

We have said enough to indicate the richness of the ground which Dr. Ball has broken, and we would commend his treatise to the careful attention of mathematicians.

We could wish that a sharper line had been drawn between real and imaginary solutions, and also between results that are only true for screws of finite pitch and those that are true without this restriction. We also think that the convention which Dr. Ball proposes (foot-note, p. 11) for removing ambiguity from the expression for the virtual coefficient, is defective, partly because he has overlooked the fact that the virtual coefficient of two screws is essentially signless until positive as distinguished from negative directions have been arbitrarily selected along them. When this selection has been made, the virtual coefficient is the value of the quaternion expression $-pS\alpha\beta + S\alpha\beta\gamma$, where p denotes the algebraical sum of the pitches, α and β unit-vectors parallel to the two selected positive directions, and γ the vector perpendicular from the screw α to the screw β . To express the same thing unambiguously without quaternions would require such a long specification as would weary the patience of our readers.

The value of Dr. Ball's book is enhanced by an appendix containing a very clear and interesting *résumé* of the literature of the subject, from Poinsot downwards. We may supplement this list by a reference to §§ 200, 201 of Thomson and Tait's "Treatise on Natural Philosophy," where one degree of constraint is shown to be reducible to the condition that "every longitudinal motion of a certain axis must be accompanied by a definite proportion of rotation about it." This comes very near to the indication of the one reciprocal screw by which such constraint may be defined.

J. D. E.

OUR BOOK SHELF

Mittheilungen aus dem k. Zoologischen Museum zu Dresden. Herausgegeben mit Unterstützung der Generaldirection der k. Sammlungen für Kunst und Wissenschaft. Von Dr. A. B. Meyer, Director des königl. zoologischen Museums. 1 Heft mit Tafel i.-iv. (Dresden: Verlag von R. v. Zahn, 1875.)

THERE can be no question that the establishment of a journal in connection with a scientific institution is one of the very best methods of promoting the interests of the latter and obtaining for it more extended support. While the institution remains in one place, its journal travels about the world, makes its most recent acquisitions known to its supporters and correspondents, and encourages them to promote its welfare by further donations. Such being the case, Dr. Meyer has acted most wisely in endeavouring to resuscitate the somewhat decayed zoological branch of the Royal Museum of Dresden, by starting the present periodical. Dr. Meyer's recent travels and discoveries in the Eastern Archipelago have brought him much and deserved credit, to which, no doubt, he partly owes his present appointment. They have likewise supplied him with abundant materials for contributing valuable memoirs to his journal. Not unnaturally, therefore, the first number of the new periodical commences with papers containing the results of some of his own researches in the Eastern Islands. The first of them contains an account of a new Bird of Paradise, not actually discovered by Dr. Meyer himself, but by one of his correspondents since his return to Europe. *Diphyllodes Galielmi III.*, as this splendid bird is named, in

honour of the King of Holland, is said to be from the little known Papuan island of Waygiou, and vies in brilliancy of plumage and elaborate excess of feathered ornaments with the finest species of this gorgeous family. Descriptions of other novelties in the class of birds discovered by Dr. Meyer himself, together with additional notes on little known species, complete this interesting memoir. Another paper by Herr Kirsch contains descriptions of new beetles from Malacca, from a large collection sent by Herr Eichhorn to the Royal Museum, and a third, which will be of special interest to our anthropological friends, is devoted to an account of 135 Papuan skulls obtained in New Guinea and Mysore by Dr. Meyer himself. We observe that a second part of the *Mittheilungen* is announced for publication early in the present year, so that we may expect shortly to have an opportunity of bringing further labours of Dr. Meyer and his assistants to the knowledge of our readers.

Table of British Sedimentary and Fossiliferous Strata.

By Henry William Bristow, F.R.S., F.G.S., Director of the Geological Survey of England and Wales. The Description of Life Groups and Distribution by R. Etheridge, F.R.S. Second Edition, revised. (London: Edward Stanford.)

THIS is an admirable and evidently very carefully prepared table, which is well suited for the use of students, science classes, and schools. In it Mr. Bristow has managed to embody a vast amount of information, which could only be obtained and verified by the consultation and comparison of a great number of maps and documents; and for this service all engaged in teaching the science of geology are greatly indebted to him. The foreign equivalents of the British rocks are only given in such cases as that of the Trias, in which our own series is incomplete. Mr. Etheridge's contribution to the work consists in a very valuable palæontological digest, in which the order of succession of the different forms of plants and animals is clearly described. The only points which seem to call for critical remark in this excellent work is the use of the term *Laurentian* for the so-called "Fundamental Gneiss" of Scotland, and the manner in which the name of Cambrian is employed. There is absolutely no evidence whatever whereby the geologist is able to correlate the azoic rocks on the opposite sides of the Atlantic, and therefore the application of the term *Laurentian* to any British formation would scarcely appear to be justifiable. In the long-veged question as to the boundary between the Silurian and Cambrian systems, we regret to find Mr. Bristow adopting the extreme views of the late Sir Roderick Murchison, and confining the name of Cambrian to a few almost unfossiliferous rocks quite at the base of the series. The line of division at the top of the Tremadoc slates, which was adopted both by Lyell and Phillips, has the advantage of making the British Cambrian system, as now defined by Hicks, very closely agree with the "Primordial" of Barrande; and we hope that in a future edition of this table, which we doubt not will soon be called for, the author may see his way to the adoption of it.

Catechism of Chemistry. New edition by Robert James Mann, M.D., &c. (London: Edward Stanford, 1876.)

PERHAPS no better illustration of the truth of Pope's line—

"For fools rush in where angels fear to tread"—

can be cited than the method employed in the manufacture of many of the so-called scientific elementary textbooks, a series of which *must* be put forth by every publisher. The "Catechism" before us is a typical example of a book constructed on this most pernicious method. The author appears to have learned a little chemistry from works which were in vogue a quarter of a century ago, and to have tacked on to this knowledge a