LETTERS TO THE EDITOR.

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The Rostrum of "Mesoplodon."

IN Mr. Beddard's recent and very interesting "Book of Whales," I observe that on p. 214 he gives as a character of *Mesoplodon* (one of the Ziphioid genera) "the thorough ossification of the mesethmoid," and in describing *Berardius* he states that "the mesethmoid plate is short, comparatively speaking; that is to say, compared with what we find in *Mesoplodon*." Here Mr. Beddard undoubtedly compares two structures which are entirely different. As I have shown and figured in the *P.Z.S.*, February 1893, the "mesorostral bone" is not the result of the ossification of the cartilaginous bar occupying in early life the spout of the animal's vomer. I have examined a number of these Cetaceans in the flesh, and have made sections of the dried beaks (a series of which I deposited in the British Museum) of individuals of ages from the quite young calf's to that of the very adult male, and I have shown in the paper referred to that the first appearance of the mesorostral bone is due to an increase in the walls of the premaxillaries by which the sides of the vomerine-spout are pressed towards each other, and, proliferation being apparently induced, both the vomer and the premaxillaries increase in size, and very variously in form, according to pressure unequally acting on them, till the cartilaginous bar is entirely absorbed or, at all events, disappears. The increase—from some pathological cause, probably—in the premaxillaries is apparently the main cause of the solidification of the beak.

Now what happens in *Berardius* is of an entirely different character. In *B. arnuxii* an ossified bar lies, often to a length of twelve inches, in the vomerine trough; but this is unmistakably an ossification of the anterior part of the mesethmoid cartilage. It takes place in a very different way, also, from the ossification in *Mesoplodon*. It is an ossification of the upper and outer layers of the mesethmoid cartilage; it is of an open and spongy texture; it never becomes ivory-fied, so that in the dried skull it is a mere prolongation of the mesethmoid—hardly seen in *Mesoplodon*—and merely covers in to some extent the gape of the vomerine trough, which underneath is quite empty, with its sides and bottom entirely unaffected. Indeed, the mesethmoid plate, with its extension, is in *Berardius* much longer than in *Mesoplodon*. What takes place in the former genus is precisely what occurs so frequently in *Clymenia*.

In a note on page 280, Mr. Beddard writes, "the Scottish vernacular for this creature [Globiocephalus] 'Ca'aing Whale' means Driving Whale." The proper orthography of "ca'aing" should be "ca' in" (two words), which being interpreted out of, to the Southerner, its foreign tongue, means "the drive in- or driven in-whale." Ca'a is entirely erroneous. Ca' (in Orkney, Kaa), as it should be printed, stands for "call." In the common order to the herd on a Scottish farm of "Ca' in the Kye" (meaning "Drive in the Cows") the expression arises, doubtless, from the custom of the past—which is the custom to-day, as I have seen in New Guinea in regard to their pigs, and in Sokotra last year in regard to the flocks and herds—of actually by voice "calling in" the cattle. The phrase has now become the common one to "drive in," by some one going for them. The method of capturing the *Globiocephalus* in the north of Scotland is for the fishers, when they see a school, to hurry out in their boats, surround and drive on to the beach the Blackfish, which is, therefore, always spoken of there as the "Ca' in Whale," *i.e.* the whale they can *drive in*, in contradistinction to a species which they have to harpoon or chase in the open.

HENRY O. FORBES.

The Museums, Liverpool, March 2.

Vector Diagrams.

IN a paragraph on the last number of *Terrestrial Magnetism*, in NATURE of March 1, p. 421, I notice the following sentence: "Dr. Lüdeling investigates graphically the phenomenon of the diurnal variation of the earth's magnetism for eleven stations with the aid of von Bezold's vector diagrams." These diagrams are curves in which the radius vector represents in magnitude and direction the resultant of the disturbing forces to which we may attribute the diurnal variation of the horizontal component of the earth's magnetic force at any particular station.

So far as I know, the earliest use of these curves by von Bezold was in a paper in the *Berlin Sitzungsberichte* of 1897. This may have been their first appearance in Germany, and if so, their association with the well-known name of von Bezold in that country need hardly occasion surprise. In England, however, their use dates from at least 1863, when Airy employed them in discussing the diurnal variation at Greenwich in different years and at different seasons of the year (see *Phil. Trans.* for 1863). Airy used them again in the *Phil. Trans.* for 1885, and they also appear on p. 186 and on Plate iii. of Lloyd's "Treatise on Magnetism, General and Terrestrial." More recently I employed them myself in discussing the diurnal variation of the magnetic elements at Kew Observatory (*B. A. Report* for 1895, pp. 209–227).

The only apparent difference between Airy and von Bezold is, that the former made use of the recorded variations of horizontal force and declination, drawing his magnetic meridian towards the top of the page, whereas the latter made use of the northerly and easterly (or westerly) components of the force, and drew his astronomical meridian towards the top of the page. The curves given by Airy and by myself show the positions of both the magnetic and astronomical meridians, and if it is preferred that the astronomical meridian should point to the top of the page, all that is necessary is a bodily rotation of the curves through an angle equal to the declination.

