

site of Hagar's well). Here are very numerous primeval stone remains, the most remarkable being piles of stones placed in rows at the edges of the cliffs which face the East. Cannot they be the remains of the old Baal worship followed by the Amorites, whose name is still preserved in the country to the north of W. Muwêileh, at Dheigat el 'Amerin (the ravine of the Amorites), Ras 'Amir, and Sheikh el 'Amiri? At various places on our route, especially at 'Uggâbeh—between Nakhl and W. Garayieh—on S. el 'Ejmell, S. 'Araif in Wady Lussân, we found very large numbers of cairns, stone circles with graves, and open spaces, which, to judge from the burnt earth within them, seem to have been designed for sacrificial purposes; also enclosures, girt by rude stone walls; and, in W. el Biyâr, circular dwellings, some of which are still standing, quite perfect. In W. Rowâg nearly every hill is topped by a cairn; there are three on the summit of Jebel 'Araif, and we noticed that they frequently occurred as far north as Bir Seba and El Milh (Molada).

At Muwêileh and near a neighbouring spring, Ain Guseimeh, are several caves. At the former place there is one cut in the face of the cliff, and entered by a staircase, ascending from a smaller cave below; this has been at one time the dwelling of a Christian hermit, as we noticed crosses rudely painted in red and traces of frescoes. At this place, too, we found, with the exception of one place in W. Lussân, the first signs of regular cultivation in former times. Stones are laid in lines across the wady-beds to check and, at the same time, distribute the drainage, and to prevent the soil being washed down by a sudden *seil* or flood.

Our next point was *El Birein*, so called from the *two wells* in the wady; here are traces of considerable ruins, a *fiskiye*, or reservoir, and aqueduct, the latter ruined, and the former nearly so. In the wady are some old *butme*h or terebinth trees, remarkable as being the first trees, with the exception of two "seyâls" or acacias, that we had seen since leaving Sinai. About six miles N.W. of El Birein lie the ruins of El 'Aujeh, confounded by Dr. Robinson with 'Abdeh, which I shall presently mention, situated on a low spur running into W. Hanein. This valley, however, on account of a superstition attaching to its real name, has always been called by the Arabs, when speaking to travellers, W. Hafir. Some five or six square miles of the wady are covered with ruined walls of gardens and fields; the sides of the water-course are built up with large stones, and dams still exist across it, though all the valley is now barren and neglected. Ten miles to the east of El 'Aujeh we discovered the ruins of a fortress called "El Meshrifeh," perched on a projecting spur, and defended on two sides by steep cliffs, which overlook a broad plain formed by the sweep of Wady el Abyadh as it debouches from Jebel Magrah; the south face of the cliff is fortified by escarpments and towers of massive masonry, and on the summit are ruins of several houses, and of a small church; on the third side a thick wall runs across the level crest of the spur. Beneath the towers and in connection with them are numerous rock-hewn chambers; also traces of a more ancient and, indeed, primeval wall, and pieces of masonry of a date far anterior to the rest of the buildings.

On the plain above mentioned and three miles and a half to the S.E. of El Meshrifeh we found the ruins of a considerable town called S'baita. This name seems to have been heard of by former travellers, who confounded the site with Rehaibeh; but I believe we were the first Europeans to visit the ruins. Here, as in many other cases, we experienced considerable difficulty, owing to the apprehensions of our Bedawin, who did their best to dissuade us from going there. I succeeded, however, in taking sketches and photographs of the chief points of interest. The town contains three churches, which, like those at El Aujeh el Meshrifeh and S'adi, must, I think, be referred to the 5th century. There are also two reservoirs, and a tower with a rudely ornamented gateway. With the exception of a fragment or two at El Aujeh, this was the only instance of sculpture we saw, and not a single inscription was anywhere to be found.

The structure of the buildings at S'baita is worth noticing: the upper stories of the houses are supported on wide, low-spaced arches two feet wide with intervals of three feet between them, and upon these is placed the flooring of the upper rooms, which consists of narrow slabs of stone. Numerous ruined towers and walled gardens and enclosures, extending to a distance of several miles from the town, attest its former importance. The vineyards, too, marked by the "Teleilat el 'Aneb," which I mentioned before, extend over large tracts in this neighbourhood.

