

on this appropriate close to his more professional work, we express an earnest hope that it will be not a few years before the inevitable *finis* is written on his scientific and literary career.

T. G. B.

DINNER TO SIR ARCHIBALD GEIKIE.

THE complimentary dinner to Sir Archibald Geikie on May 1, provided a means of giving public expression to the regard in which he is held, not only in the scientific world, but also by leaders in other branches of intellectual activity. The representative character of the dinner was very noteworthy, as will be seen from the following list of those present :—

Rt. Hon. Lord Avebury, Sir Archibald Geikie, Sir G. G. Stokes, Bart., Sir F. Abel, Bart., Major-General Sir J. Donnelly, Admiral Sir W. Wharton, Sir John Evans, Sir Norman Lockyer, Sir Henry Craik, Sir John Murray, Sir Michael Foster, Sir William Turner, Sir Henry Howorth, Sir Henry Roscoe, Sir Lauder Brunton, Major-General Festing, C. B., S. Spring-Rice, C. B., Digby Pigott, C. B., Major-General McMahon, Colonel Johnston, Colonel Bushe, Major Craigie, Rev. Prof. Bonney, Rev. Prof. Wiltshire, Prof. T. McK. Hughes, Prof. Sollas, Prof. Ray Lankester, Prof. C. le Neve Foster, Prof. J. Geikie, Prof. E. Hull, Prof. Joly, Prof. Jack, Prof. Corfield, Prof. Lapworth,

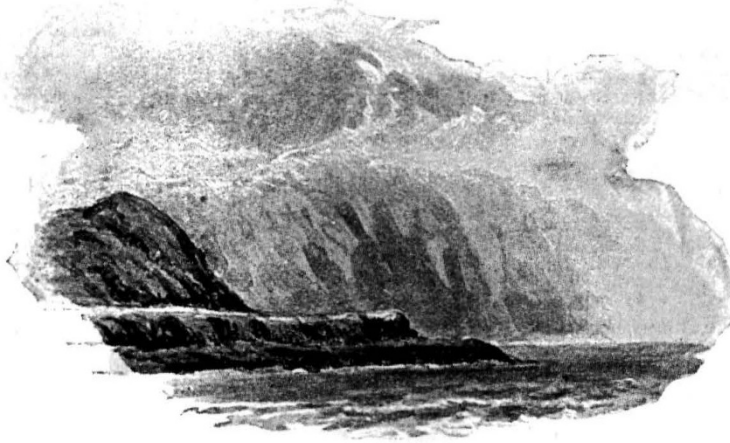


FIG. 3.—Rock terraces of old sea margins, Isle of Jura.

Prof. Watts, Prof. Seeley, Prof. Garwood, Prof. T. Groom, Prof. G. A. J. Cole, Prof. W. Galloway, Prof. H. Bauerman, Prof. R. A. Gregory, Prof. Evan Small, Dr. F. Moreno, Dr. W. Blanford, Dr. P. L. Sclater, Dr. Scharff, Dr. F. Parsons, Dr. George Ogilvie, Dr. Tempest Anderson, Dr. Horace Brown, Dr. Scott Keltie, Dr. Hugh R. Mill, Dr. J. W. Evans, Phipson Beale, K. C., H. Arnold Bemrose, J. E. Bartholomew, E. Best, F. Best, C. Borchgrevink, B. H. Brough, G. L. Craik, C. Fox-Strangways, Roderick Geikie, E. Greenly, George Griffith, A. Harker, R. S. Herries, T. V. Holmes, W. H. Hudleston, R. L. Jack, D. A. Louis, J. E. Marr, F. Macmillan, G. A. Macmillan, H. W. Monckton, George Murray, E. T. Newton, Grant Ogilvie, J. Parkinson, F. W. Rudler, A. Strahan, H. J. Seymour, J. J. H. Teall, C. Tookey, W. Whitaker, H. B. Woodward, Martin Woodward.

The list shows that the different public departments with which the Geological Survey is most closely connected were well represented, including the Treasury, Admiralty, Board of Education, Local Government Board, Board of Agriculture, Ordnance Survey, Scottish Education Office, Stationery Office and British Museum. There were likewise present the professors of geology in London, Oxford, Cambridge, Edinburgh, Dublin and Birmingham, together with numerous other Fellows of

NO. 1645, VOL. 64]

the various learned societies. Letters, telegrams and addresses of felicitation were received from all parts of Europe and America. The following telegram from Christiania was read by the chairman: "Also from Norway's mountains an echo of the cheers for the master of English geology—Brögger, Helland, Nansen, Reusch, Vogt."

