

insertion of a few additional pathological and physiological terms, and that it would be unwise to translate these in the fashion adopted at present in such words as "luftweg."

Règles internationales de la Nomenclature zoologique. Pp. 63. (Paris: F. R. de Rudeval, 1905.)

It has frequently been remarked that it is not of much use making laws and regulations unless you have the power to enforce their observation; and this trite saying applies, in our opinion, very forcibly to this code of regulations for zoological literature, drawn up by an international committee the deliberations of which have extended over some years. The code, which is published in three languages, is admirably drawn up, and for the most part free from ambiguity; but the question is, will naturalists agree to abide by it? In our opinion, a large number will refuse to accept it, since a rigid and slavish adherence to the law of priority is enjoined, and to many this is anathema. The rule that when a genus-name is changed this entails the change of the family title will be generally regarded as satisfactory. As regards emendation in names, this is held to be justifiable only when an error in transcription, a *lapsus calami*, or a misprint is apparent; but in the interpretation of this difficulties may arise, as in the well-known case of *Neurogymnurus*, which is *believed* to be an error for *Necrogymnurus*. Differences of opinion, again, are likely to arise with regard to the rejection of names on account of unsuitableness or similarity to others already in use. The retention of such names as *Polyodon* and *Apus* when applied to animals which do not properly come under such designation will, no doubt, be generally accepted; but what is to be said when, for instance, an essentially African species is named *asiaticus*? Such names as *Polyodus*, *Polyodon*, *Polyodonta*, *Polyodontus*, &c., are held not to come under the category of synonyms, although the converse rule is followed in many systematic works and catalogues, such as Dr. Trouessart's "Catalogus Mammalium."

As a "pious" expression of opinion on the part of the International Committee the "Règles" are, no doubt, valuable; but they would have been much more so had a *plebiscite* of zoologists and palæontologists agreed to accept and abide by the ruling of the committee.

R. L.

LETTERS TO THE EDITOR.

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A New Thallium Mineral.

THE element thallium, discovered by Sir W. Crookes in 1861, has up to the present been known as an essential constituent of only two minerals, viz. crookesite, a selenide of copper and thallium, and lorandite, a sulpharsenite of the latter element. To these minerals a third must now be added in hutchinsonite, a new sulpharsenite from the Binnenthal, which also contains thallium as an important constituent. The crystallographic characters of hutchinsonite were described about a year ago by Mr. R. H. Solly, who, of late years, has been particularly successful in discovering new mineral species in the Binnenthal. At the time of its discovery very little in the way of chemical investigation was possible owing to the extreme scarcity

of the mineral, but during the past year additional crystals have been acquired for the British Museum, and from these about eighty milligrams of fairly pure material have been obtained for chemical analysis. Thallium is present (up to nearly 20 per cent.), together with lead, silver, and copper, in combination with arsenic and sulphur. A full description of the mineral will appear shortly in the *Mineralogical Magazine*.

G. T. PRIOR.

The Legendary Suicide of the Scorpion.

I HAVE recently come across the following passage in the Rev. John Campbell's "Travels in South Africa" (London, 1815), p. 38:—"Having caught a scorpion near our tent, we tried whether naturalists were accurate in relating, that if that animal be surrounded with fire, and sees he cannot escape, he will sting himself to death. However, it died as quietly as any other animal, only darting its sting from it, as if to oppose any ordinary assailant." The experiment was made near Zwillingdam, Cape Colony, on February 20, 1813.

EDWARD B. POULTON.

Oxford, March 31.

Propagation of Earthquake Waves.

A FEW days ago I read Major C. E. Dutton's book on "Earthquakes in the Light of the New Seismology." While acknowledging the high merits of this book, I take the liberty of pointing out some statements which seem misleading.

I refer to chapter xiii., where the author, quoting the results of the experimental investigations of Mr. Nagaoka, gives the speeds V_1 and V_2 of the normal and transverse waves. Now a glance at the table on pp. 230 and 231 shows that for many rocks the two moduluses E_1 and E_2 perpendicular and parallel to the bedding planes are far from being equal; on the contrary, the quotient E_1/E_2 varies so much as from 1.43/2.49 for rhyolite tuff to 32.1/17.5 for rhyolite. Hence the physical properties of the rocks in question are different in different directions, and the speeds of propagation of waves are also different in different directions, so that the speeds V_1 and V_2 of the table being the same for all directions have no real meaning for many rocks.

Again, in chapter xiii. and in other chapters of the book, the author refers to normal and transverse waves in rocks. It would be better, perhaps, to speak of dilatational and torsional waves; but leaving the question of terminology out of consideration, I observe that it is only for perfectly elastic homogeneous and isotropic bodies that the separation of the dilatational (normal) from the torsional (transverse) wave takes place with certainty. We have no right to extend this property to anisotropic bodies. When the body is anisotropic the deformation of an element on the passage of a wave need not be of a purely dilatational (normal) or of a purely torsional (transverse) character; it is rather of a mixed nature.

I will not say that anisotropic bodies able to propagate purely dilatational and purely torsional waves cannot exist; but I observe that such bodies are to be considered rather as possible exceptions, inasmuch as certain special conditions must be fulfilled in order that the generation of purely dilatational and purely torsional waves should be rendered possible. So, for example, the elastic potential of a perfectly elastic homogeneous uniaxial body implies five independent constants. When we introduce the condition that purely dilatational waves may be propagated apart from torsional ones, we find that two definite relations between the constants must be satisfied so that the number of independent constants is reduced to three. But we have no reason to maintain *a priori* that the conditions in question must be always satisfied.

Of course it is to be understood that a perfectly elastic homogeneous uniaxial body cannot be considered as an exact "model" of stratified rocks; it is only very similar to them; but it is more than highly improbable that the effect of internal friction would neutralise the effect of anisotropism.

M. P. RUDZKI.

K. K. Sternwarte, Krakau (Austria), March 24.