

an answer to any question that we may send through the fathomless abyss. When the spectroscope was in its infancy it was suggested that possibly some difference might be found in the rays reflected from living matter, especially from vegetation, that might enable us to distinguish them from rays reflected by matter not endowed with life. But this hope has not been realized, nor does it seem possible to realize it. The astronomer cannot afford to waste his energies on hopeless speculation about matters of which he cannot learn anything, and he therefore leaves this question of the plurality of worlds to others who are as competent to discuss it as he is. All he can tell the world is:

He who through vast immensity can pierce,
See worlds on worlds compose one universe;
Observe how system into system runs,
What other planets circle other suns,
What varied being peoples every star,
May tell why Heaven has made us as we are.

SIMON NEWCOMB.

WASHINGTON, D. C.

THE RECENT VISIT OF SIR ARCHIBALD GEIKIE.

AMERICAN geology has been greatly benefited and stimulated by visits from distinguished European scientists, since the early part of the present century. All will recall at once Bakewell's observations on the recession of Niagara; Lyell's two visits, with the four volumes of 'Travels in America' that resulted, and that helped so much to establish a good correlation between many of our formations and those of Europe; von Richthofen's four years on the Pacific coast, and Credner's four years in the East; Posepny's travels in our mining districts; vom Rath's visits to mineral localities, and Geikie's excursions across the lava fields of the Snake River country. After an interval of eighteen years, the honor of again entertaining the distinguished Director of the British Geological

Survey has fallen to American geologists, and has proved to be an occasion of exceptional interest and importance.

Some months ago Sir Archibald was invited by the authorities at the Johns Hopkins University to come to Baltimore and open the course of lectures in geology, made possible by a foundation established by Mrs. George Huntington Williams, in memory of her husband, the late, greatly lamented professor at Johns Hopkins. The purpose of the foundation is to support an annual course of lectures in geology which are to be given alternately by European and American geologists of distinction. No more fitting choice for the first series could have been made than that of Sir Archibald Geikie, to whose cosmopolitan sympathies, as shown in his 'textbook,' geologists everywhere owe so great a debt.

Sir Archibald reached New York April 17th, and on April 19th was given a reception by the New York Academy of Sciences, as described in an earlier page of SCIENCE (p. 702). Geologists from many institutions outside of New York united with the members of the Academy to make the welcome a cordial and significant one.

On Wednesday, April 21st, Sir Archibald began, at the Johns Hopkins University, the course of lectures which was the main object of his visit. The subject chosen was 'The Founders of Geology,' and in his treatment of the theme the lecturer sketched the rise of geological conceptions among the ancient cosmogonists, tracing their gradual though slow evolution through the middle ages, and their vigorous development at the opening of the present century. Exhaustive studies have been made by Sir Archibald upon these special subjects, and much new light has been thrown by them upon the true relations of modern systems of thought to the work of the pioneers in this field a hundred years and less ago. The lectures will ultimately be published, and space is

not available at this time to review them, but they cannot fail to be of great significance to all thoughtful students of the problems before us to-day.

Previously to the delivery of the lectures invitations had been sent by the Johns Hopkins University to geologists throughout the country, asking them to be present and to share in the excursions that were incident to the occasion. In response, the fifty or more whose names appear below accepted. While the lectures were being delivered short excursions were conducted almost daily to places of geological interest near Baltimore, on one of which Sir Archibald and his companions were the guests of the Secretary of the Navy at the Naval Academy, Annapolis, and upon one of the United States government vessels on a trip to view the Cretaceous and Tertiary formations along the Severn River.

A longer excursion was made at the close of the lecture so as to illustrate the geology of the State of Maryland from the later formations of the Coastal Plain, across the Archean axis of the Blue Ridge, and the Paleozoics as far as the upper Coal Measures in the St. George's field. Through the vigorous and untiring efforts of Professor W. B. Clark, who is also State Geologist of Maryland, the interest of the Governor of the State and of the principal railway and mining officials had been secured, so that free transportation was given on the Baltimore and Ohio, the Cumberland and Potomac, and the Western Maryland Railways, as well as on one of the State official steamboats. On Wednesday, April 28th, the State vessel 'Governor McLane' carried a party of forty down Chesapeake Bay to view the Cretaceous and Tertiary strata in the bluffs along the shore. That evening two sleepers were boarded and reinforced by about ten additional guests from Washington; the party was taken to Cumberland, Md., from which starting point the mem-

bers visited the St. George's coal field, as guests of President Lord, of the Consolidation Coal Company. Thursday evening Governor Lowndes, of Maryland, entertained the party at a reception in Cumberland. Friday was passed among the Cambrian, Silurian, Devonian and Triassic exposures along the Potomac River, and Saturday the President of the Western Maryland Railroad guided the visitors over the Blue Ridge mountains, where the Cambrian quartzite and pre-Cambrian volcanics are so well exposed. The trips closed with a visit to the battle-field at Gettysburg. It has left a lively feeling of appreciation in the minds of all the participants toward their generous entertainers, and especially toward Professor Clark and his associates at Johns Hopkins, whose efforts both before and during the trip were unstintingly given. The following list of participants in the excursions will indicate the very general desire on the part of American geologists to do honor to the distinguished guest:

