

ductor. Some of the powdered substances appear to require a small spark to be passed through them before they allow a larger charge to pass, as if the particles needed polarisation.

G. H. HOPKINS

THE HERPETOLOGY OF NEW GUINEA*

DR. ADOLF BERNHARD MEYER, who, as most of the readers of NATURE will be aware, has lately returned from a very successful expedition to New Guinea, has published in the "Monatsberichte" of the Berlin Academy a short account of his herpetological discoveries, which present several points of interest. Previous investigators of the natural history of this wonderful land have paid more attention to its birds than to its reptiles and amphibians—a circumstance perhaps scarcely to be wondered at in the land of paradise-birds and so many other anomalous forms. Dr. Meyer, however, while he has by no means neglected the class of birds, as shown by his recent communications upon that branch of zoology to the Academy of Vienna, has likewise paid much attention to the representatives of the inferior orders of reptiles and batrachians which he met with in New Guinea and the adjacent islands. Although this branch of the Papuan fauna is well known to be comparatively poor, Dr. Meyer's labours have been by no means without result. Of sixty-three different forms belonging to these orders of which he collected specimens, thirty-four have turned out to be new to science; and of the remaining twenty-nine, the greater part were previously not known to occur in this locality.

Of tortoises, besides the marine *Chelone imbricata*, only one was obtained in New Guinea, which, however, was of a new species belonging to an Australian form. Of lizards, upwards of thirty species were collected, amongst which Australian types are again predominant. Amongst the sixteen serpents met with in New Guinea, Jobi, and Mysore, were several of special interest. The Australian carpet snake, *Morelia*, is represented by an allied form, proposed to be called *Chondropython*, besides which two other new genera are described, one belonging to the boas, and the other to the colubrine snakes.

Of batrachians, Dr. Meyer collected specimens of nine species in New Guinea and its islands, five of which he considers to be hitherto undescribed.

It will be thus evident that Dr. Meyer has made a by no means inconsiderable addition to our knowledge of this branch of the Papuan fauna. At the same time it cannot be supposed that we are, as yet, by any means perfectly acquainted with the herpetology of New Guinea when so little is known of the vast interior of this strange country.

COGGIA'S COMET

AN observation taken here on July 4, shows so close an agreement with the position calculated from my parabolic elements in NATURE (vol. x. p. 149), that it appears unlikely the comet can have so short a period as 137 years, and consequently that, notwithstanding similarity of orbits, it probably is not identical with the body observed by the French Jesuits in China in July 1737. Between April 17, the date of discovery, and July 4 it had traversed an arc of just 90° of true anomaly, and if any decided ellipticity existed, so wide an arc must have shown it, the stellar appearance of the nucleus having admitted of very exact

observation throughout. On July 4, twenty-one days after the last position I employed in determining the orbit, the computed right ascension differs only 20", and the declination 14" from the observation. In all probability, therefore, the comet has not visited these parts of space within many centuries.

Measures of the diameter of the nucleus on July 4 gave nearly 14 seconds of arc, the distance of the comet at the time, by my elements, being 0.6016, which indicates a real diameter of about 3,750 miles; it has, perhaps, slightly contracted within the last fortnight.

This morning Mr. W. Plummer, at this observatory, found the comet equal in brightness to *a* Persei, a second magnitude star in Argelander's Atlas.

I may here mention that for calculation of actual dimensions or distances I take the sun's parallax, after M. Leverrier = 8".86, which, combined with Capt. A. R. Clarke's value of the earth's equatorial semi-diameter, gives for the mean distance of the earth from the sun, 92,268,000 miles, a figure that I believe to be as probable as any now to be attained. The moon's mean distance from the earth, adopting Prof. J. C. Adams's parallax, is thus found to be 238,800 miles, or 60.273 equatorial radii of our globe.

Mr. Bishop's Observatory,
Twickenham, July 7

J. R. HIND

DE CANDOLLE'S PROPOSED "PHYSIOLOGICAL GROUPS" OF PLANTS

IN the *Archives des Sciences Physiques et Naturelles*, No. 197, M. de Candolle proposes a new classification of the vegetable kingdom, based on the physiological relations of plants to heat and moisture, which he believes affords a means of tracing the connections of recent and fossil floras in a way which neither botanical nor geographical grouping do. He makes six divisions altogether.

1. The first of his "physiological groups" consists of those which need much heat and much moisture, and to them he gives the name Hydromegatherm, or, for short, Megatherm. These at present live in the tropics, and sometimes as far as 30° N. and S., in warm and damp valleys, where the temperature is never below 20° C., and the rains never fail. The predecessors of the existing Megatherms were widely spread, but at the commencement of the Tertiary period they became confined pretty much to the equatorial zone. Their botanical characters vary considerably, and they are represented in almost all cases by different species in Asia, Africa, and America. The most characteristic families are Menispermaceæ, Byttneriaceæ, Ternstroemiaceæ, Guttiferæ, Sapindaceæ, Dipterocarpeæ, Sapotaceæ, Apocinaceæ, Aristolochaceæ, Begoniaceæ, Piperaceæ, &c.

2. His second group requires heat with dryness—Xerophiles he proposes to call them. Their present distribution is in dry and warm regions of from 20° or 25° to 30° or 35° on each side of the equator (their particular districts are carefully noted). The group includes a large proportion of Compositæ, Labiatæ, Boraginaceæ, Liliaceæ, Palmæ, Myrtaceæ, Asclepiadaceæ, Euphorbiaceæ; but the most characteristic are Cactaceæ, Ficoideæ, Cycadaceæ, Proteaceæ, and Zygophylleæ. There are few large trees, few annuals, and the aspect of vegetation is but meagre. The palæontology of the regions where Xerophiles now exist is too little known for us to be able to trace the former migrations of plants forming this group.

3. The third group includes those plants which require a moderate heat, 15° to 20° C., and moderate moisture, and are named Mesotherms. They are now found around the Mediterranean, in the slightly elevated regions of India, of China, Japan, California, Central United States,

* "Uebersicht der von mir auf Neu Guinea, und den Inseln Jobi, Mysore, und Mafoer im Jahre 1873, gesammelten Amphibien." Von Dr. Adolf Bernhard Meyer. (Berlin: Monatsb. Akad., 1874.)