

## Electrical Experiment

A FRIEND of mine has called my attention to a letter of F. T. Pirani, of Melbourne, accompanied by some remarks of Prof. J. C. Maxwell, in *NATURE*, vol. xvii. p. 180.

Mr. Pirani concludes his letter with the words, "If the phenomenon (described in the letter) has not been noticed before, I shall be obliged to you if you will kindly communicate it to *NATURE*."

I take the liberty to request you to call, by means of your esteemed journal, the attention of the author to an article of mine, published in the late Prof. Poggendorff's *Annalen der Physik* (vol. clvii., 1876), an abstract of which appeared in the *Philosophical Magazine* (5 ser. vol. i.). The phenomenon alluded to in Mr. Pirani's letter, *i.e.* the existence of an electromotive force due to gravity, in a vertical column of an electrolyte, is, I believe, fully proved by the experiments described in the article. The same difficulties met with by Mr. Pirani and Prof. Maxwell, who repeated the experiment, that is, the presence of irregular, casual currents, due to bubbles of air, &c., have also been encountered by me; I intimate the means of getting rid, to a certain extent, of this influence.

The transport of metal in one direction being accompanied by a transport of the other ion in the opposite direction, the phenomenon is more complete than it might appear at first sight, and the electromotive force changes its sign according to the electrolyte employed.

R. COLLEY

Kasan, Russia, January 23

## Oriental Affinities in the Ethiopian Insect-Fauna

MANY naturalists have already drawn attention to the Indian affinities in the African fauna; in other words, the zoological relationship between the Oriental and Ethiopian regions. The late Dr. Stoliczka has pointed this out in the Malayan ornithology; Mr. Wallace has described the same thing in the mammalia and birds of West Africa, these possessing "a special Oriental or even Malayan element." He has also drawn attention to the Oriental element in the Ethiopian reptiles and amphibia, and to the many cases of the same in the South African fauna. Mr. Blandford has treated of the "African element in the fauna of India," more particularly as regards the mammalia; and the late Mr. Blyth has shown the ancient date of this relationship from the evidence afforded by the Siwâlik deposits. Mr. Murray has even inclined to the opinion that the Indo-Malayan region should be included with that of Africa, south of the Sahara.

The "Insecta" of the Ethiopian region also shows the same Oriental relationship, which seems to have hitherto received less attention. Dr. Stoliczka has described this in the "Indian Arachnoidea," and Mr. A. Murray in the coleoptera of which he has given the names of eleven genera common to the two regions.

The same thing may be seen in the Lepidoptera and Hemiptera, of which I can only treat briefly, hoping to deal with the subject in a more exhaustive and analytical form when possessed of adequate data, which at present do not exist.

Of the Lepidoptera a few specific examples will perhaps serve the purpose better than the names of the many genera that could be adduced. In the Rhopalocera:—*Danaus chrysippus*, *Melanitis leda*, *Atella phalanx*, *Hypanis iithyia*, *Lycana telicanus*, *Idmais phisadia*, and *Callosine dana*, all belong to the two regions, and with the exception of *C. dana* and *I. phisadia*, have been all recorded from Madagascar. However, *D. chrysippus* (Greece and Turkey), *H. iithyia* (Nubia, Abyssinia, and Arabia), and *L. telicanus* (Egypt and Arabia), would seem to show from those habitats their route of migration from one region to the other. In the Heterocera two examples must suffice, and may be accepted as typical of what probably occurs to a far greater extent among the large number of African moths still unknown to science. *Plusia verticillata* and *Patula macrops* have a wide range over the two areas.