When comparing results at different stations, or at the same station at different epochs, there *may* be an advantage—as, in fact, I pointed out myself (*B. A. Report*, *loc. cit.* pp. 218, 219)—in taking the astronomical meridian as the line of departure; but as yet this is largely problematical. The interesting tables and diagrams for polar stations given by Lüdeling—as Lüdeling, I think, has himself noticed—seem to indicate, on the whole, less symmetry about the astronomical than about the magnetic meridian. If so, it is open to doubt whether Airy's original practice might not, after all, have been the better fitted to bring out points of resemblance.

C. CHREE.

Richmond, March 8.

Similar Geological Structures in South Tyrol and the Isle of Man.

IT may be of interest to Alpine geologists to note that the general results now obtained by Mr. Lamplugh in the Isle of Man are, in respect of the origin of the "Crush-Conglomerates" and the causes and effects of differential movements between subjacent series of rock, practically the same as the results previously obtained and described by me in maps and sections of the Enneberg area in South Tyrol (*Quart. Journ. Geol. Soc.*, *cf.* M. M. Ogilvie Gordon, 1899, and G. W. Lamplugh, 1900). In both cases the geologist deals with *resultant* local effects combining the pressure-components of at least two epochs of disturbance. In both cases the geologist is presented with strongly-marked lithological contrasts in the original succession, and, as a consequence, with highly complex superinduced structures due to differential movements between subjacent beds. This remarkable parallelism between the essential geological structures in two neighbourhoods so remote from one another, and in belts of strata belonging to utterly distinct geological epochs, is well worthy of comment and consideration by our present school of geologists.

Aberdeen, March 16. MARIA M. GORDON.

Tides along the Antarctic Continent.

IN Prof. Drygalski's statements (NATURE, February 1) of the work mapped out for the proposed German Antarctic Expedition, no mention is made of obtaining tidal observations along the Antarctic Continent. In ascertaining the *verae causae* of tides which occur along many shores, even along the eastern coast of the United States, I believe this region to be of great importance.

Hourly readings of the height of the surface of the sea above an arbitrary datum for even so short a period as twenty-four hours at each station occupied for the purpose, would be of value.

It seems to me especially desirable to have the following questions answered:—

(1) Along the Antarctic lands from long. 20° W. to about 40° E., is the (Greenwich) co tidal hour vi.?

(2) Near long. 80° E., is the co-tidal hour ix. ?

(3) Near long. 135° E., is the tide chiefly solar? If so, is the co-tidal (solar) hour xii. ?

(4) On the western coast of Graham Land, is the co-tidal hour vi. ?

Although it seems that no observations have been made farther south than Kerguelen, South Georgia, and Cape Horn, there are reasons for believing that the above questions can be answered in the affirmative. If so, then certain logical connections between the tides in this region and elsewhere would be fairly well established. At any rate, such observations would be valuable; and it is believed that the results would compare favourably in importance with those obtained in almost any one of the lines of inquiry alluded to by the leader of the expedition. R. A. HARRIS.

Washington, D.C., February 28.

Crab Ravages in China.

IN the "Kwoh-Wu," or "Good Words from the States," attributed to Tso Kiu-Ming (6th century B.C.), a king of Yueh (now the province of Cheh-Kiang) is said to have been advised by his counsellor to postpone his warlike preparation with "good words," in which the officer adverts to the "Rice-Crab (*Tau-Hiai*) that spared for man not a seed [of rice] in late years." A Japanese naturalist, Aoki Kon-yō, quoting a Chinese work, "Ping-Kiang Ki-Sze," speaks of a crab-devastation which took place in the Wu District (now Kiang-Su) in 1297 A.D., "when all plains were full of crabs, wasting all crops of rice." ("Kon-yō Manro Ku," written 1763, ed. 1891, p. 164.)

Twan Ching-Shih (died 863 A.D.) briefly speaks of this crab, thus: "In the eighth moon of the year, the crab has in its belly an ear, really that of rice, about an inch long, which it carries eastwards as a present to the 'God of the Sea'[1]; before the carriage is accomplished, the crab is not edible" ("Yu-Yang Tsah-tsu," Jap. reprint, 1697, bk. xvii. fol. 4, *a*). Contemporaneously, Luh Kwei-Mung (died *c.* 881 A.D.), in his "Notes on the Crabs" (*ap.* "Yuen Kien-lui-han," 1701, bk. 444, fol. 18) narrates:—"These crabs live in holes, which they dig in bogs, until the season that intervenes the autumn and winter, when they emanate from their homes. The people of Kiang-Tung say, when rice is ripening, the crabs take each one ear in order to pay court to their chief. Every morning and every evening they all run towards the river, when men fish them by setting weirs across the affluents. Yet six or seven out of ten crabs would pass over the dams, and in the river they grow larger; whence they proceed to the sea in the same manner as their previous march, also being persecuted as before, which, however, they escape with more skill than in former occasions." Later, in the dynasty of Sung (961—1279 A.D.), appeared a "Monograph of Crabs," by a certain Fu Kwang, who relates in it:—"In the crevices on rocks along mountain streams occurs a small crab, red and hard, and so named *Shih-hiai* (Stone Crab). When still young, in midsummer, owing to absence of any edible cereals, it feeds on the root of reed, whence its name *Lu-kan-hiai* (Reed-root Crab), and is meagre in size and taste. About the eighth month it grows larger after moulting, and, when rice or millet is mature, every one crab bellied with one spike of the cereal runs to the river, when it is termed *Loh-Hiai* (Merry Crab), and is very fat and best to eat. Thus it goes to the sea where it presents the spike to its chief" (*ibid.* fol. 19, *a*). These are very good samples of the celebrated celestial whims, which once expressed, no literatus doubts; for, to me, it is too clear that the tribute which these so-called "grain crabs" are said to pay to their king is nothing but their spawn, which they carry under the abdomen to lay down in the sea.

