

mentioned that the rainy season, January to March, was that of greatest activity. Many points of resemblance between Samoan and Hawaiian lavas command attention.—Sand-movement on the New South Wales coast: G. H. **Halligan**. The principal factors which govern the movement of sand and shingle on the littoral being ocean and tidal currents, wave action, and wind, the following matters are discussed:—the effects of strong and weak currents, counter currents, and currents due to tidal flow upon the direction and rate of sand-travel; the movement of beach material due to tidal current a negligible quantity; sand-movement more pronounced during flood tide as compared with ebb tide; a projecting headland may cause a current on its northern or southern side, according as its northern side is concave or convex, or whether the headland is at right angles to the course of the current, or meets it at an angle; the influence of the prevailing and the dominant winds upon sand-travel as shown by an analysis of the winds recorded at Sydney during the decade 1894-1903, and at the Clarence River from March, 1877, to August, 1886; the manner in which sand and shingle are moved by wave action and by currents, and the reasons why the sand on the coast of New South Wales is more readily moved to the south than to the north, where strong eddy currents do not exist; predominant influence of the strong southerly winds on the movement of sand above the limit of wave action, with instances of the northerly movement of sand-dunes on the coast.—The minerals and genesis of the veins and "Schlieren" traversing the ægirine-syenite in the Bowral quarries: D. **Mawson**. The veins ordinarily occupy fissures which may be very local, extending only a few inches, or at other times continuous by the establishment of connections between minor openings. They are classified as (1) veins of bitumen distilled from the underlying Coal-measures; (2) simple pegmatite veins of (a) small, and (b) of larger dimensions, which have originated by sweating from the sides, or by the residual gaseous and more liquid contents of the solidifying rock collecting largely in the same fashion, and crystallising out as a coarse-grained product; and (3) veins exhibiting well-marked flow-structure and of finer grain, more nearly related to the aplites.—The fixation of nitrogen by *Azotobacter chroococcum*: Dr. R. **Greig-Smith**. *Azotobacter* is a slime-forming microorganism, and in combination with other bacteria, such as *Bact. radiobacter* and *Bact. levaniiformans*, with which it appears to associate, it quickly produces a luxuriant growth of slime on saccharine media. There is also a fixation of nitrogen, but this, as has been pointed out by Beijerinck and v. Delden, is caused by *Azotobacter*, and not by the other bacteria, which, however, may render assistance.—The fixation of nitrogen by *Rhizobium leguminosarum*: Dr. R. **Greig-Smith**. The investigation showed that races of the nodule former can fix atmospheric nitrogen in artificial culture, and that the fixation is coincident with, and proportional to, the formation of slime. Under conditions which assist cell growth, but which preclude the formation of slime, there is no fixation, and conversely, under conditions which assist the formation, such as the presence of another bacterium, there is an increased fixation.

CAPE TOWN.

South African Philosophical Society, October 31.—Dr. J. C. Beattie, president, in the chair.—A series of mounted Cape Alcyonaria (Cœlenterates) obtained by the Government Biological Department: J. Stuart **Thomson**. The specimens exhibited were of remarkable beauty in form and colouring. One of the most interesting of the forms exhibited was *Anthoptilium thomsoni*, a colony measuring about 3 feet long and occurring in abundance at certain places, probably forming miniature animal forests at the bottom of the sea.—Connection between the rainfall at Durban and at Mauritius: T. F. **Clanton**. The note arises out of an inquiry into the possibility of seasonal weather forecasts for Mauritius. Examination shows that the monthly departures from average of the various meteorological elements at Durban have no connection with those at Mauritius. It appears, however, that winter droughts in Durban have invariably been followed by summer droughts in Mauritius at intervals of from three to seven

months, and that prolonged droughts in Natal or those commencing in the summer may be either accompanied or followed by prolonged droughts in Mauritius. There is some evidence to show that the interval depends upon the time of commencement of the drought at Durban.—Discussion of the errors of certain types of minimum spirit thermometers in use at the Royal Alfred Observatory, Mauritius: A. **Walter**. The conclusions arrived at are:—(1) the minimum thermometers (even the so-called "sensitive") should never be used as ordinary thermometers; (2) the errors from comparisons at certain temperatures may be as much as 2°; (3) the absolute minima obtained with the spherical bulb thermometers may amount to as much as +3°.—The chemical composition of berry wax: Dr. B. **van der Riet**. In this paper the author drew a comparison between constants found for berry wax (from berries of *Myrica cordifolia*) and those quoted for myrtle wax (from berries of various species of *Myrica*), by Dr. J. Lewkowitsch in his treatise on the chemical analysis of oils, fats, and waxes.

DIARY OF SOCIETIES.

THURSDAY, DECEMBER 20.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Track Circuit as Installed on Steam Railways: H. G. Brown.
LINNEAN SOCIETY, at 8.—Botanical Results of the Third Tanganyika Expedition, 1904-5: Dr. A. B. Rendle and others.—Fossil Foraminifera of Victoria; the Balcombian Deposits of Port Phillip: F. Chapman.—*Exhibition*: Albino Woodlice: Wilfred Mark Webb.
CHEMICAL SOCIETY, at 8.30.—A New Laboratory Method for the preparation of Hydrogen Sulphide: F. R. L. Wilson.—The Reaction of Acids with Methyl Orange: V. H. Veley.—(1) Contributions to the Study of the Calcium Phosphates, I., The Hydrates of the Calcium Hydrogen Orthophosphates; (2) Contributions to the Study of the Calcium Phosphates, II., The Action of Ammonia Gas on the Calcium Hydrogen Orthophosphates: H. Bassett, jun.

THURSDAY, DECEMBER 27.

ROYAL INSTITUTION, at 3.—Signalling to a Distance: Ancient Ways of Signalling and their Modern Development: W. Duddell.

SATURDAY, DECEMBER 29.

ROYAL INSTITUTION, at 3.—Signalling to a Distance: the Invention of the Electric Telegraph: W. Duddell.

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