

cañoes of the rivals are each the dread *sisiul*, which has a horned snake's head at each end, and a two-horned human head in the middle. It is an unlucky mischance, in a volume otherwise so carefully produced, that four lines which should begin p. 451 are printed at the top of p. 452, and it is only appreciation of the great value for reference of a series for which we are heartily grateful to Dr. Boas and his university that prompts us to beg that no future volume shall, like this, be without an index.

A. R. WRIGHT.

LETTERS TO THE EDITOR.

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The Nature of γ Rays.

DR. E. VON SCHWEIDLER pointed out in 1905 that an effect (such as ionisation by α rays) due to a finite number of independent events would be subject to fluctuations. The mathematical theory of the different experiments which have been made to exhibit this with light, α and β rays, has been developed by Mr. N. R. Campbell.

One of us began some preliminary experiments in 1908 at the Cavendish Laboratory to detect discontinuous effects with γ rays. Two forms of apparatus have been used in our experiments. In the first, two similar cylindrical ionisation vessels were placed close together with their axes directed to the source of the γ rays—some radium.

If the γ rays have a spherical wave front, the two similar vessels, being symmetrically placed with respect to the source, should be equally affected by the γ rays, though the resulting ionisation due to the equal effects may not be the same. If, on the other hand, the γ rays are any type of corpuscular radiation (in the Newtonian sense) made of a finite number of particles, the effect in the ionisation vessels would be unequal over short periods of time. To compare the number of ions produced in the two vessels, the electrodes were connected to an electrometer, one vessel being positively, the other negatively, charged. The positive and negative currents from the two cans were balanced as closely as possible for long periods of time, and so there was no large steady drift of the electrometer. The quartz fibre electrometer (Proc. Camp. Phil. Soc., xv., p. 106, 1909) showed fluctuations in the balance.

In the second apparatus a box-shaped ionisation can with a central plane electrode was used. The positive ions formed in one half of the can were received on one side of the flat electrode, the negative ions from the other half of the can on the other side of the electrode. Large fluctuations were observed when the source of γ rays was placed in the plane of the electrode outside the can. This experimental result would be explained if (1) the γ rays from radium are projected particles, or (2) if the number of ions produced in air by a constant source of γ rays is subject to fluctuations.

We are continuing the experiments with the view of determining what part each of these factors plays in producing the fluctuations observed.

T. H. LABY.

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The Occurrence of a Fresh-water Medusa (*Limnocoñida*) in Indian Streams.

MR. S. P. AGHARKAR, lecturer on biology in the Elphinstone Collège, Bombay, who has been kind enough to undertake the collection of fresh-water invertebrates on behalf of the Indian Museum, has recently sent me several specimens of a medusa from small streams in the Western Ghats. Although they were taken at so great a distance from the west coast of India, it is important to note that

these specimens were obtained from a river-system which flows across the Indian Peninsula and reaches the sea more than 500 miles away on the shores of the Bay of Bengal. Mr. Agharkar writes as follows:—

"The Medusæ were collected in deep pools of the Koyna and Yenna rivers (tributaries of the Krishna). I was not able to get the hydroid form. I was told that the Medusæ (called flowers or wheels by people) occur regularly in these rivers every dry season. Probably they are present all the year round, only they are swept away by the current during the rainy season and a short time after that. During the dry season, when the stream becomes more or less a succession of deep pools, they become very marked."

In the structure of the manubrium and digestive system, the position of the gonads, the structure of the tentacles, and the form of the umbrella these medusæ agree precisely with *Limnocoñida tanganyicae*. As regards generic identity, there can, indeed, be no doubt, and there is nothing in the specimens before me to suggest even a specific difference. They are not, however, in a particularly good state of preservation, having suffered somewhat in the post, and the question of specific identity may be left unanswered until after an examination of fresh specimens, which I anticipate no difficulty in obtaining at a suitable season. In the meantime, I should be extremely grateful for well-preserved specimens of *Limnocoñida* from Africa in order that an actual comparison may be made.

N. ANNANDALE.

Indian Museum, Calcutta, July 7.

Standard Time in Portuguese Territories.

I BEG to inform you that Standard Time will be in use from January 1, 1912, throughout Portuguese territories, as follows:—

- b. m.
- 8 o E. Macao, Portuguese Timor.
- 5 o E. Portuguese India (provisionally 5h. 30m. E.).
- 2 o E. Portuguese East Africa.
- 1 o E. Portuguese West Africa.
- 0 o (Greenwich, or West Europe).—Portugal, St. Thomé and Principe Islands, Whydah.
- 1 o W. Madeira, Portuguese Guinea.
- 2 o W. Açores and Cape Verde Islands.

This observatory remains entrusted with the determination and the telegraphic transmission of Standard Time to the whole country, to the Lisbon time-ball, and to the time station at the Meteorological Observatory, Ponta Delgada (St. Miguel, Açores).

I take this opportunity to state also that the most trustworthy geographical latitude of this observatory is lat. N. $38^{\circ} 42' 30.5''$ (prime vertical, meridian, and zenith telescope series of observations from 1872 to the present, printed or unprinted), and that the designation "*Lisbon, Tapada*," is now the most suitable for it, being similar, for instance, to "*Florence, Arcetri*," or "*Naples, Capodimonte*."

For two years a new astronomical observatory has been in existence and at work at Lourenço Marques; the geographical coordinates are (transit pier):—

Lat. S. $25^{\circ} 58' 4.9'' \pm 0.2''$ (meridian observations by Captain Gago Coutinho).

Long. E. $32^{\circ} 35' 39.4'' \pm 0.05''$ (moon culminations, simultaneously here, and geodetic connection with the Cape).

Altitude (top of pier), 59 metres.

CAMPOS RODRIGUES.

Observatorio Astronomico de Lisboa, Tapada-
Lisboa-Portugal, July 25.

Obsolete Botanical and Zoological Systems.

WOULD some naturalist with a taste for bibliography be so good as to mention books which contain tables of obsolete botanical and zoological systems? Agassiz's "Essay on Classification" and the article on Zoology in the "Encyclopædia Britannica," ninth edition, furnish useful examples, but more are desired.

L. C. M.