

information; so many travellers have lately recorded their impressions of Japan that it would now be hard for a writer to present any part of the subject from a wholly new point of view. Nevertheless, Mr. Dickson's book is one of exceptional interest, for, having already been in Japan, and having carefully studied its history, he knew exactly, on his return, the kind of phenomena which it would be best for him to study. Accordingly, we find in his narrative that he fastens attention chiefly on what is really characteristic of Japanese life, and that he understands how to connect particular facts with the general tendencies of Japanese society. Mr. Dickson was, of course, greatly struck by the enormous changes which had taken place from the time when he had formerly visited Japan, and he adds largely to the value of his observations by steadily comparing and contrasting the conditions which came under his notice four or five years ago with those he had noted twenty years before. About Japanese customs and institutions, so far as they are of native origin, he writes in a kindly and appreciative spirit; and he also finds something to admire in the effort of the educated classes "to advance in Western learning and the acquisition of scientific information." He declines, however, to commit himself to any very decided opinion as to the future of Japan. That she may have serious troubles in store for her he does not dispute; but, if they come, they will, he thinks, spring altogether from internal causes, and he has sufficient respect for her rulers to suggest that they "may have wisdom to avert a crash."

*Statics for Beginners.* By John Greaves, M.A. (London: Macmillan and Co., 1889.)

To simplify the subject of statics, and to make it attractive at the same time, is by no means an easy task, but the author of this little book has gone far towards succeeding in doing this. With the approval of several experienced teachers, the principle of the transmissibility of force has been discarded in favour of the ordinary method. The parallelogram of forces is deduced from the laws of motion, Duchayla's proof being given as an alternative. The definitions are admirable, and the various proofs are as simple as they well can be.

The examples are progressive and very numerous, typical ones being fully worked out.

The book is admirably adapted to serve as a stepping-stone to the larger treatises.

#### LETTERS TO THE EDITOR.

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#### The Structure and Distribution of Coral Reefs.

As I have had no personal experience of coral-reefs, I do not wish to touch more than the literary side of the controversy, but, in regard to this, Mr. Guppy's letter in the last number of NATURE (p. 53) obliges me to call attention to the fact that the "90-fathom reef" which he mentions is not at Socotra, but at Rodriguez. Also that, apart from Mr. Guppy, I found little evidence of "ignorance of the depths in which coral-reefs may form." On the contrary, there appeared to be a remarkable concurrence of testimony on the part of observers that, though occasionally a reef-building species may be found alive at depths greater than about 25 fathoms, this bathymetric limit for the growth of reefs, assigned by the earlier observers, is sufficiently accurate for all practical purposes.

It seems, then, to me that, with the evidence before us, the *onus probandi* of the supposition that a reef may commence at any depth which the exigencies of a particular case require, rests on Mr. Guppy (this done, no theory of coral-reef formation is needed—they may grow anywhere). But, till he can establish this hypothetical but fundamental proposition, Masámarhu Island is a fact for Darwin.

T. G. BONNEY.

#### The Turtle-headed Rock Cod.

A RARE specimen of the turtle-headed rock cod (*Glyptauchen panduratus*) has just come into the hands of Mr. J. Douglas Ogilby, of the Ichthyological Department of the Australian Museum at Sydney. This extraordinary fish belongs to the family of the red rock cods. Not many years ago these fishes (the red rock cod and its allies) formed a part of a most miscellaneous collection of species, which, under the general title of *Triglidae*, included the true gurnards (*Trigla* and *Lepidotrigla*), the flying gurnards (*Dactylopterus*), and the flat-heads (*Platycephalus*). In 1860, however, Dr. Günther wisely separated these fishes from the *Triglidae*, which family he broke up into four distinct groups. The first of these, named by him *Scorpenidae*, is that to which the specimen just captured at Sydney belongs. All the *Scorpenidae* are carnivorous marine fishes, most of which live at the bottom of the sea, and are generally provided with a powerful armature of the head and fin spines; while many possess skinny appendages on the head and body variously developed, which, owing to their resemblance to the fronds of seaweeds, serve the double purpose of enabling them the more easily to obtain their food, and the more effectually to conceal themselves from their enemies. As they are mostly of a small size, this latter point is evidently of no slight value, because, being slow, lazy fishes, they would, without some such means of protection, be unable to cope with their swifter antagonists. Nature has additionally protected this family by enabling it to vary its coloration according to any change of locality which it may be necessary to make, so as, chameleon-like, to fit itself for adaptation to the various phases of life under which it may be called on to exist. The genus *Glyptauchen*, of which the species just received by Mr. Ogilby is the sole representative, was separated in 1860 by Dr. A. Günther from the Cuvierian genus *Apistus*, for the reception of a fish from King George's Sound, Western Australia, described many years ago by Sir John Richardson under the name of *A. panduratus*. It has since been recorded from Port Jackson (Sydney), and the present specimen comes from Manly Beach, a few miles to the north of Port Jackson.

T.

#### Atmospheric Electricity.

YOUR correspondent, Mr. C. A. C. Bowlker, will, probably, be interested to learn that an electrical discharge, exactly similar to that which he recently experienced on the Glydyr Fawr ("Elidyr") was described by the late Dr. Mann, and by Mr. F. G. Smith, in the Quarterly Journal of the Meteorological Society for October 1875.

Mr. Smith was engaged in August 1865 in ascending the Lingard Mountain from Pontresina, when his party was overtaken by bad weather. They reached the summit, however, and found, at one end of the ridge of which it consists, a flag-staff tipped with an iron point, and, at the other, a flat metal disk, serving to indicate bearings. Snow was falling, and nothing was visible except mist, but the "otherwise death-like stillness of the spot was broken by a strange, intermittent noise, resembling the rattling of hailstones against the panes of a window. A careful investigation of the cause of this noise soon made it apparent that it proceeded from the flag-staff, and was due to the passage of a continuous electrical discharge from the cloud in which the summit was wrapped."

After a time, the party, although, by Mr. Smith's own admission, "alarmed," held their alpenstocks, points upward, in the air, and, at once, each became conscious of an "electrical discharge passing through him, and causing a throbbing in the temples and a tingling in the finger-ends. The noise was still vigorously proceeding when, after three-quarters of an hour's stay, Mr. Smith and his party left the summit."

I called attention to a somewhat similar phenomenon ("An Engineer's Holiday," vol. i. p. 204), which I experienced on crossing the divide separating Central City from Idaho Springs, Colorado, the height of the ridge being 10,000 feet above sea-level.

There was thunder, and "it was raining, but without lightning, as we neared the divide, when I felt a tickling sensation on the backs of my hands. Presuming that a discharge was taking place between our bodies and the cloud, I tried to increase its intensity by holding my wet umbrella, point upwards, above the waggon. This, at once, produced distinct sensations in the hand and arm, the driver remarking, 'Oh! that's common enough here, though many don't know what it is,