

would be successful wherever means of irrigation could be found. The planters were afterwards removed to Gorruckpore and Rungpore; but in those places the young crops were devoured by insects, and burnt up by the drought which followed the rainy season. The experiments are now carrying on in the neighbourhood of Dacca. In the Madras Presidency, there is already much native cotton cultivated; and the Bourbon plant was successfully introduced several years ago. The trials with the American cotton were made in Tinnevely and Coimbatore. Occasional droughts and storms have here injured the crops in some degree; but upon the whole, the experiment has been successful; and the specimens sent home have been highly approved at Liverpool and Manchester. In the Bombay Presidency, the station of Dharwar was selected. This was the site of an experimental farm, where excellent cotton was raised in the year 1832. In this place the plant appeared to answer perfectly; the cultivation has greatly increased, and the natives have adopted the new plant, finding it more profitable than their own. The gentleman who conducted the culture states that the climate is more like that of Mississippi than any he has seen in India. In this place, 600 acres were planted in 1842, 3,000 in 1843, and 6,000 in 1844. It was calculated that 15,000 acres would be in cultivation in 1845, and that the produce would be above 1,000,000 lb. Far from deteriorating, the seed appears to improve, and to resume part of its Mexican character. There is, thus, every prospect of a successful cultivation. The approval of the new culture by the natives is a favourable feature: many have bought the gins, and used them in cleaning their own produce; and as many places in the Southern Mahratta country have a climate and soil similar to those of Dharwar, there is little doubt that the Presidency will be the locality of an almost unlimited cultivation of cotton. In reply to queries sent to India by Dr. Royle, it appears that cotton may be bought at Hoobly at 1½d. per lb., and that by making advances to the ryots, a reduction of 20 to 25 per cent. may be made on that price; also that the cost of clearing and conveying the cotton to the port of shipment would be under 1d. per lb.

LINNEAN SOCIETY.—Feb. 3.—The Bishop of Norwich in the chair.—A paper was read, from the late Mr. W. Griffith, 'On a new genus of plants belonging to the natural order Anacardiaceæ.' The author proposed to call it *Swintonia*. The species described was *Swintonia floribunda*.—A second paper was read from the same author, being a description of a new genus, belonging to the natural order Ternstromiaceæ, called *Erythrochiton*, the species described *E. Wallichianum*.—A description also was read of a new species of Henslowia, *H. pubescens*. The papers were illustrated by drawings.

ENTOMOLOGICAL SOCIETY.—Feb. 2.—The Rev. F. W. Hope, F.R.S., President, in the chair.—Several Lepidopterous insects were exhibited, taken at great distances from land, settling upon ships, including a specimen of *Sphinx Convolvuli*, from Mr. Langley's collection. Mr. Westwood exhibited and described the remarkable case formed by the larvæ of *Clythra 4-maculata*, which is found in the debris of ants' nests.—The Rev. F. W. Hope read a paper containing descriptions of some Coleopterous insects brought from Adelaide, South Australia, by Mr. Fortnum, and made some observations upon their habits and geographical distribution;—Messrs. Spence and E. Doubleday gave an account of their observations on the habits and proceedings of the sacred beetles; whence it would appear that some of the marvellous circumstances which have been recorded of them, such as forming pit-falls for the purpose of burying their balls, and assisting each other in rolling them along in cases of difficulty, are doubtful.

INSTITUTE OF BRITISH ARCHITECTS.—Feb. 9.—W. Tite, Esq., V.P., in the chair.—A paper was read, by Mr. R. C. Lucas, 'On the Parthenon, with reference to his restoration of that building now in the British Museum.' The substance of this paper was given some time since in this journal, in our notice of the above model [see ante, Nos. 944-5]. Mr. Donaldson complimented Mr. Lucas on the industry and ability which he had shown in these

restorations, as well as in the candour with which he had spoken of them. Had they been represented as restorations of the sculptures of the Parthenon, they would have drawn from him no adverse remark. Nor would he have objected to them as models to show the original application and position of the fragments by which they were surrounded; but he protested against their being represented, as they were in the description published by Mr. Lucas, as "exhibiting the temple as it appeared in the seventeenth century, and executed from the existing remains or from authentic drawings:" the fact being, that Mr. Lucas had never visited the existing remains, nor had access to such drawings as were requisite to guide him in their restoration,—and as the trustees of the British Museum, by their purchase of Mr. Lucas's models, had set a stamp of authority upon all his mistakes, he protested against their being accepted for a result of the labours of English architects on the ruins of the Parthenon. Mr. Donaldson then pointed out several errors in the architecture of the restored model. He considered the casual occurrence (for so he believed it) of the fragment of a Corinthian capital among the ruins of the Parthenon to be no authority for establishing that order throughout the interior. Mr. Lucas had continued the mouldings of the capitals of the antæ where they certainly never existed; the cornice in the cella was at variance both with Stuart and the existing remains; the plinth shown in the posticus was certainly never there; three, not four, was the undoubted number of the steps on which the peristyle was raised: in the restoration of the door Mr. Lucas had been altogether misled by modern alterations, and he had overlooked the bronze enclosure of the posticus. Mr. Donaldson also objected to the treatment of the statue of the goddess, and the entablature of the lower order of the interior, as contrary to principle and precedent,—to the advance of the hypæthrum before the line of the supports,—as apocryphal, to the heads of the statues in the pediments standing forward so as to cut into the line of the corona. It was greatly to be wished that Mr. Lucas had called in the aid of architects to assist him.—Mr. Lucas rejoined, by recapitulating his authorities upon some points and admitting the objections made to others.

