3. Prof. Nipher, old series, right arm	2'080	0'126
4. " " left arm... ..	2'060	0'137
5. " new series	2'560	0'194

Also Jevons : $a = 1'74 + 4'79b$; Nipher : $a = 1'28 + 6'25b$, very nearly.

To extend the law beyond the above physiological limits, introduce the coefficient of restoration, r , and of pain, p , in

$$N = (1 + r - p) n \quad (2)$$

where both from theory and by above series of experiments,

$$r = \frac{H}{Kw} \quad (3)$$

I have no doubt that p is of the same form; but none of the above series have been continued far enough to sufficiently confirm this. It is evident that p vanishes for small values of w , and r for large values of w .

These few remarks may be sufficient to show that the earlier as well as the late experiments of Prof. Nipher constitute a very valuable contribution to Animal Mechanics.

Iowa State University, Feb. 22 GUSTAVUS HINRICHS

The Height of Waves

YOUR correspondent Capt. William W. Kiddle, in NATURE, vol. xi. p. 386, speaking of the height of waves, says:—"This remarkable gale swept over a portion of the Atlantic which the French call 'Le trou de diable.' . . . When the wind sets strongly in this direction from the north-west, the sea rises in an incredibly short space of time, and at the close of a long winter gale it is a grand sight to watch the great waves," &c. The question is then asked, why this remarkable phenomenon occurs with a north-west gale, whilst with an equally strong south-west or southerly gale the effect is insignificant?

I think an explanation may be given thus:—"Le trou de diable"—whose position, roughly calculated, is 45° N. and 40° W.—is, roundly speaking, about the centre of the Gulf Stream in that locality, and during a strong north-west gale the wind meets the Gulf current at a good angle. The force of this encounter has a tendency to drive the stream out of its course. The velocity of the water-current and its mass are, however, so great that it yields but slightly, if at all; consequently, the force of the wind exerts itself to a large extent in banking up the water to the production of unusually high waves.

From an analogous course of reasoning, it is apparent that a south-west or southerly wind will not have a similar effect; for both stream and wind are then travelling in the same, or nearly the same, direction. The force of a gale from the south-west or south has no counter water-force to oppose it; hence its high velocity tends simply to increase that of the Gulf Stream, as well as to beat down its surface to the prevention of any extraordinary waves.

ARTHUR R. GRANVILLE

Islington, March 22

Thermometer Scales

THE thermometric scale referred to by Mr. T. Southwell (NATURE, vol. xi. p. 286) was, I believe, one used and invented by Fowler, in which $0 = 55^\circ$ Fahr., 75 above $= 102^\circ$ Fahr., and 80 below $= +5^\circ$ Fahr.

The above equivalents are only approximately given. For full description, &c., see "Essays on Construction and Graduation of Thermometers," by Geo. Martine, M.D., 1772: Edinburgh.

I have failed so far in discovering the scale of Linnaeus alluded to, and shall likewise feel indebted to any of your readers who will describe it.

S. G. DENTON

34, Foreign Street, Brixton, March 23

Accidental Importation of Molluscs and Insects

I OBSERVE in NATURE (vol. xi. p. 394) a note from the *Saar und Mosel Zeitung* on the introduction of a mollusc into the Moselle near Trèves. Though the name of the species is not mentioned, I presume that *Dreissena polymorpha* is the mollusc in question, a species known to inhabit Britain since 1824, and supposed to have been introduced with timber from Eastern or Northern Europe. It is exceedingly prolific. An instance of how this species may be introduced came under my notice a few years ago. A friend showed me some shells that he had found attached to logs of wood lying on a railway truck. These proved to be alive when put into a cup of water; and if the logs in

question had been deposited on the banks of the Tay within reach of the tide, as is often the case (I should have said that the truck was on a siding near Perth Harbour), we would no doubt have found *Dreissena* in abundance in the course of a few years. As this mollusc lives in brackish water as well as in fresh, it is no doubt in a manner similar to what I have mentioned that it has been introduced into and spread through Britain. Another shell, *Planorbis dilatatus*, a North American species, was found a few years ago living in a canal near Manchester, and is supposed to have been introduced with raw cotton. Recently another case of importation of living shells came under my notice. When looking at some bales of *Typha* from the Nile, imported into Aberdeenshire as a material for paper manufacture, I observed some shells sticking in the dry mud adhering to the roots of the *Typha*. On putting some of these into water they were found to be alive, though a good many months had elapsed since the *Typha* had been gathered. The shells appear to belong to *Bythinia*, but I have not yet determined the species. It is, perhaps, not very likely that if these shells had found their way into the Aberdeenshire rivers they would have survived.

Land molluscs are sometimes introduced, and several European species have in this manner become naturalised, in North America.

Apresos of the fears that have been expressed that the Colorado Potato Beetle (*Doryphora decemlineata*) may be introduced into Europe and prove destructive, the Entomological Society of Belgium has been recently discussing the matter, and has arrived at the conclusion that the fears regarding this insect are much exaggerated. M. Oswald de Kerchove, of Denterghem, has just published a very complete memoir upon this beetle. He thinks that it is very improbable that the *Doryphora* will be introduced, and at any rate that the prohibition of the importation of American potatoes is unnecessary, as it lives upon many other plants than *Solanaceae*. M. de Kerchove further deprecates the use of the arsenite of copper (Scheele's green), so much employed by the Americans for the destruction of the beetle, as such a dangerous substance ought not to be made common.

Is not the "Blood Louse," so destructive to apple-trees, mentioned by the *Kölnische Zeitung* (NATURE, *l.c.*), the homopterous *Eriosoma lanigera*, the so-called American Bug, already too well known in this country?

Perth

F. BUCHANAN WHITE

Fall of a Meteor at Orleans

IN the "Notes" of March 18 (vol. xi. p. 396) it is stated that a meteor fell in a street at Orleans on the 9th inst. The time of the fall is not mentioned, but it would be interesting to know if the meteor were the same that was observed from here on the evening of that day about eight o'clock. It was very brilliant, as bright as Sirius, and moved slowly from a position a few degrees to the east of Sirius, in a south-easterly direction, the path making with the horizon an angle of about 60° .

Cooper's Hill, March 27

HERBERT M'LEOD

Proposed Aquarium in Edinburgh

I AM happy to be able to inform you that the suggestion originally made in NATURE, that a large aquarium should be formed in Edinburgh, is likely soon to be adopted. A company named the "Edinburgh Winter-Garden, Theatre, and Aquarium Company (Limited)" proposes to provide at the west end of Edinburgh a large and well-stocked aquarium on a scale not inferior to those of Brighton and the Crystal Palace.

Edinburgh, March 26

RALPH RICHARDSON

Acherontia Atropos

CAN any of your readers throw any light on the *raison d'être* of the dimorphism of the larva of the Death's-head Moth (*Acherontia atropos*)? Some years ago I found five larvæ of this insect on a bush of jasmine. They were all probably offspring of one female. Two of them were of the dark chocolate-coloured variety so strikingly dissimilar to the normal or commoner type. The *imago* of one of the dark-coloured larvæ differed in no respect that I could perceive from the ordinary form. It has occurred to me that the dark variety may be due to its simulating the dead, withered, blighted, or diseased shoots of the potato, as its commoner brother does the healthy leaves and stalks.

Taunton

FRED. P. JOHNSON