

a special medium described in the paper, the author has found as many as three millions of nitrogen-fixing Rhizobia in 1 gram of agricultural soil. The foremost place in the work of nitrogen fixation should, therefore, be given to Rhizobium rather than to Azotobacter, until it is found that the latter is at least half as numerous as the former. The numbers of Rhizobia in the soil afford an indication of its comparative fertility.

CAPE TOWN.

Royal Society of South Africa, August 16.—Mr. S. S. Hough, F.R.S., president, in the chair.—L. Péringuey: A note on the Heidje Eibib, or stone mound of Namaqualand. The name Heidje Eibib is usually given to artificial mounds of stone occurring in certain places in Namaqualand and elsewhere, the formation of which is ascribed to the Hottentots, who whenever passing the spot add a stone to the cairn, taking great care, however, that in so doing their shadow is not projected on the mound. But so far there was nothing to prove that these cairns were really a kind of sepulture. Lately, however, one such mound was opened, and it was found that the accumulation of stones covered parts of a body; the skull is, to all appearances, that of a Bush. But the Rev. Mr. Kling informs the author that there are two kinds of Heidje Eibib. The one opened is known as Heidje Eibib Garedeje, and would be the grave of a Bush witch doctor, erected by his people. But it is not yet proved that the Hottentot's Heidje Eibib is a grave.—E. Nevill: The secular acceleration of the orbital motion of the moon. The paper begins with a critical examination of the records of the principal ancient eclipses of the sun mentioned as being total, or very nearly total, by different Assyrian, Babylonian, Grecian, and Chinese records. The exact conditions of each eclipse have been calculated from the best modern theoretical data according to Hansen's method of computation. As a result, it is shown that with our present knowledge it is not possible by any system of data consistent with the modern observations of the sun and moon to bring all the principal eclipses recorded by ancient authorities as having been total into accord with the tables. The second portion of the paper assumes the existence of a secular acceleration in the motion of the earth around the sun, and proceeds to consider what might be the origin, and to what degree the existence of this cause will modify the motion of the different members of the solar system, and how far the deduced consequences are in harmony with observation. It is shown that the case of the terrestrial tidal effect due to the action of the sun and moon does not form a conservative system, and that the principle of conservation of angular momentum does not hold for any non-conservative system of forces. No other origin for a secular acceleration being apparent, the great difficulty in reconciling the consequences of such a secular acceleration with the known motion of the sun and moon render it preferable to look to one of the other permissible causes as a means of reconciling the existing theories of the sun and moon with the records of the ancient eclipses of the sun and moon.—A. Theiler: Some observations concerning the transmission of East Coast fever by ticks. In the experiments it has been proved:—(1) That brown tick imago which as larvæ had become infected with East Coast fever, and had transmitted the disease in their nymphal stage, were no longer infective for susceptible cattle. Four batches of ticks proved their infectivity in the nymphal stage on eight animals, but in their adult stage failed to transmit the disease to two susceptible animals. (2) Ticks belonging to the same batches which were feeding on two animals rendered immune to East Coast fever by inoculation, in the nymphal stage, did not transmit the disease in their adult stage to six animals, thus proving that the brown tick which has become infected in one stage cleans itself in the following stage by feeding on an immune or susceptible animal. (3) Ticks which became infected with East Coast fever in their larval stage, and passed their nymphal stage on a rabbit, did not prove to be infective in their adult stage for susceptible cattle. This conclusion bears out that given above (2), showing that a tick loses its infectivity the first time it feeds on an animal susceptible or immune to East Coast fever. (4) Clean or infective ticks feeding on an animal which has recovered from an attack of East Coast fever do not

transmit the disease in their next stage. This conclusion is in support of experiments undertaken eight years ago (*vide* Annual Report of the Government Veterinary Bacteriologist, 1904-5). (5) It has been demonstrated that certain batches of ticks collected at the same time, and which fed under similar conditions, did not transmit the disease in their next stage, even when infected in great numbers and on numerous animals. Other batches of ticks reared in exactly the same way and under similar conditions only infected a few animals, whilst again other ticks proved infective in almost every instance, even when a minimum number were used. It is difficult to give an explanation of this fact, but it is quite likely that outside conditions have some influence. The ticks which did not transmit the disease were bred during the coldest time of the year.

DIARY OF SOCIETIES.

TUESDAY, OCTOBER 17.

FARADAY SOCIETY, at 8.—*Adjourned discussion*: The "Paragon" Electric Furnace and Recent Developments in Metallurgy: J. Hården.—Progress in the Electrometallurgy of Iron and Steel: Donald F. Campbell.—The Hering "Pinch Effect" Furnace: E. Kilburn Scott.

WEDNESDAY, OCTOBER 18.

ROYAL MICROSCOPICAL SOCIETY, at 8.—Structural Details of *Coscinus discus asteromphalus*: T. W. Butcher.—Abstract of Paper on the Wheat Plant: A. Flatters.—New British Enchytraeids: Rev. Hilderic Friend.—Instantaneous Exposure in Photomicrography: Walter Bagshaw. ENTOMOLOGICAL SOCIETY, at 8.

FRIDAY, OCTOBER 20.

INSTITUTION OF MECHANICAL ENGINEERS, at 8.—The Endurance of Metals: Experiments on Rotating Beams at University College, London: E. M. Eden, W. N. Rose, and F. L. Cunningham.

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