

as section on two of its planes of symmetry, while its faces are isosceles triangles. He claims that this figure lends itself better than the regular tetrahedron to the construction of models representing the structure of organic compounds. The close packing of polyhedral figures is an important factor in crystallographic research, but, when it is not correlated in any way with crystallographic data, it cannot be regarded as of any value in the investigation of molecular structure. The author proceeds as if the carbon atoms were actually tetrahedral in shape, with real poles at the corners, whereas in fact, the tetrahedron merely serves as a convenient means of showing the directions in which the valencies radiate. It is, however, interesting to notice that the figure which Lewis obtained by concentrating four duplets on the centres of four *edges* of a cube is actually a tetrahedron of the shape described by the author, although obviously the duplets in marsh gas must occupy the alternate *corners* of a cube, since all the evidence points to the fact that methane has the full symmetry of a regular tetrahedron.

The Trend of Evolution.

The Evolution of Man: a Series of Lectures delivered before the Yale Chapter of the Sigma Xi during the Academic Year 1921-1922, by Richard Swann Lull, Harry Burr Ferris, George Howard Parker, James Rowland Angell, Albert Galloway Keller, Edwin Grant Conklin. Edited by George Alfred Baitzell. Pp. x+202. (New Haven: Yale University Press; London: Oxford University Press, 1922.) 15s. net.

IN the chapter entitled "The Natural History of Man" Prof. Ferris gives a very lucid summary of the most elementary facts of embryology and anatomy, which suggests to the uninitiated reviewer that the Society of the Sigma Xi, for whom the lectures in this book were prepared, is a lay body unfamiliar with biological teaching. As a means of interesting such an audience in some of the manifold aspects of biology and sociology these lectures no doubt served a useful purpose, but why call the volume "The Evolution of Man"? One would imagine that in a series of six lectures with such a title some one would have discussed seriously the problems of man's pedigree, and have attempted to explain how and why the human family acquired those distinctive attributes of brain and mind which conferred the rank of mankind upon it. But there nothing of the kind is to be found in the book.

Prof. Parker gives an excellent account of his investigations on the nervous system of sponges and other animals, but the title "The Evolution of the

Nervous System of Man" raises hopes that are not fulfilled; and the same remark applies to the address by the president of Yale on "The Evolution of Intelligence," as well as to Prof. Keller's "Societal Evolution." The criticism one is impelled to make of all these addresses is that, while they are interesting and illuminating, both their own titles as well as that of the book are irrelevant.

In Prof. Conklin's essay, the title of which the reviewer has adopted as the label for this notice, is a sane discussion of the trends of civilised mankind under post-War conditions and an earnest plea for education, and better education, as the remedy for the ills of society and the means of averting the downfall of the best types of mankind.

Our Bookshelf.

Department of Agriculture and Technical Instruction for Ireland. Memoirs of the Geological Survey of Ireland. Mineral Resources. Memoir and Map of Localities of Minerals of Economic Importance and Metalliferous Mines in Ireland. By Prof. G. A. J. Cole. Pp. 155. (Dublin: Stationery Office, 1922). 7s. 6d. net.

IT is much to be regretted that this volume must be looked upon as the swan-song of the old regime in Ireland rather than as the first effort of the new authorities. Information as to the mineral resources of Ireland has never before been collected into any authoritative memoir, but had to be sought for piecemeal among a number of miscellaneous geological and mining publications, for, as the author of the present work correctly observes, Sir Robert Kane's book on the industrial resources of Ireland is now far too old to be of any real value under the economic conditions of the present day.

Prof. Cole has done his work extremely well; he has arranged the various minerals that Ireland produces in alphabetical order, commencing with antimony and ending with zinc. It is perhaps characteristic of an Irish publication that the most important of all mineral products, namely coal, is not even mentioned. The author states specifically that he excludes sands, clay, and marble, and devotes his attention to "minerals of economic importance"; surely coal should be included under this head. The other minerals of economic importance are very fully and clearly dealt with; the list of localities is very complete and carefully drawn up, and all the more important occurrences are briefly described. If it does nothing else, the present work will serve to dispel some of the wild statements that are occasionally heard as to the immense mineral resources of Ireland, which have been neglected or, it is even sometimes hinted, deliberately concealed, by jealous Englishmen. Among the more persistent of such legends is that of the immense resources of iron ore in the Arigna valley; the present work shows that two persevering attempts were made to found an iron industry there, at the end of the eighteenth and again in the first half of the nineteenth century, and that both ended in failure; at what appears to have been the last