terises the Bennettiteæ, as a family perfectly distinct from the Cycadeæ, though probably, as Count Solms-Laubach suggests, having a common origin with them at some remote period. The Bennettiteæ, while approaching Angiosperms in the complexity of their fruit, retain a filicinean character in their ramenta, which are quite like those of ferns, and different from any other form of hair found in recent Cycadeæ. Probably the bennettitean and cycadean series diverged from each other at a point not far removed from the filicinean stock common to both.

I hope that the hasty sketch which I have attempted of some of the indications of descent afforded by modern work on fossil plants may have served to illustrate the importance of the questions involved and to bring home to botanists the fact that phylogenetic problems can no longer be adequately dealt with without taking into account the historical evidence which the rocks afford us.

Before leaving this subject I desire to express the great regret which all botanists must feel at the recent loss of one of the few men in England who have carried on original work in fossil botany. At the last meeting of the Association we had to lament the death, at a ripe old age, of a great leader in this branch of science, Prof. W. C. Williamson. Only a few weeks ago we heard of the premature decease of Thomas Hick, for many years his demonstrator and colleague. Mr. Hick profited by his association with his distinguished chief, and made many valuable original contributions to palæobotany (not to mention other parts of botanical science), among which I may especially recall his work, in conjunction with Mr. Cash, on *Astromyelon* (now known to be the root of Calamites), on the leaves and on the primary structure of the stem in Calamites, on the structure of *Calomostachys*, on the root of *Lyginodendron*, and on a new fossil probably allied to *Stigmaria*. His loss will leave a gap in the too thin ranks of fossil-botanists; but we may hope that the subject, now that its importance is beginning to be appreciated, will be taken up by a new generation of enthusiastic investigators.

CONCLUSION.

To my mind there is a wonderful fascination in the records of the far-distant past in which our own origin, like that of our distant cousins the plants, lies hidden. If any fact is brought home to us by the investigations of modern biology, it is the conviction that all life is one: that, as Nägeli said, the distance from man to the lowest bacterium is less than the distance from the lowest bacterium to non-living matter.

In all studies which bear on the origin and past history of living things there is an element of human interest—

> "Hence, in a season of calm weather,
> Though inland far we be,
> Our souls have sight of that immortal sea
> Which brought us hither."

The problems of descent, though strictly speaking they may often prove insoluble, will never lose their attraction for the scientifically guided imagination.

THE CONWAY EXPEDITION TO SPITZBERGEN.

THE *Times* of September 18 published an account of a conversation which Mr. Trevor-Battye, on his return from his recent journey in Spitzbergen, had with a representative of Reuter's Agency. To this report we are indebted for the following particulars. As will be remembered, Mr. Trevor-Battye was a member of Sir Martin Conway's expedition (an account of the doings of a section of which appeared in NATURE of September 10, from the pen of Dr. J. W. Gregory), and, as arranged, left Sir Martin Conway, Dr. Gregory, and Mr. Garwood, in company with Mr. Conway, the artist, and Pedersen, of Tromsö, near Advent Bay for the purpose of exploring some of the northern parts of the island. The first object was to explore Dickson Bay, the most northerly bay in Ice Fjord, the northern part of which had never been mapped. In this work the explorers seem to have met with very considerable difficulties from flowing ice and the remains of the old winter pack. However, they landed at a place on the western shore, and spent the night. In the morning, the ice having opened a little, Mr. Trevor-Battye and Pedersen crossed to the other side, being anxious to find out something of the character of the country which separates Ice Fjord from the sea lying to the north. At the north end they found the tide was out, and great stretches of mud of a very tenacious character were to be seen. In the distance, running north-west, appeared what seemed to be a valley; but, at a nearer view, it proved not to be a valley at all, but an enormous glacier, the front of which was masked by an immense and intricate moraine. The glacier, in striking contrast to the majority of glaciers, is a retreating one, and is slowly dying back. On reaching it, the explorers found it a mile and a half wide, and many miles in length. Pedersen, being anxious about his boat, returned to her at this stage, and Mr. Trevor-Battye went on alone, and presently climbed the snout of a rounded glacier, by which he hoped to be able to effect a crossing. It was, however, badly crevassed, the crevasses becoming wider and more formidable at every step. In his own words: "I had not expected to find ice, and so was not prepared, not even having a stick or a gun with me. I wanted to push on, however, although aware of the fact that the undertaking was rash, and one which, under the circumstances, no Alpine guide would have attempted. I went some distance further, but, sinking to my knees on a snow-bridge half-spanning a crevasse, I had to reach the other side by flinging myself forward. Later, while standing at the edge of another crevasse, a large body of solid ice, which was jammed between its walls, fell with a roar as I was going to walk across it. A little ahead I could see the col, from which I knew I should have sight of the sea; but I found it impossible to proceed without proper ice tools, for the crevasses between me and that point were masked by deep snow, and I felt any further attempts to be quite unjustifiable. I had now reached a height of 1800 feet—not of mountain, but a gradual rise of ice-river from the sea. The return journey I found more difficult, as the crevasses had to be met down hill, and a slip upon their rounded edges would have been fatal. Finally, I rejoined Pedersen after a walk of twenty-two hours. We then returned to Cape Wärn, and explored the western bay of Ice Fjord. According to Nordenskiöld's map, on which our Admiralty chart is based, a large island occupies the centre of this bay; but, after cruising about for two days, we found to our surprise that it no longer existed as an island. The glacier—which, by the way, we named 'Splendid Glacier'—had encroached to such an extent, and so rapidly, that it had entirely filled up one neck of the bay, and had also covered two-thirds of the island. In a few years' time the head of the bay will be completely obliterated."