From S'baita we went to Rehaibeh, examining *en route* the

ruins of S'adi,\* which do not seem to have been visited or even heard of by former travellers. At Rehaibeh the ruins are of much greater extent than at S'adi, but so confused that it is impossible to trace the plan of any single building. There are numerous wells, cisterns, and other remains of cultivation in the neighbourhood. From Rehaibeh we went to Khalasah and Bir Seba: the ruins at the former place have nearly disappeared, as the inhabitants of Gaza find it cheaper to send camels for the already squared stones than to quarry them near their town. Owing to the drought we found Bir Seba barren and deserted, though our Arabs assured us that in good seasons the grass is knee-deep, and furnishes ample pasturage for countless flocks and herds. Our unlooked-for appearance in out-of-the-way districts was usually considered by the natives to be in some manner connected with the exceptional drought, and on several occasions we were either implored to bring rain or cursed for the want of it, since the Arabs firmly believe that every *Nasrdni* holds the weather under his control.

From Bir Seba we went to Jerusalem, and, after a short stay there, returned to Hebron, where we engaged three of the Jehalin Arabs, with their camels, to convey our baggage to Petra. Taking a new route, we passed Tell Arad and El Milh, and struck into the unexplored mountains of the 'Azâzimeh, where we discovered the ruins of the El 'Abdeh (Eboda), which are of considerable extent, and similarly placed to those of El Meshrifeh, most of the dwellings here, as there, being half excavated and half built. Of the buildings now standing, the greater part are of Christian times. The natives are perfect savages, and detained us for two hours from visiting the ruins by collecting in a gang to the number of thirteen on the top of a pass, singing their war-song, throwing down stones, and occasionally firing off one of their old match-locks in bravado, and swearing by God and the Prophet that no one should come up. As the pass was very narrow, almost precipitous, we judged it best to propitiate them, a task accomplished, after much discussion, at the cost of eight shillings. They then escorted us to the ruins, where we took such measurements and photographs as we required. From 'Abdeh we went through the 'Azâzimeh mountain, a region so awfully desolate as to defy description, struck the 'Arabah at the junction of W. Jerafeh with W. Ghamz, and crossed thence to Petra. Here the Liyathineh fully maintained their character for brutality and insolence. Infidels in all but the name of Moslems, they are descended from the tribe of Khaiberi Jews, who bear such a bad character in Arabia. To add to our discomfort, we were snowed up for two days in a tent only just large enough for us both to lie down in. During a stay of six days, however, Petra was thoroughly examined by us and accurately mapped. We then bent our steps northwards, and at El Barid, about seven miles from Petra, discovered a colony of dwellings and temples cut in the rock, and some rudely chipped Nabathæan inscriptions. The walls and ceilings of the rock-chambers were decorated with frescoes, some coarse others well executed. We next travelled down the 'Arabah to the Dead Sea, and having examined the Lisan, went up into Moab. Here we stopped about three weeks and wandered over the country in search of inscriptions, as Mr. Palmer had specially come to ascertain if another Moabite stone was in existence. At last, however, we both came to the conclusion that *above ground* there are none. From Moab we crossed the Jordan, near Jericho, and returned to Jerusalem.

(To be continued.)

#### SCIENTIFIC SERIALS

THE fifth part of the nineteenth volume of the *Palæontographica* recently published, is devoted to the description by Prof. Schenk, of fossil plants from the north German Wealden formation. The plants here described and figured upon 8 plates are all cryptogamous, and with the exception of a single *Chara*, and four *Equiseta* belong to the group of ferns, of which 21 species are noticed; but it must be remarked that Prof. Schenk has considerably lessened the apparent number of species by reducing a great many of the names given by former authors to the rank of synonyms. At the same time he describes and figures seven forms as new species, one as the type of a new genus, *Marsilidium*, belonging to the Rhizocarpeæ, and he also establishes the new genus *Matonidium* for *Lacopteris Göpperti*, Schimper. The other new species belong to the genera *Sphenopteris*, *Alethopteris*, *Lacopteris*, *Olean-*

\* S'adi is two-and-a-half miles E.S.E. of Rehaibeh.

