A MONUMENT TO JEREMIAH HORROCKS

AT the last meeting of the Royal Astronomical Society, Prof. Adams said that he had been requested to call the attention of the Society to a petition which was about to be presented to Dean Stanley. It would speak for itself, and he would therefore read it to the meeting. It ran thus :—

To the Very Reverend the Dean of Westminster.

Reverend Sir,

It appears to us that the approaching transit of Venus offers a fitting occasion for the erection of a memorial to Jeremiah Horrocks, curate of Hoole, in Lancashire, to whom the science of astronomy is indebted for the earliest observation of Venus upon the sun's disc. He predicted, by his own calculations, the transit of the year 1639, which he and his friend Crabtree had the exclusive privilege of witnessing. The labours of Horrocks in connection with this memorable occurrence, as well as the originality of his views on other astronomical subjects, have, by the unanimous consent of scientific men, assigned to him a high place in the roll of illustrious astronomers who adorned Europe in the seventeenth century.

We therefore venture to request your permission to place in Westminster Abbey a tablet or some other memorial of Jeremiah Horrocks.

We have the honour to be,

Reverend Sir,

Your obedient Servants,

(Signed) by the Astronomer-Royal, the President of the Royal Astronomical Society, and a number of the most distinguished Fellows of the Society.

Prof. Adams remarked that he need not say anything further to recommend the signature of the memorial to the Fellows of the Society. It was perfectly impossible to estimate too highly the credit due to Horrocks, especially when his age and opportunities were taken into account. Not merely had he been successful in observing the transit of 1639, but he had first corrected the tables of Venus, from his own observations, and had thereby rendered his prediction of the transit possible. Had he merely followed the tables which had been published by Kepler, he could not have predicted the transit, and it would probably have slipped by unobserved. And this was by no means the only astronomical service rendered by Horrocks. His discovery of the law of libration of the moon's apogee constituted an important advance in the knowledge of the lunar motions. In fact, Sir Isaac Newton, when nearly half a century afterwards he attempted to explain those motions on mechanical principles, could not find any more convenient representation of the motion of the moon's apse than that which had been given by Horrocks. He had, therefore, great pleasure in bringing this petition to the notice of the Fellows of the Society.

FRENCH PREPARATIONS FOR THE TRANSIT OF VENUS

AT the meeting of the French Academy of June 29, M. Dumas gave in the Report of the Commission charged with making the necessary preparations for observing the approaching transit of Venus.

The stations chosen by the commission are Campbell and St. Paul Islands, Houméa, Pekin, Yokohama and Saïgon. Each expedition is under the charge of a chief, the conduct of the first having been intrusted to M. Bouquet de la Grye, the second to M. Mouchez, the third to M. André, the fourth to M. Fleuriel, the fifth to M. Janssen, and the sixth to M. Hérault. The observers altogether number twenty-five, accompanied by twenty-five assistants. M. Bouquet de la Grye has already left; M. Fleuriel is on the point of setting out for Pekin. M. Janssen loses no time in leaving for Yokohama, from which he will not return directly to Europe, having undertaken to go to Siam to observe the eclipse which will be visible there.

As Campbell and St. Paul Islands are perfectly barren, the expeditions destined for them have been specially cared for, being furnished with fuel and provisions for six months.

A sum of 300,000 francs was allotted by the State for the whole of the expeditions; but this sum having been found insufficient, the Minister of Marine has abundantly and generously provided for the wants which have been pointed out by the Commission. Indeed, the French Government has acted in the most handsome manner towards the various expeditions, which have been furnished with everything that is in any way necessary.

As to instruments, besides those which have been specially constructed for the enterprise, the depôt of Marine has placed at the disposal of the expeditions a large number of instruments, among which are thirty-one tested chronometers. Four of the expeditions have each received an equatoreal of 8 in. No expedition from any other country, the Report states, will be possessed of instruments so powerful. Equatoreals of 6 in. have been furnished to the six expeditions, and telescopes of the same power as those adopted by the various expeditions of other countries.

Various photographic apparatus and methods of observation have been proposed. The Commission has decided in favour of the system of M. Fizeau, who has himself superintended the construction of instruments and initiated the operators in all the practical details which they ought to follow.

ON VAPORISING METALS BY ELECTRICITY

THE following simple results obtained by frictional electricity may be of interest, perhaps too of use in the investigation of certain minerals and the action of intense heat upon them.

The description of a characteristic experiment is all that will be necessary to explain the process and to show how similar results may be obtained from other substances. A very fine thread of sheet platinum, of about an inch in length, is placed between two microscopic slides of glass, and two pieces of thin sheet copper with rounded ends are placed in contact with the extremities of the platinum, the copper being any convenient length and breadth, so as to extend beyond the glass slides, but not to be as broad; a charge of electricity from about eight square feet of Leyden jar is passed through the metals; the effect of the heat from the charge is to vaporise the platinum, which is instantly condensed in a transparent layer upon the cold glass. The layer can be investigated by a microscope, and employed in various ways to determine the character of the metal and its effect upon reflected or transmitted light.

Copper, tinfoil, tinfoil amalgamated with mercury, gold and silver, can be used in a similar manner, but they produce layers very dissimilar in appearance. To act upon finely-ground substances, such as vermilion, sulphate of antimony, sulphur, &c., a line of the powder must be made and the charge be passed through in the same way as through the platinum.

Part of the vapour escapes from between the slides, but this can easily be condensed upon each of two pieces of glass placed in such a way as to intercept the vapour as it passes from between the two slides; it is then condensed in a long but narrow line. The manner in which the glass is affected by the heat, and the concussion produced by the expansion of the vapour, are worthy of notice.

Considerable difficulty will be found in vaporising copper, doubtless from its being such an excellent con-

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.

J. R. HIND

Mr. Bishop's Observatory,
Twickenham, July 7

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, Ternstrœmiaceæ, 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.)