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

DR. CARL VON KUPFFER, Professor of Anatomy in the University of Munich, has been elected Rector of that University for the coming year.

MR. J. AIREY, of the Leeds Organised Science School, has been appointed science master of the Rhondda Intermediate School at Porth.

MR. F. T. HOWARD, Professor of Geology in Cardiff University College, has been appointed one of her Majesty's inspectors of schools.

MR. H. J. MACKINDER will deliver, at Gresham College, under the auspices of the University Extension Society, a course of twenty-five lectures on "The Geography of Europe, Asia, and Northern Africa," beginning on October 5, at six o'clock.

DR. E. SYMES THOMPSON, Gresham Professor of Medicine, will deliver lectures on "Vaccination," on October 6 and 7, and on "The New Photography," on October 8 and 9. The lectures, for which no charge for admission is made, will be given at six o'clock each evening in Gresham College, Basinghall Street, E.C.

THE Councils of University College and of King's College, London, have, in conjunction with the Technical Education Board of the London County Council, arranged a number of courses to be held in the evenings for those students who are engaged in the day-time. The courses are to be of the same standard as the day classes, and admission will be confined to students who have already made some advance in the knowledge of the subjects. At University College there will be lectures on mechanical engineering, by Prof. Hudson Beare, commencing October 12; electrical engineering, by Prof. Fleming, commencing October 13; and practical chemistry, by Mr. C. F. Cross, commencing November 1. At King's College the special evening classes for advanced students are: Civil

engineering, by Prof. Robinson, beginning Monday, October 5; architecture, by Prof. Banister Fletcher, beginning on Wednesday, October 7; experimental and practical physics, beginning on Monday, October 5, under the direction of Prof. Adams, F.R.S.; pure mathematics—higher mathematics—by Prof. Hudson, beginning on Tuesday, October 6; and a free Saturday morning class for elementary teachers—strength of materials and theory of machines—by Prof. Capper, beginning Saturday, October 17. Application to join any of the above classes should be made, as soon as possible, to the Professors who will conduct the courses. The formation of the classes is a new feature of the work of the London Technical Education Board, and it is one which will advance technical education in the right direction.

SCIENTIFIC SERIALS.

