

CAPTAIN H. L. GALLWEY, vice-consul for the Oil Rivers Protectorate, gave, at the meeting of the Royal Geographical Society on Monday, a detailed account of his travels in the Benin country, of which notice has already been taken in this column (vol. xlvii. p. 65). The fact that some of the deltaic streams are clear and transparent, while the Niger water is very muddy, makes it probable that they are small independent rivers. An account of a visit to Benin city gives some idea of the decadence of native West Africa since the time of the early writers on the region, if these were to be trusted.

MR. E. WILKINSON read a paper on the Kalahari desert, at the same meeting. It described a waggon drive through part of the desert area in company with two others, whose names were disguised under initials. Although great scarcity of surface-water was found, and the draught oxen and horses had sometimes to be watered from "sucking holes," where natives sucked up the water and filled the buckets from their mouths, the land was fairly well grassed in most parts, and Mr. Wilkinson believes it possible that it may subsequently become useful for grazing. A rough geological survey of the district passed over was made. Granite covered a large part of the surface, and appears to be the bed-rock of the whole district examined. Hard crystalline siliceo-calcareous beds and highly-altered ferruginous shales, as well as quartzite were also found but vast accumulations of blown sand masked the true geological structure in almost every place.

THE Geographical Society of California claims to have achieved "an immense success." The Society was incorporated on December 11, 1891, for "the acquisition and dissemination of scientific geographical knowledge," and has already achieved a membership of 400. Monthly lectures have been given, and a bulletin has been published. We hope that a society which has begun so well will fulfil the Latin proverb which it has adopted for its motto, "*Vires acquirit cundo.*"

#### THE ANNIVERSARY DINNER OF THE ROYAL SOCIETY.

THE anniversary dinner of the Royal Society was held on the evening of St. Andrew's Day at the *Hôtel Métropole*. It was more largely attended than any previous anniversary dinner, covers being laid for about 230. The chair was occupied by the President, Lord Kelvin. On his right were Mr. Shaw-Lefevre, M.P., Sir James Paget, the Italian Ambassador, Prof. Raoult (medallist), Sir H. Roscoe, M.P., Sir James Lister, Lord Justice Lindley, Sir B. Samuelson, Sir A. Moncrieff, Sir U. Kay-Shuttleworth, M.P., Sir C. E. Bernard, the Dean of St. Paul's, Mr. John Hutton, and Sir H. Acland. On the left of the chair were Mr. Arthur Acland, M.P., Prof. Huxley, Mr. James Bryce, M.P., the Swedish Minister, Lord Ashbourne, Sir G. Stokes, the Treasurer of the Society (Sir John Evans), Mr. Alma Tadema, Sir R. E. Welby, Mr. Herbert Gardner, M.P., Sir Godfrey Lushington, Mr. Bryant, and Dr. Mackenzie. The vice-chairs were occupied by Sir B. Baker, Prof. Roberts-Austen, Lord Rayleigh, Prof. M. Foster, Sir A. Geikie, Mr. Norman Lockyer, Dr. Pye-Smith, Prof. Vines, and Mr. Rix (assistant secretary). The first toasts were "The Queen and the Prince and Princess of Wales," and "Her Majesty's Ministers and the Members of the Legislature."

Mr. Shaw-Lefevre, in the course of his reply to the latter, said that men of science as a rule were unwilling to abandon the quiet fields of research in order to launch on the stormy seas of politics; and if they were willing, they were too philosophical to swallow the creeds of either political party. He thought that the two older Universities might help in this matter, and do more to justify their right of representation by emulating the example of the London University in returning men of science to Parliament. If there was any man in the country whose presence in the House of Commons would add to its quality and power, it was Prof. Huxley.