I do not know whether the rice-carrying crab is the same with what devastates the plantations, as is supposed by Aoki (*l.c.*), although very probably so. And I shall be very much obliged if, through your medium, some one will answer my questions: (1) What species of crabs is the cause of such stories? and (2) Is such a crab-ravage reported in modern times from China? From De Rochefort's "Historie . . . des Iles Antilles," Rotterdam, 1665, p. 255, I gather the renowned Violet Land-Crabs of the West Indies to make some damage to tobacco farms, but not to grain as is so vastly attributed to the Chinese crabs; while F. Legnat, about the end of the 17th century, described a land-crab of Rodriquez, whose destructive power during its emigrating period appears to equal that of its Chinese kin (see his "Voyages," ed. 1891, p. 92).

Yu Pau (4th century A.D.) writes in his "Sau-shin-ki":—"In the year 283 A.D. all crabs in the District of Hwui-Ki were turned into rats, whose group covered the rice-farms and made an extensive devastation. When yet immature, these rats had hair and flesh but no bones, and unable to pass over the ridges in the farms, but became vigorous after a few days." This erroneous exposition, to account for the origin of rats or field-mice, would seem partly to originate in some similarity of the fur of rats with that of the so-called Hair-Crab (see Stebbing, "Crustacea," Pl. III.), but more in the people's familiarity with the land-ravaging crabs[2] in ancient times.

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[1] The Japanese who worship the deity of Kotohira (the patron-god of mariners) taboo the eating of crabs.

Leonid Meteor Showers.

I HAVE nowhere seen an account of a very remarkable display of these meteors visible here (in Shanghai) on the morning of November 15, 1886. Though the date is distant, it may be of use to record it, as it may throw light on the conditions of the orbit.

I was sleeping in a room with an almost due north exposure looking into an open compound, and chanced to wake up about three in the morning, when I saw a number of meteors flashing across the window. I got up on recollecting the date, and for about an hour witnessed the most brilliant pyrotechnic display I have ever seen.

The meteors were flying in every direction from the radiant point in numbers past all calculation, and the intensity of the shower was keep up without intermission the whole of the time I was gazing.

I expected to hear from other quarters an account of the phenomenon, and was much surprised to find it had apparently not been noticed elsewhere. I had to leave shortly after for the interior, where I was practically cut off from communication with the outer world for some months, and hence did not at the time report the fact.

As much stress is laid on the appearance of the meteors in Europe in 1833 and 1866, the shower may be some of interest.

Shanghai, February 12. THOS. W. KINGSMILL.

The Capture of Butterflies by Birds.

CONCERNING the capture of butterflies by birds, permit me to relate an incident which I witnessed in the summer of 1899 at the Deserted Village, near Scotch Plains, N.J.

My attention was attracted to a maple tree on a lawn by a violent fluttering of the wings of a robin among the leaves. Presently a large brown butterfly, evidently wounded, but still attempting to fly, fell from the branches. The robin pursued the butterfly eagerly, and attacked it upon the ground, alternately striking with its beak, with lowered wings, and running off a short distance to observe developments. Finally, the butterfly ceased to move. The robin thereupon tore the body from the wings and devoured it. I picked up the mutilated wings and showed them later when narrating the incident.

29 Broadway, New York. GEORGE A. SOPER.

The Smell emitted by Quartz when Rubbed.

WHEN two quartz pebbles are rubbed hardly, or ground together, so as to give an electric spark, that seems under their surface, and then smelt, they emit a very peculiar smell, which some people call a sulphurous smell, but I cannot trace any resemblance to sulphur, or ozone, or phosphorus. What is it supposed to be? E. L. GARBETT.

25 Claremont Square, N., March 7.

[2] The "Hair-Crab" of Japan is caught in the same way as the Chinese mode of fishing the rice-carrying crab. The Japanese well know its descent down the river in autumn, and have well noticed it never to reascend it afterwards as some fish do (Kaibara, "Yamato Honzô," 1708, bk. xiv. fol. 48), but never possessed a belief in a crab carrying grain to the sea. Only one case that slightly approaches that of the latter, I find in "Hokusô Sadan," where it is narrated that near the end of the last century the river Yodo, near Kyōto, was one day so swarmed with small crabs that every handful of water was full of these creatures.