Wiedemann's Annalen der Physik und Chemie, No. 9.—Effect of light on spark discharges, by E. Warburg. This effect is not a direct action, but is the consequence of the shortening of a process preceding the spark discharge, and this shortening is brought about by illumination. The author studied the shortening by applying the difference of potential more or less rapidly, and finding the lowest difference of potential capable of producing discharge within five minutes, this being the greatest delay observed. The discharge potential thus found he calls the statical discharge potential, to distinguish it from the dynamic discharge potential producing sparks when the current surges to and fro. The experiments made by the author show that the statical discharge potential is not materially influenced by illumination. But when a difference of potential nearly seven times as high is applied for a few thousandths of a second only, it always produces discharge when the kathode is illuminated by an arc lamp, and not in the dark. The range of potentials at which discharge only takes place occasionally is very small in the case of illumination, but large in the dark. This explains why a telephone connected with an illuminated spark gap gives a purer note than when it is not illuminated.—Electric refractive indices of water and aqueous solutions, by P. Drude. For oscillations of the frequency of 4×10^8 per second the square of the electric index of refraction at 17° C. is 81·67. Water possesses slight normal dispersion, since the square is 80·60 for a frequency of $1·5 \times 10^8$, and 83·6 for 8×10^8. Between 0° and 26° the change of n^2 is proportional to the temperature. It decreases by 0·367 per degree. At higher temperatures the decrease is slower. The refractive indices of dilute aqueous solutions are very nearly the same as those of water.—Dilute ferromagnetic amalgams, by H. Nagaoka. In fields of less than 20 C.G.S. units the magnetisation of iron amalgams shows a discontinuity at the melting-point. On heating an amalgam containing 1·78 per cent. of iron, produced by electrolysis, up to its melting-point (−38° C.), the intensity of magnetisation in a field of 16 units gradually increased. It suddenly attained a maximum on melting, and gradually diminished on further heating.—Influence of pulling and pushing forces upon magnetic properties, by G. S. Meyer. Cobalt also shows the effect discovered in iron by Villari of a maximum of magnetic intensity when under a certain force. In nickel and cobalt tension produces an E.M.F. identical in direction with that produced by longitudinal magnetisation.—An attempt to liquefy helium, by K. Olszewski. (See p. 377.) Helium cannot be liquefied by the most powerful methods yet available. It is more permanent than hydrogen, probably owing to its monatomic structure, and is on that account valuable as a thermometric substance at very low temperatures. A comparison of a helium and a hydrogen thermometer shows, however, that hydrogen has normal expansion as far as −234·5° C., its critical temperature, and is therefore available for thermometric use down to that point.

Bollettino della Società Sismologica Italiana, vol. ii., 1896, No. 3.—On the Benevento earthquake of March 14, 1702, by M. Baratta. A discussion of the earthquake founded on three old documents recently discovered, and of its relations to the Benevento earthquakes of June 1688 and September 1885.—Present state of the endogenous phenomena in the Eolian islands, by A. Riccò.—Considerations on recording seismic apparatus and modification of the two-component microseismograph, by G. Vicentini and G. Pacher. A reprint of a paper already noticed in NATURE.—Summary of the principal eruptive phenomena in Sicily and the adjacent islands during the six months January to June, 1896, by S. Arcidiacono.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, September 21.—M. A. Cornu in the chair.—The President announced the loss that the Academy had sustained in the death of M. Fizeau, and the meeting was adjourned in consequence.

NEW SOUTH WALES.

Linnean Society, July 29.—Mr. Henry Deane, President, in the chair.—Appendix to the Australian *Clivinides* (fam. *Carabidæ*), by Thomas G. Sloane. Since his paper was read (at the June meeting) the author has had the opportunity of examining the *Clivinides* of King's Sound, W.A., and its vicinity, in the Macleay Museum. The collection comprises sixteen species, of which two are described as new.—Descriptions of new species of Australian Coleoptera, by Arthur M. Lea. Two genera and thirty-four species belonging to the families *Tenebrionidæ* and *Curculionidæ* are described as new. Two very interesting species are noted—an apterous *Pterohelæus* and a Cossonid having an 8-jointed funicle.—Descriptions of some new *Araneidæ* of New South Wales, No. 6, by W. J. Rainbow. Eight species, comprising representatives of the genera *Nephila*, *Epeira*, *Dolomedes*, and *Actinoups*, are described as new. The last named is specially interesting from the fact that it is the first of the genus recorded from Australia. Five of the spiders described are remarkable for their protective colouration or mimicry; in addition to these, numerous other examples are instanced. After summing up all the facts recorded, the writer concludes by dividing the *Araneidæ* into two groups, viz.: (1) (*a*) spiders whose colouration and (*b*) formation is protective: and (2) spiders that mimick, (*a*) animate or (*b*) inanimate objects, and (*c*) whose colours are attractive.—Description of a new species of *Ablepharus* from Victoria, with critical remarks on two other Australian lizards, by A. H. S. Lucas and C. Frost. *Ablepharus rhodonoides*, sp.n., from Mildura, is allied to *A. greyi*, Gray, by the head-scaling, but in habit it resembles species like *A. muelleri*, Fischer, and *A. lineatus*, Bell, which are remarkable for the reduction in the size of the limbs, as well as in the number of the digits. *A. greyi*, described from West Australia, is recorded from the Boggabri District, N.S.W. *Hemisphæriodon tasmanicum*, Lucas and Frost (Proceedings, 1893, p. 227), as the outcome of the examination of series of additional specimens, is now reduced to a variety of the very variable *Homolepida casuarineæ*, D. and B.—On a new genus and three new species of mollusca from New South Wales, New Hebrides, and Western Australia, by John Brazier.

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