Nacional").

DENMARK.—Prof. Christiansen (Universitet, Copenhagen).

FRANCE.—Prof. A. Milne-Edwards (Membre de l'Institut, &c.); Prof. G. Darboux (Membre de l'Institut, &c.); Prof. Troost (Membre de l'Institut, &c.); Dr. J. Deniker (Librarian, Muséum d'Histoire Naturelle, Paris).

GERMANY.—(Names not yet received).

GREECE.—M. Avierinos M. Averoff (Greek Consul at Edinburgh).

HUNGARY.—Prof. August Heller (Librarian, Ungarische Akademie, Buda-Pesth); Dr. Theodore Duka (London).

ITALY.—General Annibale Ferrero (Italian Ambassador in London).

JAPAN.—Hantaro Nagaoka (Assistant Professor, Science College, Tōkiō); Gakutaro Ozawa (Assistant Professor, Medical College, Tōkiō).

MEXICO.—Señor Don Francisco del Paso y Ironcoso.

NETHERLANDS.—Prof. D. J. Korteweg (Universiteit, Amsterdam).

NORWAY.—(Names not yet received).

PORTUGAL.—The Portuguese Minister in London (Señor D'Antas).

RUSSIA.—Privy Councillor Stasow (First Librarian, Imper. PUBLIČNAJA Biblioteka, St. Petersburg).

SWEDEN.—Dr. E. W. Dahlgren (Librarian, Kongl. Svenska Vetenskaps Akademien, Stockholm).

SWITZERLAND.—The Swiss Minister in London (M. Bourcart); Prof. Dr. F. A. Forel (Président du Comité Central de la Société Helvétique des Sciences Naturelles).

UNITED KINGDOM.—Representing the Government: Right Hon. Sir John E. Gorst, M.P. (Vice-President of the Committee of Council on Education). Representing the Royal Society of London: Prof. Michael Foster, Sec. R.S., Prof. H. E. Armstrong, F.R.S., Mr. J. Norman Lockyer, C.B., F.R.S., Dr. Ludwig Mond, F.R.S., Prof. A. W. Rücker, F.R.S.

UNITED STATES.—Dr. John S. Billings (U.S. Army); Prof. Simon Newcomb, For. Mem. R.S. (U.S. Nautical Almanac Office).

CANADA.—The High Commissioner for Canada (the Hon. Sir Donald A. Smith, G.C.M.G.).

CAPE COLONY.—Mr. Roland Trimen, F.R.S.

INDIA.—General Sir Richard Strachey, F.R.S.

NATAL.—The Agent-General for Natal (Walter Peace, C.M.G.).

NEW SOUTH WALES.—(Appointment awaiting confirmation).

NEW ZEALAND.—The Agent-General for New Zealand (the Hon. W. P. Reeves).

QUEENSLAND.—The Agent-General for Queensland.

NOTES.

WE are asked to state that a zoologist with experience of deep-sea dredging is required for the Belgian Antarctic expedition. Intending applicants should communicate with Lieut. de Gerlache, Commander of the expedition, at Sandefjord, Norway.

PROF. DR. G. NEUMAYER, the Director of the Deutsche Seewarte, reached his seventieth birthday on Sunday last. We join with German scientific papers in congratulating Prof. Neumayer upon his numerous contributions to natural knowledge, and in the hope that science may have the benefit of his assistance for many years to come.

DR. D. GILL, F.R.S., has been elected a Correspondant of the Paris Academy of Sciences.

WE regret to announce that Sir Joseph Prestwich died on Tuesday morning, after a short illness. By his death science has lost a devoted student, whose numerous papers in the various departments of theoretical, observational, and practical geology testify to a career of earnest and careful work. He was born in 1812, and became a Fellow of the Royal Society in 1853.

MR. J. H. MAIDEN has been appointed Government Botanist and Director of the Botanic Gardens at Sydney, in succession to Mr. Charles Moore, who has recently retired after a service, in these capacities, of nearly half a century.

MAJOR ARTHUR GRIFFITHS, one of her Majesty's Inspectors of Prisons, has been appointed by the Home Secretary to represent her Majesty's Government at the International Congress of Criminal Anthropology to be held at Geneva in August next.

WITH reference to the tornado at St. Louis on May 27, we learn from *Science* that, with commendable promptness, the Washington Weather Bureau issued, on May 29, a special storm-bulletin showing the weather conditions over the United States on May 26-28. The Chicago 8h. a.m. forecast on May 27 predicted severe thunderstorms for Illinois and adjoining States during the latter part of the day, and a special warning was issued from Washington at 10h. 10m. on that morning.

THE Northern Province of Japan has recently been visited by a series of destructive earthquakes. Within twenty hours, on the 15th and 16th insts., no less than 150 shocks were felt. Nearly the whole of the town of Kamaishi has been destroyed, with the reported loss of one thousand lives. Three of the shocks appear to have been of exceptional severity, for, according to information we have received from Prof. Vicentini, they were registered by his microseismograph at Padua. The first pulsations began there at 10h. 45m. a.m. (Greenwich mean time) on the 15th, and lasted till 10h. 10m. p.m.; the second continued from 7h. 28m. to 8h. 30m. p.m.; the third and strongest began at 11h. 14m. p.m., and ended at 10h. 2m. a.m. on the 16th inst. The great sea-wave, which accompanied the earthquake, extended over seventy miles of the north-east coast of Japan, destroying many towns, and drowning, it is feared, about ten thousand persons.

A DEVOTED student of natural history, whose name is known to most zoologists, and whose observations have greatly enriched ornithology, has just passed away in the person of Lord Lilford. Numerous notes by him on British birds, and on the ornithology of Spain and of the shores of the Mediterranean, have appeared in the *Zoologist* and the *Ibis*, the journal of the British Ornithologists' Union, of which he was President. Last year he published an excellent volume on the birds of his native county, Northamptonshire, with beautiful illustrations, and the thirty-second part of his "Coloured Figures of the Birds of the British Islands," which was issued only in April last, almost