

nation of which one man here and another there (as Schleiden sets forth in his book, 'The Plant,' in a charming ideal conversation at the Travellers' Club) has seen and enjoyed more of the wonders and beauties of this planet than the men of any nation, not even excepting the Germans—that this nation, I say, should as yet have done nothing, or all but nothing, to teach in her schools a knowledge of that planet, of which she needs to know more, and can if she will know more, than any other nation upon it. . . .

"Thus much I can say just now—and there is much more to be said—on the practical uses of natural history. But let me remind you, on the other side, if natural history will help you, you in return can help her; and would, I doubt not, help her, and help scientific men at home, if once you look fairly and steadily at the immense importance of natural history—of the knowledge of the 'face of the earth.' I believe that all will one day feel, more or less, that to know the earth *on* which we live, and the laws of it *by* which we live, is a sacred duty to ourselves, to our children after us, and to all whom we may have to command and to influence; ay, and a duty to God likewise. For is it not an act of common reverence and faith towards Him, if He has put us into a beautiful and wonderful place, and given us faculties by which we can see, and enjoy, and use that place—is it not a duty of reverence and faith towards Him to use those faculties, and to learn the lessons which He has laid open for us? If you feel that, as I say you all will some day feel, you will surely feel likewise that it will be a good deed—I do not say a necessary duty, but still a good deed and praiseworthy—to help physical science forward, and add your contributions, however small, to our general knowledge of the earth. And how much may be done for science by British officers, especially on foreign stations, I need not point out. I know that much has been done, chivalrously and well, by officers, and that men of science own them, and give them hearty thanks for their labours; but I should like, I confess, to see more done still. I should like to see every foreign station, what one or two highly-educated officers might easily make it—an advanced post of physical science, in regular communication with our scientific societies at home, sending to them accurate and methodic details of the natural history of each district—details $\frac{9}{10}$ of which might seem worthless in the eyes of the public, but which would all be precious in the eyes of scientific men, who know that no fact is really unimportant, and more, that while plodding patiently through seemingly unimportant facts, you may stumble on one of infinite importance, both scientific and practical.

"There are those, lastly, who have neither time nor taste for the technicalities, the nice distinctions, of formal natural history; who enjoy Nature, but as artists or as sportsmen, and not as men of science. Let them follow their bent freely; but let them not suppose that in following it they can do nothing towards enlarging our knowledge of Nature, especially when on foreign stations. So far from it, drawings ought always to be valuable, whether of plants, animals, or scenery, provided only they are accurate; and the more spirited and full of genius they are, the more accurate they are certain to be; for Nature being alive, a lifeless copy of her is necessarily an untrue copy. Most thankful to any officer for a mere sight of sketches will be the closet botanist, who, to his own sorrow, knows three-fourths of his plants only from dried specimens; or the closet zoologist, who knows his animals from skins and bones. And if any one answers, 'But I cannot draw,' I rejoin, you can at least photograph. If a young officer, going out to foreign parts, and knowing nothing at all about physical science, did me the honour to ask me what he could do for science, I should tell him, learn to photograph; take photographs of every strange bit of rock formation which strikes your fancy, and of every widely-extended view which may give a notion of the general lie of the country. Append, if you can, a note or two, saying whether a plain is rich or barren; whether the rock is sandstone, limestone, granitic, metamorphic, or volcanic lava; and if there be more rocks than one, which of them lies on the other; and send them to be exhibited at a meeting of the Geological Society. I doubt not that the learned gentlemen there will find in your photographs a valuable hint or two, for which they will be much obliged. I learnt, for instance, what seemed to me most valuable geological lessons, from mere glances at drawings—I believe from photographs—of the Abyssinian ranges about Magdala.

"Or again, let a man, if he knows nothing of botany, not trouble himself with collecting and drying specimens; let him simply photograph every strange tree or new plant he sees, to give a general notion of its species, its look; let him append,

where he can, a photograph of its leafage, flower, fruit, and send them to Dr. Hooker, or any distinguished botanist, and he will find that, though he may know nothing of botany, he will have pretty certainly increased the knowledge of those who do know.

"The sportsman, again—I mean the sportsman of that type which seems peculiar to these islands, who loves toil and danger for their own sakes; he surely is a naturalist, *ipso facto*, though he knows it not. He has those very habits of keen observation on which all sound knowledge of nature is based; and he, if he will—as he may do without interfering with his sport—can study the habits of the animals, among whom he spends wholesome and exciting days. . . .

"The two classes which will have an increasing, it may be a preponderating, influence on the fate of the human race for some time, will be the pupils of Aristotle and those of Alexander—the men of science and the soldiers. They, and they alone, will be left to rule; because they alone, each in his own sphere, have learnt to obey. It is therefore most needful for the welfare of society that they should pull with, and not against, each other; that they should understand each other, respect each other, take counsel with each other, supplement each other's defects, bring out each other's higher tendencies, counteract each other's lower ones. The scientific man has something to learn of you, gentlemen, which I doubt not that he will learn in good time. You, again, have (as I have been hinting to you to-night) something to learn of him, which you, I doubt not, will learn in good time likewise. Repeat, each of you according to his powers, the old friendship between Aristotle and Alexander; and so, from the sympathy and co-operation of you two, a class of thinkers and actors may yet arise which can save this nation, and the other civilised nations of the world, from that of which I had rather not speak, and wish that I did not think, too often and too earnestly.