Lord Avebury, in proposing the health of the guest of the evening, said :—

Sir Archibald was educated at the Royal High School and University of Edinburgh, which must indeed be very proud of him. He commenced his official career in 1855, when, at the early age of nineteen, he was appointed to a post on the Geological Survey, and in 1867 was made director for Scotland. In 1871 he became professor of geology at Edinburgh, and held the post till 1881, when he resigned it on his appointment as director-general of the Geological Survey and director of the Museum of Practical Geology in Jermyn Street, which he has since held with credit to himself and great advantage to geological science. Every one would admit (1) that the Geological Museum was a model museum, (2) that the Geological Survey has been admirably managed and that Sir Archibald has organised a splendid staff, (3) that the maps and memoirs of the Geological Survey are admirable contributions to science and an honour to all concerned.

Sir Archibald was one of the first field geologists to realise the value of microscopic sections of rocks, and under his superintendance some thousands of slides were made and added to the Jermyn Street Museum. Under his able successor, whom we all congratulate on his appointment, we may be sure that this branch of the science will not be neglected.

Besides his official duties Sir Archibald has contributed to the progress of science by much original work, comprising nearly 100 separate memoirs; to scientific education by his primers and text-books, which are models of clearness; to scientific literature by his admirable "Text-book of Geology," his "Geological Sketches at Home and Abroad," "Founders of Geology," "Memoir of Ramsay," "Life of E. Forbes," "Life of Murchison," &c.

Others also of his books are important as contributions to science, and also in rendering it more accessible and more interesting to the general reader, such as his charming "Scenery of Scotland" and "The Ancient Volcanoes of Britain." These seem to me models of what such books should be, combining, as they do, scientific accuracy with a love of scenery, and the power of description in happy and expressive words, for Sir Archibald combines with the

striking qualities of a geologist those of an enthusiastic lover of nature. He is an artist in two senses, both with pen and pencil, for his sketches add much to the vividness and clearness of his writings.

Our countrymen have not always received fair play from foreigners, but I am happy to say that, among men of science at any rate, the most friendly and harmonious relations exist; we cordially acknowledge the splendid services they have rendered to science, and recognise that, in this respect at any rate, our international relations are pleasant and harmonious. For this also we are greatly indebted to Sir Archibald Geikie.

Sir Archibald is now retiring from his official duties, and the additional leisure which he will enjoy will in great measure, we may be sure, be devoted to the prosecution of geological research.

He has received many well-deserved honours. He was made F.R.S. before thirty; has been vice-president and foreign secretary of the Royal Society and received a Royal Medal; also the Macdougall-Brisbane Medal of the Royal Society of Edinburgh, and the Wollaston and Murchison Medals of the Geological Society. He is an associate of most of the chief academies of Europe and America, D.C.L. of Oxford, D.Sc. of Cambridge and Dublin, and LL.D. of Edinburgh and St. Andrews. He received the honour of knighthood in 1891.

But it is not merely to do honour to a great geologist that we

are here to-night, but to express our warm feelings towards an old and valued friend and to congratulate him on his well-earned honours. Sir Archibald we drink your health, and for our own sakes, as well as for yours, we hope that you have before you many years of health and happiness.

The chairman then presented Sir Archibald with an illuminated address from his colleagues of the Geological Survey and Museum in the following terms:—"We desire, upon the close of your tenure of office, to express our sense of the high value of the services which you have rendered to these Institutions; we proudly recognise the high position attained by you in the scientific world and gratefully acknowledge the beneficial influence of your example. That you may long live, after more than forty-five years in the public service, to enjoy your freedom from official cares and to enrich geological literature with your luminous writings is our earnest desire."

Sir Archibald Geikie replied as follows:—

You may well believe that on such an occasion as this it is hardly possible for a man adequately to express the feelings that overpower him. If "silence is the perfectest herald of joy," this is no less true of gratitude. Hence, were that permissible, I would fain simply thank you in the fewest words for this manifestation of your friendly regard. To you, my lord, I am deeply indebted for all the kind words you have been pleased to say of me and my work, and to you, my friends, my debt is not less for the way in which these kind words have been received and re-echoed by you. The feeling, next to overpowering gratitude, which rises uppermost in my mind is a bewildering wonder why so much kindly appreciation and good-will should have been in this way showered upon me. And yet on reflection I recognise that it is only the culmination of what has been so liberally extended to me all my life. When I look back into the past, the vista of fifty years seems to me crowded with friendly faces and helpful hands, ready at every turn with wise counsel or stimulating sympathy and encouragement. Most of these voices have long been silent for ever, but their sound still lingers in my ears. It is to their aid and guidance that I stand mainly indebted for anything that I have been able to do in the cause of science, and I should be ungrateful and unworthy if on this memorable occasion I failed to acknowledge my indebtedness.

