

with two months' provisions, that he might, at the end of two weeks, follow my track at leisure, through Australia Felix. I hoped, by proceeding faster, to survey and reconnoitre the country at more freedom, and also to reach the Colony in time to send back a supply of provisions to meet Mr. Stapylton on the banks of the Hume.

"My route homeward, from the vicinity of the Australian Pyrenees, passed through a country of the most varied and fascinating description. At intervals of fifty or sixty miles, we crossed ranges of granite, through all of which I found passes for the carts across the very lowest parts, reconnoitring the ranges as far as possible in advance. The districts between the different ranges consisted of excellent land, thickly covered with the *Danthonia* grass, and well watered.

"I hoped to have met with some advanced station before we reached the Murrumbidgee, but although we did not, we were fortunate in finding a way for the carts to this point, unobstructed by mountains or swamps. It is near the station of Mr. Thompson, a gentleman who has accommodated me with a supply of provisions, to be sent back to the other party tomorrow. We reached the station the third day after our supply had been exhausted.

"I have succeeded in working a continual chain of triangles along the heights between Cape Nelson and the banks of this river, thereby connecting my work on that coast with the Survey of the Colony.

"I trust that the results of this expedition will prove satisfactory to His Majesty's Government, considering the various difficulties surmounted, and the elements with which I have had to contend. Besides establishing the fact of the identity of the Upper and Lower Darling, it has been in my power, under the protection of Providence, to explore the vast natural resources of a region more extensive than Great Britain, equally rich in point of soil, and which now lies ready for the plough in many parts, as if specially prepared by the Creator for the industrious hands of Englishmen.

"I have much pleasure in stating that I have had reason to be well satisfied with the zeal and perseverance of Mr. Stapylton on all occasions. It will be seen by this report, and more fully by my journal, how well I could rely upon both.

"All the men of the party have behaved well, and are returning in safety, with one exception, James Taylor, who was unfortunately drowned in endeavouring to swim a horse across a swampy river on the 13th instant.

"I beg leave to bring also under His Excellency the Governor's notice, Piper, an aboriginal native of Bathurst, who has accompanied me throughout this eventful journey, and has proved a valuable auxiliary, as will appear in almost every page of my journal.

"I have the honour to be, Sir,

"Your most obedient servant,

"T. L. MITCHELL,

"Surveyor General."

GEOLOGICAL SOCIETY.

May 31.—Rev. W. Whewell, President, in the chair.—A paper was first read, on certain areas of elevation and of subsidence in the Pacific and Indian Oceans, as deduced from the study of coral formations, by C. Darwin, Esq., F.G.S.

The author first notices the most remarkable points in the structure of Lagoon Islands, and shows that the lamelliform corals do not grow at any great depths—indeed, beyond ten fathoms; the bottom generally consisting of calcareous sand, or of masses of dead coral rock. He then noticed the "encircling reefs," which form a ring round mountainous islands at the distance of two or three miles, and which also encircle the submarine prolongation of islands, as the double line of reef extending 110 miles beyond the island of Caledonia. Again, the barrier reef, as that parallel to the north-east coast of Australia, forms a third class of coral formations. These three classes of reefs—encircling, barrier, and lagoon—are very similar in formation. A distinct class of reefs was also pointed out by the author, called by him "fringing reefs," which extend only so far from the shore that there is no difficulty in understanding their growth.

The theory which Mr. Darwin then offered, so as

to include every kind of structure, is simply, that as the land with the attached reefs subsides very gradually from the action of subterranean causes, the coral-building polypi soon again raise their solid masses to the level of the water; but not so with the land; each inch lost is irremediably gone; as the whole gradually sinks, the water gains foot by foot on the shore, till the last and highest peak is finally submerged. The author then proceeded to offer some considerations on the probability of general subsidences in the Pacific, where many causes tend to its production, and the difficulty of explaining the existence of a vast number of reefs on one level, unless we suppose that one mountain top after another becomes submerged, the zoophytes always bringing up their stony masses to the surface of the water. Subsidence being granted, it was shown that a fringing reef would be converted by the upward growth of the coral, into one of the encircling order; and thus, by the disappearance of the central land into a lagoon island. After adducing some proofs of subsidence in Keeling and Vanikoro Islands, and of elevation in Sumatra, the author proceeds to show that as continental elevations act over wide areas, so might we suppose continental subsidences would do; and in conformity to these views, that the Pacific and Indian Seas could be divided into symmetrical areas of the two kinds: the one sinking, as deduced from the presence of encircling and barrier reefs, and lagoon islands; and the other rising, as known from uplifted shells and corals, and skirting reefs. The absence of lagoon islands in certain tracts, such as in both the West and East Indies, Red Sea, &c., was thus easily explained, for proofs of recent elevation are there described.

Mr. Darwin then pointed out the above areas in the Pacific and Indian Oceans, and deduced as important consequences—1. That linear spaces, of great extent, are undergoing movements of an astonishing uniformity, and that the lands of elevation and subsidence alternate. 2. That the points of volcanic eruption all fall on the areas of elevation. 3. That the geographical distribution of plants is elucidated by the discovery of former centres, whence the germs could be disseminated. 4. That some degree of light might thus be thrown on the question whether certain groups of living beings, peculiar to small spots, are the remnants of a former large population, or a new one springing into existence; and lastly, when beholding more than a hemisphere divided into symmetrical areas, which, within a limited period of time, have undergone certain known movements, we obtain some insight into the system, by which the crust of the globe is modified during the endless cycle of changes.