"I may be a dreamer; and I may consider in my turn, as wilder dreamers than myself, certain persons who fancy that their only business in life is to make money, the scientific man's only business to show them how to make money, and the soldier's only business to guard their money for them. Be that as it may, the finest type of civilised man which we are likely to see for some generations to come, will be produced by a combination of the truly military with the truly scientific man. I say, I may be a dreamer; but you at least, as well as my scientific friends, will bear with me; for my dream is to your honour."

SCIENTIFIC INTELLIGENCE FROM AMERICA*

A LATE number of the *College Courant*, of New Haven, contains a detailed account of the exploring expedition under Prof. Marsh, which occupied the greater part of the warm season of 1871, and of which we have already furnished occasional notices to our readers. The general plan, as already stated, embraced excursions from several points, exploring as many different fields, with special reference to the examination of regions comparatively little known. The first starting-point of operations was Fort Wallace, and from this post the cretaceous deposits of South-Western Kansas and the region of the Smoky River were investigated. The second proceeded from Fort Bridger in Western Wyoming, to examine the ancient tertiary lake basin previously discovered by Prof. Marsh. Salt Lake City was the initial point of the third exploration, and the party proceeded thence to the Shoshone Falls, on Snake River, and from there to Bois  City, in Idaho; thence they passed over the Blue Mountains to the head waters of the John Day River, and followed down to Ca on City. On the route they made extensive collections of fossil fishes. They also explored two basins, one of the pliocene and the other of the miocene age, and in these remains of extinct animals were found in large numbers; the upper bed containing the bones of the elephant, rhinoceros, lion, &c., with several species of the fossil horse; the lower and older basin was found to contain species of the rhinoceros, oreodon, turtles, &c. From this point the party proceeded to the Columbia, and thence to Portland, Oregon, where they took a steamer to San Francisco. Here the expedition divided, a portion going to the Yosemite and elsewhere, while several, with Prof. Marsh, sailed, *via* Panama, for New York, reaching that

* Communicated by the Scientific Editor of *Harper's Weekly*.

city on the 14th of January. We understand that the expedition was thoroughly successful in every respect, securing the collection of large numbers of fossils, as also numerous skeletons of recent animals, together with valuable antiquities, &c. The expense of the exploration amounted to nearly 15,000 dols., exclusive of the value of the services rendered by the Government. This was defrayed entirely by the gentlemen composing the party; and it is understood that the material results are to be placed in the Museum of Yale College, which will thereby be rendered the richest in America in this department of natural history.—According to Dr. Petermann, the peak of Itatiaiossu, the highest mountain in Brazil, was ascended during the past summer and its altitude determined by Mr. Glaziou, the Director of the Imperial Parks in Rio de Janeiro. It proved to have an elevation of 8,899 English feet, being somewhat less than had been previously estimated. Many species of plants were found on the mountain, and what is of great interest, a large number of Alpine species, especially of *Compositæ*, were collected at from three to seven hundred metres below the summit.—The report of progress for 1870 of the Geological Survey of Ohio, under the direction of Prof. J. S. Newberry, has just been published at Columbus, forming a volume of nearly 600 pages, with a number of accompanying maps and sections. The volume contains, besides a report of progress of 1870, a sketch of the structure of the lower coal measures in North-Western Ohio, by Prof. Newberry; the report of labours in the second geological district, by Prof. E. B. Andrews, and on the geology of Highland County, by Prof. Orton; the report of the Agricultural Survey of the State, by Mr. J. H. Klippart; a report of the chemical department, by Prof. Wormley; sketches of the geology of several counties, by Messrs. M. C. Read and E. Gilbert; a sketch of the present state of the iron manufacture in Great Britain, by W. W. Porter; and a sketch of the present state of the steel industry, by Henry Newton. All these subjects are treated with great care, and the whole volume bears ample testimony to the ability of the chief geologist and the industry of his assistants. This volume is intended as simply preliminary to the final report, which Prof. Newberry hopes to have embodied in four volumes—two of them devoted to geology and palæontology, one to economical geology, and one to agriculture, botany, and zoology. The materials for these volumes are in advanced stage of forwardness, and will embrace monographic treatises on the several subjects, which will be of the utmost benefit in ascertaining and developing the resources of the State.—A society was organised in New York some time since under the name of the "Palestine Exploration Society," with the Rev. Dr. J. P. Thompson, chairman, Dr. Howard Crosby, secretary, and James Stokes, jun., treasurer, with a list of members including the principal archaeologists of the Eastern States. Its first report was published some time ago, embracing an account of the American explorers in Palestine, and the proceedings of the English Palestine Exploration Society, notices of the late explorations in Jerusalem, the Moabitic stone, &c., and concluding with an appeal to all persons interested for contributions of funds to aid in carrying out the proposed researches of the society. The field of investigation proposed includes the territory east of the Dead Sea and the Jordan Valley, as also Hermon, Lebanon, and the valleys and plains of Northern Syria. A simultaneous prosecution of researches in this field by two such bodies as the American and English societies will probably be productive of very important results, especially if supported with proper official documents from the Turkish Governments. As so much of what is now on record in regard to the geography and condition of Palestine is due to Americans, it is much to be hoped that the work may be continued by them toward a successful completion.