At the outset of my career there were four men who specially befriended me and set me in the path which I have followed ever since. The first of these was James Pillans, professor of Latin (or Humanity as it is called in the north) in the University of Edinburgh. As he was teaching for more than half a century, a large part of the population had passed through his hands. Robert Chambers used humorously to divide mankind into two sections—those who had been under Pillans and those who had not. I am glad to have belonged to the former section. Pillans's name is perhaps most widely known from the savage and wholly undeserved slander of him inserted by Byron in his "English Bards and Scotch Reviewers." As I knew him he was a genial old man, with much of the gravity and stiffness of an eighteenth century pedagogue, but with a kindly nature, a vein of chivalrous sentiment and an enthusiasm for classical literature to which his best students owed much. He was an educational reformer well in advance of his time. In particular, he used to insist on the study of physical geography as a necessary accessory in all historical inquiry. When the story of the progress of education in this country is fully written, an honoured place will be given to Pillans. Horace was his favourite author, and as I was fond of turning the odes into English verse and illustrating them with parallel passages from other authors, my exercises procured me first his notice and then his friendship, which he continued to the end of his life. Knowing my taste for geology, he asked me to meet Leonard Horner at breakfast, and in this way indirectly led to my introduction to Lyell and to the Geological Society of London.

Another teacher whose influence and help were great was George Wilson, well known to chemists for his able researches on fluorine, and to a much wider public for his delightful literary essays. In his laboratory I studied chemistry. It was he who first opened out to me the prospect of employment in the

Geological Survey and eventually introduced me to Andrew Crombie Ramsay.

Hugh Miller, by his writings, and still more by the personal charm of his conversation, as he discoursed over the fossil treasures in his museum, finally confirmed my determination to give my life up to geology, if that were found to be practicable. It was he who first brought my name before Murchison, then newly appointed Director-General of the Geological Survey.

To William Edmond Logan, Director of the Geological Survey of Canada, it is a pleasure to acknowledge my deep indebtedness. From time to time he used to return to this country, and on each of his visits to his brother, who was a lawyer in Edinburgh, I was privileged to spend long hours with him, while he spread his Canadian maps on the floor and gave me graphic pictures of his life and work, with the help of his well-filled sketch-books and note-books. After such interviews, as you may well believe, the determination to become a geologist took deep root.

At that time, however, now half a century ago, the outlook for employment in a geological capacity was neither very wide nor very clear. Robert Chambers, probably most widely known now as the author of the once famous "Vestiges of Creation," but, I venture to think, best deserving to be remembered for his pioneer work in glacial geology, rather sought to dissuade me from the Survey. I remember that one of the reasons he gave was that he hardly thought I possessed strength and appetite enough for the life of a professional geologist. He had lately been in Wales with a Survey party, consisting, if I remember, of Ramsay, Selwyn and Jukes, and being the oldest member of the company was unanimously voted into the chair, where he had the duty assigned to him of carving a leg of Welsh mutton. He described the prodigious capacity of the geologists for food, and the incredibly short time that passed before he had nothing but a bare bone in front of him.

In the early autumn of 1855 I had an interview with Murchison at his hotel in Edinburgh. He looked a little doubtfully at my youthful and slight figure, but was reassured by Ramsay, whom I had shortly before taken on a geological excursion in the neighbourhood. The chief remarked to me that a pair of good legs were of about as much use as a head to a geologist. I joined the staff in the following October. Six years later I accompanied Murchison in a long geological tour through the Highlands, and as the climbing all fell to me, he was quite satisfied as to the capacity of my legs. That expedition secured for me his lasting friendship. He never lost an opportunity of aiding me. Underneath a somewhat stiff military manner he carried a warm heart. Among all my benefactors there is none to whom I owe so much and for whose memory I cherish a warmer regard.

The Geological Survey was then a much smaller establishment than it has since become. Originally placed under the Board of Ordnance, its members wore a military uniform; but on the transference of the organisation to the Civil Service this uniform was discarded, though, as in the case of the "poor workhouse boy," the gilt buttons survived, and with their crossed hammers and crown continued for many years afterwards to be sported on the vests of the Survey men at their annual festivities. Who shall describe the delights of the Survey life in the field, when what had been the employment only of an occasional precious holiday, became the absorbing occupation of one's life? We had pessimists on the staff then as now. One of these continually reminded us that as ours was a service depending for its maintenance upon an annual vote of Parliament, which might some fine day be refused, we should all hold ourselves prepared to find something else to do.

