

plucked a mussel from the rock knows better in this respect than Dr. Brehm; and when the latter tells us, à propos of the songs of birds (p. 37), that the "voice is still motion," and we connect the statement with a previous assertion (p. 19), that "worlds roll on through boundless space—and live," we feel certain that we ought to hear the music of the spheres, or some other mystical sweet sounds, if we could only elevate ourselves to his exalted ecstasy.

But we think we need not trespass further on the time of our readers. We will conclude by expressing the hope that when Mr. Jesse and Mr. Labouchere next set about translating a German author they will have better luck in pitching upon a subject—and they will easily find one—for their labours than the rhapsodies of Dr. Alfred Edmund Brehm.

OUR BOOK SHELF

Proceedings of the London Mathematical Society. Vol. iii., Nos. 21—40.

THE papers read before this Society still preserve the high character attributed to them in the notice of vol. ii., which appeared in this journal. That such should be the case is not matter for surprise, when we run our eyes over the list of contributors. The principal authors are Prof. Cayley and Mr. Samuel Roberts. The former furnishes three memoirs on quartic surfaces (pp. 59—69; 198—202; 234—266); sketch of recent researches upon quartic and quintic surfaces; rational transformation between two spaces (pp. 127—180); on Plücker's models of certain quartic surfaces. The latter communicates papers on the order of the discriminants of a ternary form; pedals of conic sections (pp. 88—98); on the ovals of Des Cartes (pp. 105—126); on the order and singularities of the parallel of an algebraical curve (pp. 209—259); on the motion of a plane under certain conditions. Prof. Clerk Maxwell contributes a paper on the mathematical classification of physical quantities. Besides the foregoing communications, the above-named gentlemen have laid other papers before the Society. Memoirs have also been presented by Mr. J. Griffiths, Mr. J. J. Walker, Prof. Clifford, Hon. J. W. Strutt, and other members. Some other highly valuable communications, we learn from the "Proceedings," were made to the Society, but no record has as yet been made of them, their authors not having yet sent their completed papers for publication. The Society, from the number and high character of its memoirs, seems to have met a want, and is, perhaps, the only Society before which many of the communications could have been brought. As generally the papers are worked out in some detail at the meetings, members have an interesting opportunity of seeing how some of our foremost mathematicians employ their divers instruments. The Society has lost by death during the past session, its first president, and one of its earliest warm supporters. A slight sketch of Prof. De Morgan and his works appeared in NATURE close upon his death in March last. The eighth session of the Society's existence has just commenced, and we trust its future work may be as good as that it has already achieved. *Florcat.*

Treatise on Terrestrial Magnetism. (Blackwood and Sons.)

THE first half of this book contains a good deal of information, and some inquiries connected with the question of the secular variations in the magnetic elements. The author, on the supposition that the secular changes in the declination are caused by the action of a single, slowly rotating pole on a needle which at each place is locally influenced in a definite and determinable manner, com-

putes the declination at several places, and shows that it agrees tolerably well with actual observation. The rotating pole he places at a constant distance of $23^{\circ} 30'$ from the pole of the earth's axis, and gives to its rotation a period of 640 years. The latter part of the book, however, is taken up with "an hypothesis." The writer of this book, and many other such writers, would do well to remember the words of Newton, "*Hypotheses non fingo.*" The hypothesis referred to is simply this:—that the sun attracts the electric matter in the earth and carries it round in a sort of tidal wave, this causes an electric current from east to west, which causes the magnet to point to the north, and from which the writer also attempts to deduce some of the other phenomena of magnetism. There seems to us to be some ambiguity in the writer's method of expression, so that we do not clearly gather whether he intends this current to account for the whole magnetic action of the world, or only for the variations of it. A consideration of the character of the variations of the needle is sufficient to overthrow the hypothesis announced by our author. The solar diurnal variation is thus explained by him:—The pole of the ecliptic revolves once a day round the pole of the earth's axis, the needle tends to follow this, and hence the solar diurnal variation. Now, we may point out a circumstance which, apparently, entirely overthrows, not only this hypothesis, but any which attempts to account for that variation by anything of the nature of the movement of a magnetic pole. At Point Barrow the needle points N.E., at Port Kennedy it points S.W., yet at each place the solar diurnal variation follows local time and exhibits precisely the same features. Standing, then, at the centre of the needle, and looking towards its marked end, that end would at both places be observed to be moving towards the left hand of the observer between the hours of 8 A.M. and 1 P.M. But since the needles are pointing in opposite directions, this constitutes a movement of the marked end of the one towards the geographical west, and of the marked end of the other towards the geographical east, and this at times when the needles are under precisely the same circumstances with respect to the sun's influence. Now, no movement of the magnetic pole can account for this, it would necessarily entail a movement of the marked end of both these needles in the same geographical direction. The consideration of this phenomenon shows us that if the solar diurnal variation of the declination is to be attributed to a current, it must be one not round the magnetic pole or the geographical pole, but along the magnetic meridian. But this is not the place for us to discuss this question further at present. It would seem to be, however, rather from the consideration of such phenomena as this in a careful and accurate way, and the attempt therefrom, by induction, to arrive at laws, that we may hope to form a theory of terrestrial magnetism, than from "making an hypothesis," and then attempting to apply it to facts.

J. S.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

Mayer and De Saussure

IN Prof. Tyndall's account of the labours of Mayer, a paragraph is devoted to the bearing of his principles upon the phenomena of vegetable life. It suggests two points of difficulty to me:—

1. It is said that "Mayer's utterances are far from being anticipated by vague statements regarding the 'stimulus' of light, or regarding coal as 'bottled sunlight.'" Nevertheless the paragraph reads almost like a paraphrase of the following passage from Sir John Herschel's "Outlines of Astronomy" (1833), p. 211:—