

subject, and that "his intention is to offer a new interpretation of observed phenomena." The "contemporary literature" which has afforded the materials for the "new interpretation" consists of Page's "Geological Manual," Phillip's "Vesuvius," and very many extracts from the current weekly and quarterly periodicals for the last year. With the exception of an allusion to M. Daubr e, obtained from an appendix to Professor Haughton's "Manual of Geology," the author shows no acquaintance with any of the French or German authorities who have worked so hard at his subject. He is, moreover, in ignorance of the labours of Sorby, and of the translation of Bischoff, published by the Cavendish Society. Had he read Lyell's "Principles" he would certainly not have been betrayed into writing such a strange book as the "Interior of the Earth."

We will give one sample of the quality of "the new interpretation." "Page tells us 'that the interstratified trap-tuffs, the basaltic outbursts, and the numerous faults and fissures testify to a period of intense igneous activity.' We have a familiar example of this action in our hot-beds and our hay-ricks." Mr. Malet then proceeds to explain the earth's heat and volcanic phenomena by a like action on buried vegetable matter. To combat views such as these would be absurd. Their author has succeeded in gaining a place among geologists similar to that of the circle-squarer among mathematicians. Z.

Sitzungsberichte der Naturwissenschaftlichen Gesellschaft Isis in Dresden. (Jahrgang, 1869. Nos. 10—12.)

THIS part of the report of the Isis Natural History Society of Dresden contains as usual a great number of interesting notices in all departments of natural history, the most important being on botanical subjects, namely, the commencement of a prodomus of the Lichens of Saxony, Thuringia, and Northern Bohemia, by Dr. L. Rabenherst, and the conclusion of a synopsis of the Coniferae, by M. Laessig. In the latter, diagnoses of the families and genera are given, and the general characters and geographical distribution of the species are indicated. In the continuation of a lecture on extinct mammalia, Dr. G nther noticed the following species:—*Canis familiaris fossilis*, *C. spelaeus* (= *C. lupus*), *C. vulpes fossilis*, *Hyana spelaea*, *Felis spelaea*, *F. antiqua*, Cuv., *F. minuta fossilis*, Wagn., *F. aphanista*, and *ogygia*, Kaup, and some species of *Mustela*. In a paper on recent explorations for rock salt in Prussia, M. Otto noticed the occurrence of a vast bed of that mineral near Spereberg, where a boring has been carried down 2,270 feet, of which 1,920 feet is through a salt bed. The boring has probably nearly reached the bottom of the deposit, as the material brought up now contains much anhydrite. Near Segeberg, in Holstein, a deposit of salt has been met with at a depth of 400 feet.

Milne-Edwards. Leçons sur la Physiologie et l'Anatomie comparée. Tome ix. 2^{me} partie. (Paris: Masson et fils.)

WE gladly welcome another instalment of the long and great work, the "beautiful legacy," as Bernard has called it, of the venerable French naturalist. At a time when the "differentiation" of study is carried to such an extent that many physiologists know very little about other animals than frogs, rabbits, dogs, and men, and many zoologists have a very meagre acquaintance with the results of experimental physiology, such a work as this, which skilfully weaves together all the main facts of animal biology, is most wholesome reading. The present part continues the discussion of the Reproductive Organs of the Invertebrata, and contains two lectures on the Development of the Embryo. We trust the distinguished author may be spared still to preside over and finally to witness the conclusion of this great work.

M. F.

LETTERS TO THE EDITOR

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

The Apparent Size of the Moon

DR. INGLEBY is curious to know what Prof. Helmholtz would say on this vexed question. If Dr. Ingleby will turn to page 630 of the "Physiologische Optik," he will find that Prof. Helmholtz has anticipated his wishes. As others of your readers may be interested in seeing how the matter is treated by one who is *facile princeps* in this department, I subjoin a translation of the passage. If the curious experiment mentioned by Dr. Ingleby had referred only to the vertical diameter of the disc, it would have seemed to be another illustration of our inveterate tendency to ascribe an exaggerated value to vertical lines or angles, at or near the horizon. It is said that if ten men be required to fix off-hand on a star half way between the zenith and horizon, nine, at least, will choose one very much too low. If an exact square be cut out in paper and pinned against the wall opposite to the eye, the sides will appear longer than the top or bottom. If an equilateral triangle be placed in the same position, the angles at the base will appear larger than the angle at the vertex. If a line be drawn parallel to the bottom of a sheet of paper, and a second line, making with it an angle of 20° or 30°, any one attempting, without moving the paper, to draw a third line through the point of intersection, so as to make an angle with the second line equal to that which the second makes with the first, will make the second angle too large. (This experiment is guaranteed by Helmholtz.) After reading Helmholtz's theory, metaphysicians may be willing to allow that all these illusions are to be derived, after his example, from the clouds. As metaphysicians have, before now, contributed a good deal to the clouds, it is perhaps only fair that the clouds should contribute something to the metaphysicians.

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"To this category also belongs the celebrated question why the moon appears larger when she is near the horizon than when she is high in the heavens, although, in point of fact, owing to atmospheric refraction, her vertical diameter ought in the former case to seem less than in the latter. Even Ptolemy and the Arabian astronomers were perfectly aware that the true reason why the moon appears larger when seen in the horizon, is that she then appears further off. The real question therefore is, why the sky should appear further from us at the horizon than it does at the zenith. Various causes have been assigned for this fact, and I am myself disposed to admit that there are several causes which combine to produce this effect, so that it may be difficult to say which of these causes predominates in any one case.

"First of all we must remember that there is no decisive reason why the starry firmament should appear to us to be a spherical surface. It certainly reveals to us objects (the stars) which are at an infinite distance; but hence we can only infer that it may assume the appearance of any such indeterminate surface as any motive whatever may lead us to ascribe to it. If we were floating in empty space, and could survey it in its whole extent at the same moment and in all directions, or if its movements were so rapid as to make a distinct impression on the senses, there might be more reason for assigning to it a spherical rather than any other kind of surface. In point of fact, however, its apparent form and apparent direction are constantly changing, according as the portion we happen to see is more or less enclosed by various terrestrial objects, and according as we fix our attention on a higher or a lower spot. We shall see further on that we are naturally disposed to regard it as a plane surface, at right angles to the line of sight, whenever both eyes are steadily fixed on one point.

"But with the canopy of cloud the case is entirely different. The clouds in general are so far from us that the criteria for judging of distance which binocular vision or the movement of our own bodies can supply are utterly useless. But the clouds are often disposed in parallel lines, they generally drift with a constant velocity and in the same direction; when near the horizon they appear like bars across the sky seen edgewise, and so lighted that it is easy to perceive they are bodies whose horizontal extension is foreshortened by perspective. All these indications serve to give us the impression that the true form of the canopy of cloud, at least in the zenith, is that of a very flat