

three different types, according as they show (1) how much plant food exists in a form immediately available for plants; (2) what proportions are present as a reserve stock; or (3) the aggregates of the plant-food constituents in the soil. The third type of analysis may have its value for the geologist, but only the first and second afford the farmer any indications of the land's worth, the former indicating its immediate productiveness and the latter its permanent value. Until recently sufficient samples had not been analysed by a method that could be taken as a trustworthy means of ascertaining the reserve stock of plant food in the colony's soils, nor had the Geological Commission progressed to an extent sufficient to enable it to be used as a working basis. Furthermore, the soils that had been analysed had been selected from definite fiscal divisions without regard to geological conditions. Some 200 soils had, however, been selected from the number hitherto analysed and taken as fairly representative of various geological formations. Of the soils derived from the pre-Cape rocks, those from the Malmesbury slates in the south-western part of the Colony were found to be poor all-round on the average. In the northern portion of the country, where the Campbell Rand series extended over a large area, the soils were rich in lime. The soils derived from the Table Mountain series, which were the lowest rocks of the Cape system and consisted of little else than silica, lacked all the essential mineral ingredients of plant food. Above the Table Mountain series lay the Bokkeveld beds, and these produced soils with satisfactory proportions of plant food. The highest rocks of the Cape system, namely, the Witteberg series, produced soils which may be anticipated to resemble those of the similar Table Mountain series, and the few that had been analysed bore out this view. This was the district in which bone-diseases in cattle prevailed. Of the soils of the Karroo system, those derived from the Burghersdorp beds and Stormberg series were found to be well supplied with potash and phosphates, and contained large proportions of lime. This was also the case with the soils formed from the Uitenhage series, in the Cretaceous system. For hundreds of miles fertile silts were transported by rivers in flood. To the silts thus brought down from the Karroo, the Oudtshoorn division owed its fertility, and the soil of that division was now undergoing transportation to the sea, except where deposited in the Riversdale and Mossel Bay divisions en route.—Some new fossil reptiles from Victoria West: Dr. R. Broom. A description is given of three new reptiles found by Mr. T. J. R. Scholtz at Victoria West, in beds which are believed to correspond to the *Lystrosaurus* beds of Colesberg, Middelberg, and Cradock. Hitherto almost the only fossils known from these beds have been the aquatic *Lystrosaurus* and fish.—Solifluction: Prof. E. H. L. Schwarz. Solifluction is a term coined by Andersson for the flow of saturated soil down mountain sides. Originally used only for regions covered with ice and snow, the object of the present paper is to show that the same action goes on in temperate countries, only to a smaller extent, producing stone courses in the mountainous districts, and a gradual downward creep of soil and subsoil in parts of the country which have less relief. Under the same term must be included the flow of volcanic ashes saturated with water, which are characteristic of the so-called mud-volcanoes in South America, Java, &c.

DIARY OF SOCIETIES.

THURSDAY, MAY 23.

ROYAL SOCIETY, at 4.30.—The Relation of Thallium to the Alkali Metals: a Study of Thallium Sulphate and Selenate: Dr. A. E. H. Tutton, F.R.S.—On the Frictional Resistances to the Flow of Air through a Pipe: Dr. J. H. Hindley and A. H. Gibson.—Chemical Reaction between Salts in the Solid State: Dr. E. P. Perman.—Studies on Enzyme Action, IX., The Nature of Enzymes: Prof. H. E. Armstrong, F.R.S., and Dr. E. F. Armstrong.—Studies on Enzyme Action. The Enzymes of Yeast: Amylase: R. J. Caldwell and S. L. Courtauld.—On Light Elliptically Polarised by Reflection especially near the Polarising Angle: a Comparison with Theory: Prof. R. C. Maclaurin.

ROYAL INSTITUTION, at 3.—Chemical Progress—Works of Berthelot, Mendeléeff, and Moissan: Sir James Dewar, F.R.S.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Present State of Direct Current Design as Influenced by Interpoles: F. Handley Page and Fielder J. Hiss.—Hot Wire Watt Meters and Oscillographs: J. T. Irwin.

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FRIDAY, MAY 24.

ROYAL INSTITUTION, at 9.—Recent Contributions to Electric Wave Telegraphy: Prof. J. A. Fleming, F.R.S.

LINNEAN SOCIETY, at 3.—Anniversary Meeting.

PHYSICAL SOCIETY, at 5.—On the Measurement of Mutual Inductance by the Aid of a Vibration Galvanometer: A. Campbell.—Note on the Rate of Decay of the Active Deposit from Radium: W. Wilson and W. Makower.—Exhibition of Apparatus for Relay Working of Long Submarine Telegraph Cables: S. G. Brown.

MONDAY, MAY 27.

ROYAL GEOGRAPHICAL SOCIETY, at 3.—Anniversary Meeting.

SOCIOLOGICAL SOCIETY, at 8.—Functional Relations of the Family and the City: Dr. W. Leslie Mackenzie.

VICTORIA INSTITUTE, at 4.30.—Mencius: Rev. F. S. Turner.

TUESDAY, MAY 28.

ROYAL INSTITUTION, at 3.—Malaria, Sleeping Sickness, Tick Fever, and Allied Diseases: Prof. G. H. F. Nuttall, F.R.S.

ZOOLOGICAL SOCIETY, at 8.30.

SOCIETY OF ARTS, at 8.—Sheffield Plate and Electro Plate: Sherard Cowper-Coles.

FARADAY SOCIETY, at 7.50.—Annual General Meeting.—At 8.15.—Contributions to the Chemistry of Gold: F. H. Campbell.—Reduction of Oxides, Sulphides, &c., by Means of Metallic Calcium: Dr. F. Mollwo.

ROYAL INSTITUTION, at 3.—Exhibit of Thermostatic Apparatus: Dr. T. M. Lowry.

WEDNESDAY, MAY 29.

BRITISH ASTRONOMICAL ASSOCIATION, at 5.—Mr. C. Michie Smith on his Work at Kodaikānal.

SOCIETY OF ARTS, at 8.

THURSDAY, MAY 30.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: The Solubility of Air in Fats, and its Relation to Caisson Disease: Dr. H. M. Vernon.—Mitosis in Proliferating Epithelium: Dr. J. O. Wakelin Barrett.—An Experimental Inquiry into the Nature of the Substances in Serum which Influence Phagocytosis: George Dean.—The Correlation of Ovarian and Uterine Functions: E. S. Carmichael and F. H. A. Marshall.

ROYAL INSTITUTION, at 3.—Chemical Progress—Work of Berthelot, Mendeléeff, and Moissan: Sir James Dewar, F.R.S.

SOCIETY OF ARTS, at 4.30.—Irrigation Colonies in India: Laurence Robertson.

FRIDAY, MAY 31.

ROYAL INSTITUTION, at 9.—Recent Journey Across Africa: A. Henry Savage Landor.

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