When I joined the staff the system of Civil Service examinations had lately been authorised by Act of Parliament, but had not yet been brought into working order. I used to be warned from time to time by one lugubrious member of the Department that I had better get myself examined in time, otherwise I would probably endanger my pension, if I lived long enough to claim it. But I knew that, as the examinations were then framed, I should infallibly be plucked. I could not, for example, have given the precise ages of each of Henry the Eighth's wives, nor could I have done a sum in compound addition three feet long in ninety seconds. So I thought it best to let a sleeping dog lie. I never passed any examination, and I am happy to assure you that the Treasury has not refused me my pension.

No member of the Survey who served under Ramsay will ever forget the charm of his presence, his radiant good humour, his unvarying helpfulness, his acuteness in criticism, his sagacity

in geological discussion and the little petulances and whims that made his society so irresistibly amusing. His beneficent influence was long one of the great features of the service, and we owe to him, not only the recollection of his delightful personality, but the guidance and encouragement which have carried us through our work.

To my colleagues in the Survey who have prepared and signed this beautiful address my heartiest acknowledgments are due. It will remain with me as a precious memorial of many close and enduring friendships. Each signature will remind me, now of some delightful ramble in the country when geological problems were eagerly discussed on the ground, now of some momentous conference in the office when the plan of campaign or the details of maps and memoirs were fully considered and settled.

During my tenure of office as Director-General I have been ever supported by the loyal and unstinted devotion of the staff. It has been an honour and a pleasure to be placed at the head of such a body of men—so enthusiastic in their whole-hearted consecration to science and so unwearied and loyal in their efforts for the interests of the service. I feel sure that in no branch of the public service could the *esprit de corps* be higher than it has been among us. You can well understand that it is impossible without regret to sever one's connection with comrades such as these. At the end of my official career, however, I can truthfully claim to have striven to the utmost of my power for the welfare of the staff and for the scientific renown of the service. I have sought to secure the very best men whom it was possible to obtain, and I feel very confident that the Geological Survey, as regards the zeal, capacity and attainments of its members, may challenge comparison with any scientific institution in any country of the world. I rejoice to think that the service is being now put on a firmer footing than it has ever held before, that the prospects of pay and promotion have been lately broadened and brightened, and that, under the guidance of my distinguished friend and successor, the Survey may look forward to a future even more illustrious and more useful than its past. Gentlemen, I thank you all once more from the very bottom of my heart.

THE ROYAL SOCIETY SELECTED CANDIDATES.

FOLLOWING our usual course, we print the qualifications of the fifteen candidates selected by the Council of the Royal Society on Thursday last, for election into the Society:—

ALFRED WILLIAM ALCOCK,

Major, I.M.S., M.B., C.M.Z.S. Superintendent of the Indian Museum; Professor of Zoology in the Medical College, Calcutta. Distinguished as a zoological investigator and teacher, and as a museum curator. Was Surgeon Naturalist to the Marine Survey of India, from 1888 to 1892, on board the Royal Indian Marine Ship *Investigator*, also to the Pamir Boundary Commission in 1895. Has devoted himself chiefly to the study of marine zoology with especial reference to fishes, crustacea, echinoderms and madreporaria, and to problems connected with the geographical distribution of the Indian representatives of these groups, and the phenomena of viviparity in fishes. Author of an extensive series of memoirs, papers and reports dealing with the aforementioned subjects, published during the past ten years in the *Proceedings* of the Royal Society, the *Journal* of the Asiatic Society of Bengal, the *Annals and Magazine of Natural History*, and in the series of publications of the Indian Museum, and "Scientific Memoirs" by the Medical Officers of the Indian Army, and elsewhere. Some of these (*e.g.* the series entitled "Materials for the Carinological Fauna of India") are revisionary monographs of the groups with which they deal, and in others (*e.g.* the Survey of the Deep Sea Zoological work of H.I.M.S. *Investigator* for 1884-1897, and the "Deep Sea Madreporaria") the general bearing of the zoogeographical problems arising out of the work are fully discussed in their association with the facts and theories of oceanographical research. In connection with the work of the *Investigator* he originated, in 1892, the serial publication, "Illustrations of the Zoology of the *Investigator*," now progressing.

