

superior varieties of rice and cotton, can only be grown on good soil; on poor soil they at once deteriorate. The same may be said of live stock: the miserable native breeds are accustomed to starve during a part of every year; such treatment would be fatal to better animals. Until good fodder crops are grown, any permanent improvement in the breeds of farm animals is impracticable.

We might easily extend our notice of this useful volume; it is full of practical information, and must prove of great value to all engaged in agricultural operations in India.

R. W.

Grundriss der chemischen Technologie. Von Dr. Jul. Post. Part ii. (Berlin: Robert Oppenheim, 1879.)

WE have already noticed the first part of Dr. Post's excellent manual of chemical technology (see vol. xvi., 83), which made its appearance towards the end of 1876. Unfortunately, the completion of the work has been delayed by the severe and prolonged illness of the editor. The first portion was mainly confined to a description of the modes of manufacture of crude or intermediate products; the second part treats of the finished or final products. Objections might, doubtless, be raised against such a mode of treatment, but we question if, on the whole, a more systematic method of dealing with so complex a subject as chemical technology could have been devised. The entire work forms unquestionably one of the most, if not *the* most, complete repertorium of the existing processes of industrial chemistry that we know of in any language, and as such we can confidently recommend it to the notice of our chemical manufacturers. Dr. Post has been assisted by an excellent band of collaborators, many of whom are recognised as authorities on the subject of their respective communications. A due amount of space is usually devoted to a consideration of the theory of the various processes when this has been at all worked out; and the description of the mode in which these processes are actually carried into operation is facilitated by numerous diagrams and plans. Dr. Post is to be congratulated on the completion of an exceedingly useful work.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

The November Meteors

THE cloudless sky from the morning of the 12th to the 15th, with the total absence of moonlight, afforded a most favourable opportunity for the observation of the meteors of the Lion. A constant watch was kept up at this observatory from 10 P.M. until daybreak of the 13th, 14th, and 15th, and the results show that the Leonids were considerably in excess of what they had been during the last few years.

The total number of meteors observed was 309, and out of these 104 radiated from the Lions, and 56 clearly indicated five principal radiant points. Four of the radiants were situated near the stars ϵ , γ , δ , and η Leonis, and the fifth was just below (31) Leonis Minoris. The position of this east point was very clearly marked by a stationary meteor of the 1st magnitude. Eighty-six of the meteors were of the 1st or 2nd magnitude, and nine others were brighter than 1st magnitude stars. The largest number of Leonids seen during a single hour was fifteen, from 4 to 5 A.M., on the 14th.

S. J. PERRY

Stonyhurst Observatory, November 18

The Platysomid Fishes

I AM very sorry to find that my esteemed friend Prof. H. Alleyne Nicholson has, in the new edition of his "Manual of

Palæontology" (vol. ii. p. 138, *note*) committed the mistake of quoting me as his authority for elevating the Platysomid fishes to the "rank of a distinct division of Ganoids." No such proposition occurs in the unpublished paper to which he refers, which was written to follow up the views which I expressed in my account of the structure of the Palæoniscidæ (Palæontographical Society, 1877), as to the abolition of the sub order "Lepidopleuridæ," necessitated by the demonstration of the fact that the Platysomidæ as a *family* are not really allied to the Pycnodontidæ, but are on the other hand so closely linked by ties of structure to the Palæoniscidæ, that, wherever the latter family is placed, thither the Platysomidæ must follow.

My paper on the "Structure and Affinities of the Platysomidæ" was read before the Royal Society of Edinburgh on May 5 of this year, and will in a few weeks appear in the forthcoming fasciculus of that Society's *Transactions*. Prof. Nicholson's mistake as to my views is obviously due to his having only had, and that on one single occasion, a very hurried glance over my proof-sheets.

R. H. TRAQUAIR

8, Dean Park Crescent, Edinburgh, November 12

Voice in Fish

THE question as to whether fish have any so-called voice or means of intercommunication having some interest for your readers, I may relate that about six years ago, while engaged in a survey of the Disang river in Eastern Asam, I had occasion to sound by a line the depth of a pool called the "Deo Dubé" (or deep of the Demon).

While seated in a small *Rob Roy* canoe and very slowly drifting on the pool, I became aware of a number of large Mahsir (*Barbus macrocephalus*) moving about in the water below and around me. Sitting perfectly still I had the pleasure to see them gradually approach the surface and move about me at a foot or so distant, passing alongside, under and round the canoe carefully examining it, bow and stern specially. It may not be easy to guess a fish's thoughts, but from the manner in which they examined my symmetrical and grey coloured canoe they appeared to think it might possibly be a huge fish, and dead of course.

While watching their movements I was aware of a peculiar "cluck," or percussive sound—frequently repeated, on all sides, and coming from below, but close to me. Eventually I found that this was made by the Mahsir, and one—passing close along on my right, by itself, made several *distinct* sounds as it went on—that seemed answered by others to the left. If seated, say on the bank, the sound would be loud enough to be heard at 40 feet distance.

A large bivalve also is common in some parts of Eastern Asam that sings loudly in concert. A small *ant* also makes a peculiar thrice-repeated noise by scraping in unison on the dry leaves of its nest if it is disturbed.

S. E. PEAL

Silurian Fossils in the "Lower Old Red Sandstone" of the Curlew Mountain District

YOUR correspondent in NATURE, vol. xxi. p. 32, on the above subject has evidently misunderstood the notice (NATURE, vol. xx. p. 641). The rocks in question, though belonging to what is generally known as the "Old Red Sandstone," contain Silurian fossils, which confirms the opinion of myself and others that the lower Old Red should be regarded as the upper part of the Silurian formation.

G. HENRY KINAHAN,

President of the Royal Geological Society of

Dublin, November 17

Ireland

The Paces of the Horse

A GOOD many ingenious contrivances have lately been invented by which to find out the true movements of the feet of the horse in its various paces, notably that described in "A Study on Locomotion" which appeared in NATURE, vol. xx. pp. 434, 468, 488.

My object in writing this letter is to challenge the assumption of all these experimenters that their diagrams should constrain artists to correct their representations of animals in motion.

When, for instance, Prof. Marey says of his diagrams, "these pictures are correct as regards the position of the members; it would be the artist's duty to add elegance of form," it is apparent to me that such a division of labour would never produce a picture. Take Fig. 16, for instance, representing the true position of the legs in galloping, and I venture to say no amount of