Mr. Acland, in proposing the next toast, said,—I have to propose to those who are here present, and who do not bear the title of "F.R.S.," the toast of "The Royal Society"—a society ancient, independent, distinguished, and most beneficent in its operations during a course of more than two centuries. Why I, a mere politician, have been selected to propose this toast I do not know. In looking over a list of the late proceedings of your society a day or two ago, I tried to discover some links between yourselves and the Education Department, over

which I preside. I came across the words, "On character and behaviour," and I thought that that looked like the kind of language which we employ in our instructions to her Majesty's inspectors of schools. But it was not so. The subject to which the words had reference was "on the character and behaviour of the wandering cells of the frog, especially in relation to micro-organisms." I feel that I must fall back upon some more substantial links than that, and I fall back upon the fact that I have the honour to preside over certain institutions in which members of your society are engaged. There is the Dean of the Royal College of Science at Kensington, Prof. Huxley; and your foreign secretary, Sir Archibald Geikie; and, altogether, including those who examine for us from time to time, there are something like thirty members of the Royal Society who are connected with those institutions, and I consider it a very high honour to be linked with institutions with which they are connected. Whether some of my friends at Kensington look on their connection with the State in the same light, I do not know. When I have the honour of going over the laboratories of my friends, Prof. Thorpe and Prof. Rücker, I am inclined to doubt it. But as far as the present connection with the State goes, the Royal Society do most admirable service. They act as unpaid judges for the administration of a sum of £4,000, which the State would find it very difficult to administer on its own account; and they do the work in so impartial and admirable a manner that no man in his senses could complain. There is one other link between us. There are present here a large number of men who are interested in the work of education; and I think they will agree with me that we have one great task before us. Between the Universities and the University Colleges with which most of them are connected and the great sphere of elementary education there lies a large region, at present unorganized and chaotic, which we want to organize and bring into working order as soon as possible. There are many men of science in these colleges who often greatly regret to find willing lads, with the highest scientific capacity, brought under their notice and care, whose only lack is a lack of adequate educational preparation for their work. It is that which we want to remedy, and if I am enabled to take however humble a share in remedying it, I shall be proud of the task. We want to engage in the task of the reclamation of waste; and one of the most serious of all wastes is the waste of intellect. For those lads who go to our colleges in every part of Great Britain and Ireland we want to hold out one great possible goal—the blue riband of science—the title of Fellow of the Royal Society. You at any rate in your scientific honours have no distinction of class, and, as your medallists to-day will testify, no distinction between one country and another. You regard all as equal when you adjudge your honours to the fittest men to bear them. I connect with this toast the name of your distinguished President, Lord Kelvin. It was truly said some nine years ago, when his claims were urged for the Copley Medal, "there is scarcely a branch of physical science to the substantive advantage of which he has not contributed"; and I understand that while he has touched both the highest and the most abstruse subjects, he has not failed to descend even to humble matters like the domestic water-tap. Among those of you who know far better than I do what Lord Kelvin has done, both for abstruse science and for the welfare of mankind, there can be no limit as to the value of his work to future generations. I am sure that he himself cannot possibly say how great the value of what he has done may be in the far-off future. But I understand from Sir Archibald Geikie that your president has attempted to put a limit to the inquiries of the geologists, when they look into the backward past. He has definitely said that in looking backwards they must not go beyond the moderate limit of twenty million years. I understand that this is a grievance on the part of the geologists, but I hope that the President will not give unnecessary pain to his geological friends. In the draft of the preamble of your charter—it was drafted by Sir Christopher Wren—it was said Fellows of the Royal Society, by "their labours in the disquisition of nature, would try to prove themselves real benefactors of mankind." I give you the toast of "The Royal Society," coupled with the name of Lord Kelvin, and I assert that your present President has done his part in proving himself a benefactor of mankind.

The Chairman, in replying, said,—I thank you very heartily for the kind manner in which you have received this toast. I feel the honour you do me, but I also feel my incapacity to say

what ought to be said for so great an institution. I can only say in my own way that I believe the Royal Society, as an institution, has up to the present time persevered in well-doing, and had been successful in its efforts. The Royal Society has certainly endeavoured to carry out the objects of its institution—namely, to inquire into natural knowledge and the improvement of it. The mode of carrying out that object was carefully considered, no doubt, by those who founded the Royal Society; and they determined to hold regular meetings, partaking somewhat of the character of a debating society—meetings where discussions could be raised by questions presented, and the truth arrived at thereby. That object has been carried out from the inception of the Society to the present day; and the society has been imitated by other societies over a large part of the civilized world. Indeed, the Royal Society itself only followed in the path of other learned societies in Italy, which had determined that by personal discussion of questions in regular meetings truth might be arrived at which otherwise might be lost. We often find complaints that meetings of scientific societies are unsatisfactory. We have even complaints that the important duty, the publication of their proceedings for the rest of the world, is not altogether ideally perfect. Some who desire the progress of science above all, and heartily wish success to the Royal Society, think that the society ought to be a body for merely recording and indexing the work that has been done all over the world. That is a part of the work of the Royal Society which is not neglected. The council has had most anxious, careful, and laborious consultations from year to year with reference to this work—not only as to the publication of its own transactions and proceedings, but as to the cataloguing and indexing of the proceedings of scientific bodies and scientific workers all over the world. One very important part of the work of the society consists of the cataloguing of all scientific papers published; and a very dry and fatiguing subject it is to work upon. The difficulty here is *embarras de richesses*.