NO. 1645, VOL. 64]

FRANK WATSON DYSON,

M.A. (Cantab.), Chief Assistant (since 1894) Royal Observatory, Greenwich. Late Fellow of Trinity College, Cambridge. Secretary of Royal Astronomical Society. Author of various papers on mathematics and astronomy, among which may be mentioned:—"The Potential of Ellipsoids of Variable Densities" (*Quart. Journ.*, Pure and Applied Mathematics, No. 99, 1891); "The Potential of an Anchor Ring" (two papers—*Phil. Trans.*, 1893, pp. 43-95 and 1041-1106); "The Motion of a Satellite about a Spheroidal Planet" (*Quart. Journ.*, Pure and Applied Mathematics, No. 105, 1894); "The Effect of Personality in Observations of the Sun's Right Ascension on the Determination of the Position of the Ecliptic" (with W. G. Thackeray, *Monthly Notices, Roy. Astron. Soc.*, vol. liv., 1894); "Account of the Measurement and Comparison of a set of four Astrographic Plates" (with W. H. M. Christie, *ibid.*, vol. lv., 1894); "On the Determination of the Positions of Stars for the Astrographic Catalogue at the Royal Observatory, Greenwich" (with W. H. M. Christie, *ibid.*, vol. lvi., 1896); "New Division Errors of the Greenwich Transit Circle and their Effect upon the observed N. P. D.'s (with W. G. Thackeray, *Mem. Roy. Astron. Soc.*, vol. liii., 1899); "Comparison of the Diameters of the Images of Stars on the Greenwich Astrographic Plates, with the Magnitudes given in the 'Bonn Durchmusterung'" (with H. P. Hollis, *Monthly Notices, Roy. Astron. Soc.*, vol. lx., 1899). Distinguished as an astronomer.

ARTHUR JOHN EVANS,

M.A. Hon. Fellow of Brasenose College, Vice-President of the Society of Antiquaries, Keeper of the Ashmolean Museum, Oxford. Distinguished as an archaeologist and anthropologist. Mr. Evans's recent discoveries in Crete have been of the highest importance as throwing an entirely new light on the early civilisation of the Ægean and Mediterranean areas, and proving the hitherto unknown fact that a Præ-Phœnician form of writing was in use within those areas during the Mycenaean period. Starting from certain engraved gems, some of them found in Crete, the figures on which he suspected to be alphabetic or syllabic signs, he was led by inductive reasoning to infer that in that island there must exist monuments of a præ-historic system of writing. For some years he has carried on investigations in Crete, with the final result of bringing to light, in what seems to be the Palace of King Minos, or the famous Labyrinth, upwards of a thousand clay tablets, inscribed with documents in both a pictographic and a linear system of writing, as well as remains of artistic work of remarkable interest. The existence of a high stage of Mediterranean culture, about 2000 B.C., has thus been established, and the use of writing among Hellenic peoples has itself been carried back to a date at least 500 years earlier than has hitherto been regarded as possible. Of Mr. Evans's other published works may be cited his researches in the anthropology and antiquities of Illyricum and Dalmatia, and his numerous memoirs relating to the Iron Age, the Mycenaean Period, the late Celtic or Early Iron Period, and generally the connection of Egypt and the East with the dawn of European civilisation. His works on the coinages of Tarentum and Sicily are standard authorities, and after the death of Prof. Freeman he completed that eminent writer's "History of Sicily."

JOHN WALTER GREGORY,

D.Sc., F.G.S. Professor of Geology in the University of Melbourne. Explorer of Mount Kenya, and author of "The Great Rift Valley." Has contributed a large number of papers to scientific publications on Palæontological, Petrological and Physiographical questions; for example, on the Maltese fossil Echinoidea (*Trans. Roy. Soc.*, Edin.); on British Palæogene Bryozoa (*Trans. Zool. Soc.*); on the Echinoidea of Cutch and on the Corals of Cutch (Palæont. Indica); on Pseudodiadema Jessoni; on Archæodiadema; on Echinocystis, &c., besides the volumes in the British Museum Catalogue on the Jurassic and the Cretaceous Bryozoa. In Petrology he has written in the *Quarterly Journ. Geol. Soc.* on the Tudor specimen of Eozoon, the Variolites of the Fichtelgebirge, the Waldensian Gneisses, the Schistes Lustrées of Mont Jovet, the Geology of British East Africa (three parts), and (in collaboration) the Variolites of the Mont Genevre, the Geology of Monte Chaberton, the Eozoal structure of ejected blocks, Monte Somma, &c., and among several papers in Physical Geology, the Glacial Geology of Mount Kenya, and (in collaboration) Contributions to the Glacial Geology of Spitzbergen.