INSTITUTION OF CIVIL ENGINEERS.—Feb. 10.—Sir John Rennie, President, in the chair.—The discussion on Mr. Barlow's paper 'On the existence (practically) of a Line of Equal Horizontal Thrust in Arches,' which was read Feb. 3 [ante, p. 152] was continued at such a length as to preclude the reading of any papers, and is to be renewed on Tuesday.

ROYAL INSTITUTION.—Jan. 30.—Lord Prudhoe, President, in the chair.—Prof. Brande, 'On the Electro-Chemical Protection of Metals.' The chief subject of Prof. Brande's communication was, the description and philosophical explanation of the protection given to iron by coating it with zinc. The researches of Sir H. Davy in the years 1824-25 were noticed, and the effects of sea-water on copper, simply immersed in that liquid, were contrasted with the protection afforded to it by a cemented plate of zinc or iron. It was then demonstrated that, whenever two metals, possessing unequal affinity for oxygen, are brought into metallic contact in any medium containing oxygen, an electrical current is produced; that this current passes from the more oxidizable to the less oxidizable metal; and that the latter is protected by the increased corrosion of the former. Thus, the interior of a copper stew-pan will not be affected by acids so long as any of its tinning remains; while, on the contrary, if what is called tin-plate (*i. e.* iron plate coated with tin) be scratched, however slightly, the iron is quickly corroded, the cuticle of tin being protected at the expense of the metal which it was designed to preserve. Now, zinc on iron is what tin is on copper,—a perfect protection, so long as any remains on its surface. It was then shown that, generally, the direction of an electric current depended, not only on the metals, but on the nature of the medium through which the current passed (*e. g.* on whether an acid, or a solution of sulphur, or of any other electro-negative substance was used). Instances of metallic deposition by chemical affinity, as that of lead on zinc, of copper on iron, &c. were exhibited; and it was shown that, whenever the electric current was superinduced by the employment of a conductor of elec-

tricity, whether metallic or not, the metal passed to the conducting (or the electro-negative) surface (the cathode of Faraday). The process of zincing iron was then exhibited. The metal is carefully scoured, steeped in dilute acid, washed in water and thoroughly dried, and then plunged into melted zinc. As it is necessary that there should be perfect metallic contact between the metals, sal-ammoniac is sprinkled over the melted zinc before the immersion of the iron. This covers the liquid metal with a film of chloride of zinc, which precludes intervening oxide, and thus insures perfect adhesion between the coating and coated metals. Prof. Brande concluded his communication by exhibiting zinced iron piping, and by mentioning instances of the successful application of this invention, as in the cases of the iron roofing of the Houses of Parliament, the buoys used by the Trinity House, wires of galvanic telegraphs, &c.

Feb. 6.—Lord Prudhoe, President, in the chair.—Professor Owen 'On the Geographical Distribution of Extinct Mammalia.'—The Professor announced his purpose to develop the law or principle on which mammals are, and have been, distributed over the surface of this planet. (A mammal was described as being characterized by a hairy skin, quick respiration, and, therefore, a temperature usually higher than that of the surrounding atmosphere, and by bringing forth living young.) He stated that recent researches had led him to defined views on the following subjects:—1. *Comparative development as between mammals of the old and new world.* 2. *Peculiarities of mammalian distribution in Australia and the neighbouring islands.* 3. *Probable final causes of several instances of this development.* 4. *Inquiry whether the extinct species of mammals were localized like the present races.* Thus,—1. *On the comparative mammalian development in the new and old world of geographers.*—The Professor stated that, in the old world, mammals reached their highest type. Among other illustrations of this truth, he contrasted the lion and royal tiger of Asia and Africa with the puma and jaguar of America; the large and useful camel with the feeble vicugna. The most remarkable of the herbivorous and pachydermatous animals, as the giraffe and the antelope in the former class, and the elephant, rhinoceros, hippopotamus, babroussa, horse, djiggitas, zebra in the latter, are peculiar to the Old World. With respect to the rodent animals, water-rats, hares, rabbits, tailless hares, are only found in the Old World. The beaver is, indeed, represented by an American species, but this is distinct from the beaver of the Danube. The monkeys of the Old World are equally distinguishable from those of the New. In the latter we find the prehensile tail, the wide and approximated nostrils, and the absence of an opposable thumb on the hand. Professor Owen proceeded, 2ndly, to notice the peculiarities of mammalian distribution in Australia and the neighbouring islands.—In this tract of the globe all the animals are distinguished by two remarkable peculiarities, one positive and the other negative; (*a*) all are organized to carry about their young, from a very early period of embryonic life, in a portable pouch; and (*b*) none have attained a high degree of development. The largest marsupial carnivora are the *Thylacine* and *Dasyure*, which are respectively of the size of the dog and the wild cat. 3. *Probable final causes of several instances of this development* were then adverted to. Thus, the marsupial inhabits a country liable to long-continued drought, and where the indigenous animals are consequently compelled to make long journeys in search of water; were it not for the arrangement enabling the marsupial to carry its young with ease from one place to another, the races would probably become soon extinct. The prehensile tail of the American marsupial, as well as of the porcupine, kinkajons, ant-eaters, and monkeys of the New World, have reference to their arboreal life in the huge forests in which these creatures live. Then, to prevent mischievous effects from the decomposition of vegetable matter in countries where it is so luxuriant, decaying plants furnish food to *Termites* and other insects, which, in their turn, support a peculiar genus of quadrupeds, the *Myrmecophaga* (or ant-eaters). In closing this part of his subject, the Professor noticed the armour-like, osseous skin of the armadillos, which live at the foot of trees, and are, therefore, extremely liable to blows from falling boughs, &c.