*dridium*, *Dictyophyllum* and *Protopteris*, the last being doubtfully represented by a portion of a tree-like stem.

THE second part of, Tome xx. of the *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève* (1870) contains an exceedingly important zoological paper, namely, a supplement to Prof. Claparède's descriptive account of the Chaetopod Annelides of the Gulf of Naples. This not only includes descriptions of many new forms discovered by M. Claparède during the winter of 1868-69, but furnishes him with an opportunity of effecting a combination between his own observations and those of Prof. Ehlers, whose valuable work on the Chaetophorous Annelides appeared almost simultaneously with Prof. Claparède's former publication. The memoir is illustrated with fourteen beautiful plates. This part also contains descriptions by Dr. J. E. Duby of some minor little-known exotic mosses, accompanied by four plates.

THE first and second numbers of the *Bollettino del R. Comitato Geologico d'Italia*, published together for the months of January and February of the present year, contain some interesting papers, among which, perhaps, the most important is that on the temperature of the rocks in the Mont Cenis tunnel, communicated by the engineer, M. F. Giordano. The highest temperature observed was 29°50' C. (=85°10' F.) at a distance of 6,450 metres (about 21,000 feet) from the southern opening, at the same time that the temperature of the rock at 400 metres (about 1,300 feet) from the opening was only 11° C. (=38°2' F.). M. Giordano also publishes notes on the geological constitution of the Roman Campagna, illustrated with three long sections. These numbers also contain a translation into Italian of G. von Rath's memoir on the environs of the lake of Bolsena, an extract from a paper by Prof. T. Taramelli on the Eocene formation of Feiuli, and some short bibliographical notices.

THE editor of the *Geological Magazine*, in his April number (No. 82), has resumed his series of notices of eminent living geologists with a sketch of the scientific life of Mr. Thomas Davidson, illustrated with a good portrait. That Mr. Davidson's labours on the Brachiopoda fully entitle him to such an honour no one will be inclined to deny, but one is somewhat startled at learning what is the real result of his activity, chiefly in this field of research, and being told that his published writings occupy about 2,220 pages, and are illustrated with 244 plates, all or nearly of them drawn by his own hand! Mr. H. B. Woodward describes a curious example of the inversion of strata belonging to the carboniferous series at Vobster, in Somersetshire, to the north of the Mendip Hills, where coal is worked beneath mountain limestone. This phenomenon has been ascribed to a folding over of the main ridge of the Mendips, but the author adduces what seem to be good reasons in opposition to this view, and endeavours to account for it by local disturbance associated with faults. He illustrates his views by means of a diagram section.—Mr. G. H. Kinahan communicates a paper on Æolian drift or blowing sands in Ireland, in which he explains these peculiar deposits as being the products of the action of glaciers during the glacial period.—M. De Rance describes the pre-glacial geography of north Cheshire. The number also contains a reprint of Mr. David Forbes' lecture on the nature of the earth's interior, and the usual reviews and short communications.

THE *Transactions of the Linnean Society*, vol. xxvii. part 3, has just been issued, containing three papers, each illustrated with 4to. plates:—Observations on the Lichens collected by Dr. Robert Brown in West Greenland in 1867, by Dr. W. Lauder Lindsay; On the Vertebrate Skeleton, by Mr. St. George Mivart; and Descriptions of some British Spiders new to science, by the Rev. O. P. Cambridge. Mr. Mivart's article is devoted to a discussion of the following questions:—1. What is the best way to seek *a priori* a general view of the axial skeleton? 2. What is the essential nature of ribs, transverse processes, and sternum? 3. What is the essential nature of branchial arches, and in what relation do they stand to the ribs? 4. What is the essential nature, as compared with branchial arches, of the hyoid arch, mandible, and more anterior structures? 5. What relations exist between the "chevron" bones and other parts of the vertebrate skeleton? The appendicular skeleton, as distinct from the axial skeleton, consisting of the anterior and posterior limbs, is also discussed.