F. D. Adams, McGill College, Montreal; Cleveland Abbe, Jr., of Washington; R. M. Bagg, Johns Hopkins University; W. S. Bayley, Colby University; F. Bascom, Bryn Mawr College; George F. Becker, U. S. Geological Survey; L. A. Bauer, University of Cincinnati; J. M. Clarke, Assistant State Geologist of New York; Samuel Calvin, State Geologist of Iowa; W. B. Clark, State Geologist of Maryland; N. H. Darton, U. S. Geological Survey; J. S. Diller, U. S. Geological Survey; C. W. Dorsey, U. S. Department of Agriculture; S. F. Emmons, U. S. Geological Survey; O. L. Fassig, U. S. Weather Bureau; Sir Archibald Geikie; D. C. Gilman, Johns Hopkins University; L. C. Glenn, North Carolina; R. T. Hill, U. S. Geological Survey; A. B. Hoen, of Baltimore; J. A. Holmes, State Geologist of North Carolina; C. W. Hayes, U. S. Geological Survey; J.

C. Hartzell, South Carolina; T. C. Hopkins, Pennsylvania State College; E. V. d'Inwilliers, State Geologist of Pennsylvania; Lyman C. Josephs, of Newport, R. I.; Arthur Keith, U. S. Geological Survey; J. F. Kemp, Columbia University; E. P. King, Portland, Maine; Elizabeth Kirkbride, Bryn Mawr College; E. C. E. Lord, U. S. Geological Survey; F. J. H. Merrill, State Museum, Albany; W. J. McGee, U. S. Bureau of Ethnology; S. W. McCalley, Assistant State Geologist of Georgia; E. B. Matthews, Johns Hopkins University; J. A. Mitchell, Mt. St. Mary's College, Maryland; F. H. Newell, U. S. Geological Survey; W. H. Niles, Massachusetts Institute of Technology; Edw. Orton, State Geologist of Ohio; C. C. O'Harra, Carthage College, Illinois; Major J. W. Powell, Bureau of American Ethnology; L. V. Pirsson, Yale University; F. B. Peck, Lafayette College; Heinrich Ries, Columbia University; Harry Fielding Ried, Johns Hopkins University; R. D. Salisbury, University of Chicago; A. C. Spencer, U. S. Geological Survey; T. W. Stanton, U. S. Geological Survey; G. O. Smith, U. S. Geological Survey; G. W. Stose, U. S. Geological Survey; J. Stanley-Brown, of Washington; G. B. Shattuck, Johns Hopkins University; Chas. R. Van Hise, University of Wisconsin; C. D. Walcott, U. S. Geological Survey; Lester F. Ward, U. S. Geological Survey; T. G. White, Columbia University; I. C. White, Morgantown, W. Va.; H. S. Williams, Yale University; Bailey Willis, U. S. Geological Survey.

As the party was about to disband the following letter was drawn up:

TO THE BOARD OF COMMISSIONERS OF THE MARYLAND GEOLOGICAL SURVEY AND THE STATE GEOLOGIST:

Gentlemen: We have spent the last four days in a most interesting inspection of Maryland's geology, under conditions which your hospitable forethought

has made peculiarly favorable. Our appreciation of the provisions made for the comfort of the party is keen, and our enjoyment of the excursion has been all that you could have wished it. In twice traversing the State of Maryland, opportunity has been afforded us of observing its mineral wealth, and in coming in contact with a wide range of phenomena illustrative of many of the aspects of geology. The field is rich, and it affords opportunities for inquiries which may add honor and wealth to the Commonwealth, contributing at the same time to the sum of human knowledge. The exploitation of these opportunities will be safe under your guidance, and we wish you a speedy success.

The paper was signed by Sir Archibald Geikie and the entire company of geologists.

At the close of the Baltimore visit, Sir Archibald went, on May 3d, to Washington, where, May 5th, he addressed the Geological Society of Washington upon the subject, 'Notes for a correlation between the Tertiary Volcanic Succession in Northwestern Europe and in Western America.' At the close of the lecture he was tendered a reception at the rooms of the U. S. Geological Survey. May 6th Sir Archibald visited Bryn Mawr College and briefly addressed the students, and May 7th lectured before the Philosophical Society in Philadelphia upon 'Recent Geological Work in the Hebrides and Faroe Isles,' after which the Society entertained him at a conversation, at which many visiting geologists were present. May 8th he reached New York, and, aside from courtesies privately extended, was occupied with the rich collections of the American Museum of Natural History. May 10th he lectured in Brooklyn on the 'Geology of the Inner Hebrides,' and passed the remainder of the week in visiting Yale University and relatives in Connecticut. Saturday, May 15th, he sailed for England, accompanied by a cordial 'bon voyage' and an 'auf wiedersehen' from his many friends in America.

J. F. KEMP.

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