To get the titles only of these papers is itself a truly Herculean task. If the Royal Society had not only capacity, but had also great funds at its disposal, it would make short work of this task. It would not only index, it would publish the papers; and would put them in such a form that any one could find his own particular subject at once, and the particular volume and page in which it was treated. This is an exceedingly difficult subject, but the first necessity is funds, and if those were supplied all the rest would follow. The publishing and indexing, however, is not the only work of the society. The life and soul of its work is in its meetings and discussions, and whoever has not felt the stimulus of attending those meetings has hardly yet found out the spirit of scientific enquiry. For myself, I say the fact that we can attend meetings of the Royal Society, and hear papers on subjects very far removed from the subjects of our every-day work, is a stimulus which is of the highest value. The worker who has heard what other people are doing goes back to his work with something which may help him in it, which, at any rate, brightens his life, and makes the drudgery and heavy work necessary for success in any scientific investigation less irksome and dry. For myself I may say that my connexion with the Royal Society, extending over a great many years, has been one of unmixed benefit and pleasure, and has given to me some of the happiest of those pictures of knowledge and memory the possession of which constitutes so much of the delight of life. Mr. Acland remarked upon my having been hard upon the geologists. I do not think that I have actually been so. I do not believe in one science for the mathematician, another for the chemist, another for the physicist, and another for the geologist. All science is one science; and any part of science which places itself outside the pale of the other sciences ceases for the time being to be a science. The sooner it returns to the pale of the other sciences the better; and when all are working for a common good the better it will be for the progress of each.

Prof. Huxley, in proposing the next toast, said that he had to discourse on the merits of the gentlemen to whom medals had been awarded. There was one the adequate treatment of whose merits would occupy the whole available time; and yet Mr. Shaw-Lefevre wished him to say something about his capacity to become a legislator and also to give an opinion upon geological time. He would answer the first interrogation by telling a story. When he was a very young man a solicitor in large practice discovered in him what that gentleman believed qualities that would command success at the Bar, which he had never discovered