THE *Proceedings of the Natural History Society of Dublin* for the sessions 1867-68, 1868-69, vol. v. parts iii. and iv., was published on May 3, 1871. Among the more important papers

we notice:—Prof. W. King "On some Palliobranchiate Shells from the Irish Atlantic;" Prof. Macalister "On the Myology of the Otter," "On the pyloric appendages of the common Trout," "On the Flora of Kiuross-shire," and "On the arrangement of Pronator Muscles in the limbs of Vertebrate Animals.—Dr. D. Moore "On the Botanical Congress of Paris of 1867," and "On Addenda to British and Irish Muscology." Dr. A. W. Foot "On some points observed in the dissection of an Aylesbury Duck." Rev. E. O'Meara "On some new Arran Diatomaceæ" (Plate 13). W. Archer "On a peculiar cyst-like structure enclosing examples of *Staurastrum cuspidatum*," &c., and "On some Freshwater Rhizopoda" (Plates 8, 9, 10). Prof. E. P. Wright "On *Tubipora musica*" (Plate 11). Notes of a tour in the spring and summer of 1868 to Sicily and Portugal (Plate 12). These Parts conclude vol. v., and have title page, index, and appendices.

## SOCIETIES AND ACADEMIES

### LONDON

Royal Institution of Great Britain, May 8.—Sir Henry Holland, Bart., M.D., president, in the chair.—The following Vice-presidents were nominated for the ensuing year:—Duke of Northumberland, Lord Lindsay, W. Spottiswoode, the Treasurer, Sir Frederick Pollock. William S. Burton, Arthur Samuel Hobson, Richard Liebreich, Abraham De Mattos Mocatta, and Edward Stanhope Pearson, were elected members. John Tyndall, F.R.S., was re-elected Professor of Natural Philosophy.

Zoological Society, April 29 (Anniversary Meeting).—Viscount Walden, president, in the chair. After some preliminary business, the report of the Council was read by Mr. P. L. Sclater, F.R.S., the secretary. It stated that the number of Fellows of the Society on the 1st of January last was 3,021, showing a net addition of fifty-five ordinary members to the roll during the year 1870. Twelve new corresponding members had likewise been elected during the year 1870. The total income of the society during the year 1870 was stated to have been 23,257*l.*, being 488*l.* more than that of the preceding year. The total ordinary expenditure had been 21,364*l.*, in which sum had been included every item necessary to keep the society's establishment in its present state of efficiency. Besides this the sum of 3,043*l.* had been devoted to extraordinary expenditure, in the shape of new buildings and works in the gardens. Of these works the most important was the new elephant-house, on completing which the sum of 2,324*l.* had been expended. This, when added to the sums spent upon the same building in former years, had raised the total cost of that building to 6,356*l.*, in which, however, the yards, ponds, fences, terrace walk in front, and the necessary arrangement of the adjoining grounds were included. Other works carried on in the society's gardens during the past year had been the completion of the new first-class refreshment-room, and the extension of the system of heating the buildings by hot-water apparatus. The total number of visitors to the society's gardens during the year 1870 had been 573,004, showing an increase of 156 over the corresponding number in 1869. The greatest daily number of admissions in 1870 (28,457) was on Whit Monday, the 5th of June; the least number (28) on the 3rd of March; the average daily number of admissions throughout the year had been 1,570. The number of animals contained in the society's menagerie on the 31st of December, 1870, was stated to have been 2,118, showing an increase of 105 when compared with the corresponding number at the same date in the previous year. Among the additions made to the collection during the year 1870 had been a considerable number of special interest, either on account of their scientific novelty or from not having been previously brought to England in a living state. Full particulars concerning these were given, as also a list of the species that had bred in the society's gardens during the year. The report then proceeded to give a long list of donors and their several donations to the menagerie, after which, in conclusion, the council contrasted the present state of the society's affairs with that which had existed ten years ago. In 1860, they observed, the total number of Fellows was 1,716; it was now 3,021; in 1860 the number of visitors to the society's gardens had been 394,906; in 1870 it had been 573,004. The total income of the society in 1860 was 16,864*l.*; in 1870 it had amounted to 23,257*l.* In 1860 the reserve fund was 3,000*l.* Reduced Three per Cents.; it had now been augmented to 7,000*l.* of the same stock. Moreover, during the past ten years, sums amounting altogether to upwards