mode is followed, and all are arranged stratigraphically, without any attempt to show the more interesting developmental or time-series. Thus, in both cases the most interesting and instructive methods of arrangement are entirely neglected in favour of systems which are adapted solely to facilitate study by specialists, but which are comparatively unimportant and uninteresting to the public. Even to this day it does not seem to be realised by curators of museums, that the collections for study and those for public exhibition require to be arranged upon totally distinct plans; and that the method which is the very best in the one case may be, and usually is the very worst in the other. ALFRED R. WALLACE

*Geology of the Counties of England and of North and South Wales.* By W. Jerome Harrison, F.G.S. (London: Kelly and Co., 1882.)

ALL who have had occasion to use the valuable Post Office Directories of the English counties published by Messrs. Kelly and Co., will have noticed that the imperfect notes on geology contained in former editions have now been replaced by very accurate and well-written articles on the subject. These notes on the geology of the English counties have been drawn up, evidently with much skill and labour, by Mr. W. J. Harrison. In each case the scattered maps and publications of the Geological Survey have been very carefully studied, and the various memoirs and notices on the geology of each of the counties contained in miscellaneous journals and magazines faithfully summarised. The result is that the numerous readers of those widely diffused publications, the County Directories, have at hand a reliable sketch of the geology of the district in which they live, carefully brought down to the date of publication. What is perhaps of still greater importance is, that these sketches include references to all the principal works bearing on the subject, so that the reader is told where he may find fuller and more detailed information upon any point in which he may be interested. We can scarcely conceive a method by which useful geological information could be more widely diffused, or made more easily available for those who wish to obtain correct ideas concerning the geology of the district in which they live. These sketches of the Geology of the English Counties have now been collected into a volume, and constitute a very useful work of reference. We have tested it in many ways, and find that in almost every case the latest information, even when published in journals of very restricted circulation, has been discovered and made use of. Mr. Harrison's essays are clearly written, and each of them is preceded by a list of the local Natural-History and Scientific Societies, the members of which collect information bearing on the geology of the county; of the museums in which rocks and fossils from the county are preserved; of the publications of the Geological Survey bearing on the county; and of such other works as in any way refer to the subject. In all cases where he was in doubt Mr. Harrison appears to have sought the assistance of competent authorities, the result being a work which is exact, and at the same time is written in a popular style. There are numerous excellent woodcuts, most of which appear to be taken by permission from the publications of the Geological Survey and the Geological Society. We can heartily recommend this book as a convenient and reliable work of reference.

*University College Course of Practical Exercises in Physiology.* By J. Burdon Sanderson, M.D., LL.D., F.R.S., with the Co-operation of F. J. M. Page, B.Sc., F.C.S., W. North, B.A., F.C.S., and Aug. Waller, M.D. 8vo, pp. 75. (London: H. K. Lewis, 1882.)

THIS book is a *multum in parvo*. It gives in a most condensed and yet most clear and precise form, an account of the method of performing the most important experiments in physiology. It will be useful not only to students, but to practitioners who wish, with a small expenditure of time and labour, to become acquainted with the present state of our information, and the most important points in physiology, and the experimental data on which our knowledge rests. The exercises relating to the physiology of muscle and nerve are especially worthy of commendation. They make clear to the student the different arrangements of electrical apparatus, the comprehension of which is to many an insuperable difficulty, not only during their student's career, but during the whole of their lives. The few and simple diagrams in the text are just what were wanted to make the experiments readily understood. Half an hour spent with this little work will, we think, give to the beginner a better grasp of the subject of which it treats than days spent over more elaborate text-books, however good the latter may be for advanced students.

*Mémoires de la Société des Sciences Physiques et Naturelles de Bordeaux* 2e série, tome iv. 2e cahier. (Bordeaux: 1881.)

WE draw attention to this number specially for the benefit of such as are interested in the early history of arithmetic. It contains (pp. 161-194) an able paper by M. Paul Tannery (who is known by his previous similar work upon the "Collection Mathématique" of Pappus in tome iii. pp. 351, &c., of these same *Mémoires*) on "l'Arithmétique des Grecs dans Héron d'Alexandrie." He goes carefully into the question of the authenticity of the several so-called Heronian writings, and analyses those which he accepts, and concludes with one or two specimens of the approximate methods employed. We need only mention the names of Cantor, Martin, Hultsch, and Rodet as being those of the authors whose works and statements are discussed. Other papers are: M. Hautreux, "Etudes météorologiques de la Gironde à la Plata"; M. Millardet, "Pourridie et Phylloxera; étude comparative de ces deux maladies de la vigne"; M. Royer, "Récherches sur le passage du mercure à travers les liquides"; and M. Ponsot, "De la reconstitution et du greffage des vignes." From this enumeration it will be seen that some of the papers are of a very practical character, touching the interests of the commonalty. M. Debrun contributes a short note (and illustration), "Sur un nouveau baromètre amplificateur."

## LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

### Hypothetical High Tides

I SHOULD like to be allowed to ask two questions on this subject: First. Could the vegetable accumulations from which the coal has resulted have escaped destruction if, during their subsidence, the world was subject to such tides as Mr. Ball postulates? It is difficult to understand how this could be if the shales and sandstones which overlie the coal be of marine or estuarine origin. Second. What do the Palæozoic conglomerates disclose on the subject? The shingle of beaches heaped up by the tide, having each layer of sand and pebble laid at the slope of the beach face, exhibits when cut at right angles to the trend of the beach the continuously oblique bedding which represents this slope, the vertical heights of the shingle bed thus laid up representing the extreme rise and fall of the tide and surges. This may be seen in the case of the Lower Eocene shingle in Bickley Cutting of the Dover Railway and in the case of the early Glacial shingle in deep pits at Henham and Halesworth in Suffolk. The latter show a tidal rise and fall there of more than twenty-five feet, the former not so much. The same structure obtains in the case of sandbanks left dry by the tide, and of such

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