In the African Hemiptera-Heteroptera the Oriental relationship is very pronounced. The following are some of the genera common to the two regions:—*Solenosthedium*, *Hotea*, *Coptosoma*, *Brachyplatys*, *Plataspis*, *Canthecona*, *Agonoscelis*, *Antestia*, *Bathycalix*, *Catacanthus*, *Tesseratoma*, *Aspongopus*, *Phyllocephala*, *Macrina*, *Mictis*, *Leptoglossus*, *Odontopus*, *Physopelta*, *Lestomerus*, *Catamiarus*, *Pachynomus*, *Acanthaspis*, *Oncocephalus*, and *Thodelmus*. Genera, of course, are subject to constant revision and redivision, making, as a rule, generic calculations of geo-

graphical distribution very uncertain and unstable. A genus of to-day may embrace species belonging to two regions; to-morrow an author may split this genus into two, for which he may find local characters. In other words, genera common to two regions at the present time may be shown as the contrary by a later worker. In a general way the value of the term genus is often equal to the value of the term species. The twenty-four genera of Hemiptera, however, which I have enumerated above, may be accepted as more certain examples. Dr. Stål has paid particular attention to this order, and has made many genera from a minute examination of structure, and I think his divisions must at least be considered as sufficiently exhaustive. I have carefully compared my list with his latest classification, and find that eighteen out of the twenty-four genera still remain intact on his catalogue, one other is common to the two regions from an East African species I recently described, and so only five remain, which Dr. Stål has further subdivided. Of these twenty-four genera, *twenty-two extend to the West African sub-region*, twelve have at the present time also been recorded from China, and twelve from the Australian region. When we further analyse the list as to the probable route of migration, it is found that eight genera appear in Madagascar and two in Réunion; whilst a northern junction is also indicated by one genus being found in Tangier and Syria, two in Egypt, and one in Abyssinia. A few species are common to the two regions, as *Leptoglossus membrananeus*, *Oncocephalus annulipes*, &c.

It is probable that the African Neuroptera and Orthoptera may show the same affinities.

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## Sense in Insects—Drowned by a Devil-Fish

In the file of *NATURE* from October 18 to the end of November which I have just received, I find a discussion regarding the senses possessed by insects, especially the lepidoptera. For years I have been in the habit of collecting these insects for my friends, and of course have become more or less acquainted with their habits. I recall one or two instances in point. In Costa Rica the Heliconias frequent certain flowers, and pass over others of the same colour and same approximate size without noticing them. But the most marked case was of the large brilliant Morphos. My Indian servants always carried with them a fermented paste of maize flour, which they mixed with water to the consistency of gruel as a beverage. On our arriving at the side of a stream in a narrow gorge, invariably, within a few minutes after they opened a package of this paste, although there might not have been a butterfly in sight before, those most brilliant of their kind would come sailing up, always from leeward, and I have made some of my best catches in this manner. I have also caught them by baiting with a piece of over-ripe or even rotting banana. At other times they were almost unapproachable. They seem to live on fruits just merging into the state of rotteness.

I have never been able to detect any sensitiveness to sound in insects, and suspect that the case cited by one of your correspondents might be equally explained by sight, or by the vibration of the air caused by striking the glass. That certain coleoptera and diptera are attracted by smell alone is too obvious to require proof.

The same may be said of ants in following an established trail. I have experimented with this frequently, obliterating the scent for a space of but a few inches; and watching the puzzled wanderers each going an inch or less beyond his predecessor, hunting the lost clue until the blank was finally bridged over. After that if the new route as re-opened differed from the old, it was nevertheless rigidly followed even if longer and less direct.

Another matter. You mention a case of "drowning by a devil-fish" (*NATURE*, vol. xvii. p. 27). The story is to me very probable. I once measured a specimen of my *Octopus punctatus* caught in San Francisco harbour, which gave clear 15 feet from point to point of the arms. The animal, as I bought it from a fisherman, filled a champagne basket.

W. M. GABB

Puerto Plata, Sto. Domingo, December 29, 1877

## Drowned by a Devil Fish

THOUGH in British Columbia at the time or the occurrence of the incident referred to by Mr. Moseley in *NATURE* (vol. xvii. p. 27) I was in the interior, and consequently heard nothing of the matter. On reading Mr. Moseley's letter, however, I wrote