himself, and proposed to advance him an income for a certain number of years until he could pay the amount back out of the fees he was sure to earn. He was sorry to say his reply was this, "So far as I understand myself, my faculties are so entirely confined to the discovery of truth that I have no sort of power of obscuring it." With regard to political life, the absolute contradictions that were made by politicians of opposite sides upon matters of fact were absolutely fatal to his chances in a political career. Coming to the subject of the toast, he narrated the history of the Copley medal. A bequest of £100 was left to the Society 188 years ago by Godfrey Copley, a Fellow of the Society, for improving natural knowledge. The medal was thrown open to all the world, a step much disapproved by certain narrow-minded persons at the time; but that step was the real reason why, a century later, Sir Humphry Davy could really call it "the ancient olive crown of the society." The value of the medal was originally fixed at £5, people being able to get five per cent. for their money in those halcyon days. He did not like to dwell upon its appreciation now lest the County Council should put in a claim for unearned increment. The medal had certainly done nothing for itself; the appreciation of its value had arisen entirely from surrounding circumstances, the chief being the wisdom and integrity of some eighty successive councils. A complete list of the awards was published every year. Going back one hundred years from 1887—he had a reason for not taking a later date—the century began with John Hunter, and finished with Joseph Hooker. Between them was a galaxy of the heroes of science, French, German, Scandinavian, Italian, American, and English; and, although one star might differ from another star in glory, none was unworthy of its place in the constellation. The present council had not fallen below the standard of its predecessors; there was no biologist, no scientific physician, no anthropologist, no archaeologist to whom the name of the illustrious Rector of the University of Berlin, Rudolph Virchow, was not familiar. No one had done more to put pathology on a scientific foundation; no one had done more for critical anthropology, especially in connection with archaeology. Without venturing on the dangerous field of politics, he would add that these merits were, to his mind, greatly enhanced by the fact that Virchow had never merged the citizen in the philosopher, but amidst great difficulties and with undaunted courage, he had taken an active, a disinterested, and a thoroughly independent course in the Legislature of his country. The next medal in order of age was that founded by Count Rumford at the commencement of this century, on equally cosmopolitan principles, but limited in scope to the physico-chemical sciences. In these sciences hardly anything had attracted popular attention more of recent years than the marvellous power which spectroscopy had placed in our hands to discern the chemical composition of bodies which were millions and billions of miles away; and, for anything we knew to the contrary, these minute and careful inquiries into the constitution of stars might be *post-mortem* examinations. In the accurate examination of stars by the spectroscope, he understood from others that Dr. Dunér, of Sweden, had laid secure foundations for all future investigations. The Royal medals were founded by the Sovereign some sixty-odd years ago, were now maintained by her Majesty, and were confined to British subjects. There were two medals every year, and they were usually allotted one to physical and chemical science, and the other to biological science. They were usually given to younger men; and it was so in his own case forty years ago. The value of the medal was inexpressible to him. In his younger days, if a man took to science, it was thought he was going to the bad. The receipt of the medal made an entire revolution in the minds of his friends; and he was a respectable person from that time. On the present occasion the first of these medals was awarded to the present Director of the Astronomical Observatory in Oxford, Prof. Pritchard, and he was told that there was no observatory in the three kingdoms in which so much admirable work of observation was being done. Only a short time ago the Royal Astronomical Society awarded its gold medal to the Director of the Oxford Observatory. He was further told that the director was tackling what he understood was one of the most difficult pieces of astronomical work—parallax determination; and that he had already printed off more stars than anybody else. Besides this, he was hard at work on the great international chart of the heavens. It was obvious that this gentleman must be in the

full vigour of youthful energy, and therefore he treated with contempt a rumour that had reached him that the director was in his eighty-fourth year. They would join with him in wishing Prof. Pritchard a long continuance of the health and strength which were turned to such splendid account. The second of these medals was awarded to Dr. Langley, of the University of Cambridge, for the long-continued and very valuable physiological researches. There was a familiar phenomenon observable before sitting down to dinner, and known as watering of the mouth. If it were possible to determine the exact condition of that operation in physiology the exact knowledge would be a key to an immense range of the secrets of Nature. It was these problems that Dr. Langley had been investigating, and he had come nearer to their solution than any one else. The Davy medal was awarded to a distinguished French *savant*, M. Raoult, whose work was considered of the highest importance; and he rejoiced that the recipient of the medal was present. The Darwin medal was instituted in honour of one of his best and dearest friends, and it was now conferred upon a man who was one of the staunchest friends he had had for the last forty years. He might fairly appeal to Sir Joseph Hooker's present activity, put him down also among the young men, and thereby save the credit of the council in the matter of its own regulation. To those who knew the "Life and Letters of Darwin," talk about Sir Joseph Hooker's right to the Darwin medal was as futile as the attempt to judge Manlius in sight of the Capitol. He knew no more remarkable example of life-long devotion, of stores of information laid open, of useful criticism, and of still more useful encouragement, by one man to another, than that exhibited by Sir Joseph Hooker in this picture. It might be that even the man whose motto was "It's dogged as does it," and who so patiently laboured for half a lifetime at the great fabric of the origin of species, might have fainted by the way without this friend's aid. And assuredly Hooker's great study of geographical distribution was a most important factor in Darwin's work. It lay in the eternal fitness of things that Wallace and Hooker should receive the Darwin medal; and that these old young-men should give it a heightened value for the young young-men to whom it would hereafter pass.

Prof. Raoult returned thanks, speaking in French.

Dr. Langley responded for the other medallists and himself.

Sir James Paget briefly proposed "The Guests."