SCIENTIFIC SERIALS

Annalen der Chemie und Pharmacie viii. Supplement band, 3 Heft. Hesse has contributed a lengthy paper on the alkaloids of opium. It is the most exhaustive essay on the rarer alkaloids that has yet been published. He has examined minutely the following:—Pseudomorphin, laudamine, codamine, narcotine, papaverine, nitropapaverine, cryptopine, nitrocryptopine, protopine, laudanose, and hydrocotarine, and numerous salts of each of the above. The author groups the alkaloids into four classes, the morphine, thebaine, papaverine, and narcotine groups, and gives the distinctive characters with which the members of these groups dissolve in pure concentrated sulphuric acid. Marignac

follows with a long communication "On the specific heat, density, and expansion of certain solutions." Bousingault has made some experiments on the freezing of water. He took an exceedingly strong steel cylinder, placed in it a small steel bullet, and filled it entirely with water at 4° C, the cylinder was then closed by means of a cap, so that it was absolutely tight; the cylinder was exposed to a temperature of -24° for some time, but the water inside was not frozen, as was proved by the mobility of the bullet in the interior. Immediately on opening the cylinder and relieving the pressure, the water became a mass of ice.

THE *Geological Magazine* for February (No. 92) opens with some excellent notes on fossil plants by Mr. Carruthers, illustrated with a plate and several woodcuts. The subjects here referred to are the *Palæopteris hibernica*, the presence of sporangia belonging to the *Hymenophylleæ* in coal, *Osmundites Doakeri*, the genus *Antholites*, a revision of the British forms belonging to which is given, the coniferous wood of Craighleith quarry and *Pothocites grantoni*.—Mr. S. R. Pattison communicates a note on the pyrites deposits in the province of Huelva, in Spain, and Mr. James Geikie the conclusion of his memoir on changes of climate during the glacial epoch. The latter contains a comparison of the glacial deposits of Scotland, Switzerland, Scandinavia, and North America. The other articles in the number are an abstract of the contents of Heer's "Flora Fossilis Arctica," by Mr. R. H. Scott, and an early notice (50 years old) of the occurrence and use of meteoric iron in Greenland.

SOCIETIES AND ACADEMIES

LONDON

Anthropological Institute, March 18.—Dr. Charnock, vice-president, in the chair. M. Letourneur and Dr. Haast were elected corresponding members. Mr. Geo. Harris read a paper on "The comparative Longevity of Animals of different species, and of Man; and the probable causes which mainly conduce to produce that difference." He cited several remarkable instances of longevity both in animals and man, and alluded to the opinions on the subject, both of ancient and modern writers. The influence of climate, air, and food were discussed, and also of domestication and civilisation. The theory of disease in connection more especially with concurrent decay and renovation was inquired into, and some speculations were made as to the effect future scientific discovery, as regards the medical properties both of plants and animals, might have on the question at issue.—Sir Duncan Gibb, Bart., M.D., read a paper on "The Physical Condition of Centenarians." His remarks were founded upon an examination of six genuine examples, in whom he found the organs of circulation and respiration in a condition more approaching to the prime of life than old age. There was an absence of all those changes usually observed in persons reaching 70, and in nearly all the special senses were unimpaired, the intelligence perfect; thus showing, at any rate, the complete integrity of the nervous system. The author's views were opposed to those held regarding the extreme longevity of centenarians.—Dr. Leith Adams exhibited and described a series of stone implements from the island of F'erm; and Col. Fox contributed a note on some stone implements and pottery from St. Brienne, Normandy.

Entomological Society, March 4.—Prof. J. O. Westwood, president, in the chair.—Prof. Westwood exhibited living specimens of the *Acarus* described by him at the last meeting as *Argas reflexus*, from Canterbury Cathedral, and also another species of the genus found by Dr. Livingstone in Central Africa, which enters the feet of the natives between the toes, causing pain and inflammation.—Mr. S. Stevens exhibited an apparently new species of *Phycia* from near Gravesend, remarkable for its pearly colour and *Crambus*-like form.—Mr. F. Smith read an extract from a further communication from Mr. J. T. Moggridge respecting the storing of grain by ants at Mentone. Mr. Moggridge had confined a colony of the ants in a glass vessel so as to observe their habits, and he was now able to state positively that they fed upon the grain. A detailed account of the observations will be furnished by Mr. Moggridge upon his return to England.—Mr. Müller exhibited galls formed by *Acari*, of the genus *Phytoptus*, upon the leaves of *Cinnamomum nitidum*, from Bombay, being the first observation of the occurrence of those creatures in India.—Mr. H. W. Bates exhibited a series of species of *Cara-*