A letter was then read from Dr. Forchhammer, of Copenhagen, Foreign Member of the Society, addressed to C. Lyell, Esq., F.G.S., on some changes of level which have taken place during the historical period in Denmark; showing that not only does elevation go on at a different rate, but that motion takes place in opposite directions. Thus the Island of Saltholm, mentioned as a source of income from the thirteenth century, and being hardly five feet above the level of the Sound, must have been elevated at a slower rate than Bornholm, which rises one foot in a century. On the Danish coast, six miles to the north of Copenhagen, there is a well-defined beach, six feet above sea level. The Danish Island of Bornholm has its eastern shore composed of a granitic rock, covered, to the height of 250 feet, by a stiff loamy soil, containing numerous fragments of the slates and limestones of the transition formation—the specimens of the latter rock may be traced to the island of Gothland. From this and other facts, the author conceives that this clayey loam is due to a violent inundation from the north coast of the Baltic. The first beach formed on Bornholm is seen at a height of about 40 feet. The small bays formed on the coast, having been choked up towards the sea, formed ponds, which by degrees became filled with peat. This peat moss is separated from the sea by a narrow beach, ten feet high, sloping at an angle of fifteen degrees, and abutting on an horizontal plane 160 feet in breadth, which is succeeded by a sloping beach 100 feet in breadth, and this by the present beach. The formation of these beaches must have continued through great numbers of years, and their elevation has been very gradual, ex-

cept the abrupt elevation of ten feet, which the author thinks may have been owing to a great earthquake 4000 years ago.

The author also mentions, that over all Denmark, Sleswig, and Holstein, shells of the German Ocean, of the present day, may be found at considerable elevations; and also, that a submarine forest (said to be of fir) is found nine feet below high water mark, between the island of Rómöø and the shores of the kingdom of Sleswig.

ASTRONOMICAL SOCIETY.

The last meeting of this Society, for the present season, was held on the 9th instant.—Mr. Baily, President, in the chair.—Several papers were read, announcing observations of occultations, eclipses, and other astronomical phenomena. The President also communicated a paper, on the non-existence of the star called 42 *Virginis*, the insertion of which into the British Catalogue of Flamsteed, he attributes to an error of computation. Baron Zach has given, in his zodiacal catalogue, a star which he calls 42 *Virginis*, which, however, does not agree with the position given by Flamsteed; but, what is very singular, this star also is not now to be found in the heavens. A paper was likewise communicated by Mr. Main, the principal assistant at the Royal Observatory, on the position of the node and inclination of Venus. It appears that Professor Eneke had altered the place of the node from the observations of the transits in 1761 and 1769, which is now found not to correspond with the best modern observations. Mr. Main therefore undertook the arduous task of determining these positions anew, from the recent observations made by Mr. Airy at the Cambridge observatory, the result of which will in future render the place of Venus, as computed for our national Ephemeris, more correct than by the present tables of Lindeman. Some of the papers recently read before this Society, though not perhaps of general interest, have been considered of so much importance as to induce the Government to print them at the public expense.

ROYAL SOCIETY OF LITERATURE.

May 11.—Colonel Leake, V.P. in the chair.—Mr. Hamilton, the Foreign Secretary, read an extract from a memoir by M. Boeckh, published in the Transactions of the Royal Academy of Berlin, entitled, an 'Explanation of an Athenian Monument relating to the influence of the Sanctuary of Apollo, at Delos.'

Delos, though of small extent, was, in the opinion of the ancients, the most important, as well as the most sacred part of Greece, and chiefly in consequence of its containing the celebrated sanctuary of Apollo.

When Athens rose into eminence, a claim to the possession of the temple was put forth by that state, which it pretended to derive from the time of the elder Cecrops. It is probable, this claim was first formally advanced when the Romans were attempting to get the islands under their power. At all events, the control of the temple fell into the hands of the Athenians before the commencement of the Peloponnesian war. Under the pretext of purifying the island, Athens expelled the inhabitants, and peopled it with her own citizens; at the same time passing a decree, that in future no child should be born, nor any person allowed to die within its limits; women about to have children, and sick or aged persons, were in consequence removed to Rheneia.

The property of the temple, as calculated by M. Boeckh from an account contained in the Sandwich inscription, amounted to about 40 talents, or 11,000*l.*, a considerable sum in those days.

In the time of Demosthenes, the Delians brought a formal action against Athens, before the Amphictyonic Council, for the restitution of their sanctuary; on which occasion, Hyperides was appointed their agent. The arguments brought forward before the Council, on occasion of this memorable contest, were discussed by the author at considerable length, and were shown to be of great historical value, as throwing light on the state of the island, and its connexion with Athens.

May 25.—Rev. Dr. Spry, V.P. in the chair.—The Secretary read a paper, by Colonel Leake, on the Journeys and Discoveries of Mr. George Finlay, who has been engaged in exploring Attica, with a