The Swedish Minister, in responding, said—The honour to be your guest and to participate with you in the celebration of this interesting day cannot be more thankfully felt than by me, who still has to consider this favour, above all, as a compliment to the country where you have selected this year your Rumford medallist. This distinction to my fellow-countryman, Prof. Dunér, whose merits Prof. Huxley has so eloquently explained to you, is a new link in the long chain of tokens of sympathy and appreciation from this society to scientific Scandinavians, a chain of which one of the oldest links is the creation of the Linnean Society. More than a hundred years have passed since, and in the meantime many systems have been altered; and, especially in the last twenty years, those alterations have so closely followed the one upon the other that we laymen have been accustomed to believe we were entitled to ask every new morning, "What great discovery will this day bring?" In one department, however, scientific men as well as laymen cannot admit the possibility of any alteration, and that is in our conviction and belief that this country occupies a prominent place in the universal scientific movement—a proof of which, among many others, is the fact that no other institution in the world encourages as much as does this society other countries' scientific researches.

Mr. Alma-Tadema also responded, remarking in the course of his speech that there was no art without science, neither was there any science without art: and that art coloured life as the sun colours the flowers of nature.

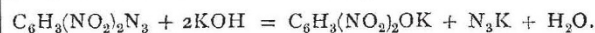
#### AZOIMIDE.

A FURTHER communication concerning azoimide, the interesting compound of hydrogen and nitrogen,  $N_3H$ , discovered two years ago by Prof. Curtius, is contributed to the current number of the *Berichte* by Drs. Noelting and Grandmougin of Mülhausen, in conjunction with Herr O. Michel. As described in our note of vol. xlv. p. 600, Drs. Noelting and Grandmougin have previously shown that azoimide may be obtained by indirect means


from the singular compound prepared somewhere about the year 1866 by the late Dr. Peter Griess, and which has hitherto been

known as diazobenzene imide,  $C_6H_5-N \begin{matrix} \diagup N \\ \parallel \\ \diagdown N \end{matrix}$ . This com-

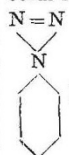
ound is now recognised as the phenyl ester of azoimide. It is, however, a substance of very considerable stability, and successfully resists the attack of concentrated alcoholic potash, even under pressure. Although thus stoutly resisting direct attack, Drs. Noelting and Grandmougin have shown that by undermining its constitution by the introduction of a couple of nitro groups in the place of two hydrogen atoms, it becomes weakened so greatly as to be no longer capable of withstanding the action of the alkali, and is decomposed with production of the potassium salts of azoimide and dinitro-phenol—



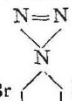
This interesting result is now supplemented by showing that it is not necessary to introduce *two* nitro groups in order to render diazobenzene imide sufficiently negative in character as to be susceptible to the attack of alcoholic potash, that *one* such group suffices, provided it be introduced in the *para* or *ortho* position. A nitro group introduced in the *meta* position appears to exert much less weakening power, quite inadequate for the purpose.

Para nitro diazobenzene imide, , is a substance crystalliz-

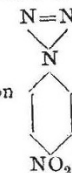
ing well in colourless tabular crystals. When these crystals are allowed to fall slowly into a cold solution of one part of caustic potash in ten parts of absolute alcohol, they instantly dissolve and the liquid becomes coloured a deep red. If this red solution is warmed for a couple of days over a water bath, and the larger portion of the alcohol subsequently distilled off, upon acidification of the residue with dilute sulphuric acid, and again distilling, azoimide,  $N_3H$ , passes over along with the vapours of water and alcohol. In order to free the azoimide from alcohol it is only necessary to neutralize the distillate with soda, and evaporate the solution to dryness, when the sodium salt of azoimide,  $N_3Na$ , is obtained; the sodium salt is then dissolved in water; the solution acidified with sulphuric acid, and subjected to distillation, when an aqueous solution of azoimide is obtained. The yield of azoimide is usually only about 40 per cent. of the theoretical, owing to secondary reactions which occur simultaneously with the main one. The *ortho* compound,

  $NO_2$ , treated in a similar manner, also furnishes azoimide

to the extent of about 30 per cent. A very much larger yield, about 85 per cent., is afforded by the dibrom derivative of

the *para* compound,   $Br$ , a substance which is readily

obtained in the form of long colourless prisms. Azoimide has also been obtained to the extent of 30 per cent. of the theoretical amount by the decomposition of a nitro toluene derivative of

azoimide of the constitution   $CH_3$ .