

Alps, but it is rightly held that the man who goes through a course of training among the crags of Cumberland qualifies himself to tackle the giants of the Alps or Caucasus. Beginning with the tors on Dartmoor, the would-be Alpinist can pass by easy stages to such climbs as those of Deep Gill, Mickledoor and Napes Needle, and then complete his course of instruction on the Alps. For convenience of reference, all the headings are arranged in alphabetical order. It is easy, therefore, to turn up information about hills or rocks which afford climbs, and to find the meaning of technical terms and expressions. It would have been an advantage, however, if Mr. Smith had given a list of climbs in the order of difficulty, for beginners would then know exactly where to commence their mountaineering education. The book is illustrated with twenty-three sketches by Mr. Ellis Carr, and five plans. It will doubtless increase the number of climbers, and the many admonitions it contains ought to keep down the mortality from what someone has called the "greasy pole" exercise.

LETTERS TO THE EDITOR.

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Trituberculy and Polybunty.

It is a matter of regret to me that so clear-headed a naturalist as Dr. Forsyth Major should have misunderstood what I thought to be clear intelligible language.

In his letter (NATURE, May 31) Dr. Forsyth Major declares that, in my paper on the Stonesfield mammalia, I stated that he has expressed views in his paper on Squirrels (*P. Z. S.* 1893) the very reverse of those recorded by him in that paper. All that I have said about Dr. Major, whose paper I read after writing mine, is "Dr. Forsyth Major does not favour this view," viz. that all the various forms of lower molars of Ditreumatous mammals can be derived from the tubercular-sectorial type. I shall be glad if Dr. Forsyth Major will either state that he does favour this view, or withdraw his charge of misrepresentation.

Again, I think, Dr. Major has misunderstood my words when he proceeds to declare that I have made "some obviously contradictory statements" in my paper on the Stonesfield mammalia, and in my letter to NATURE of May 3. The object of my remarks on the primitive mammalian tooth in my paper, was to show that that part of the "tritubercular theory" (as lately set forth by Profs. Cope and Osborn) which seeks to explain the tubercular-sectorial tooth as having arisen—within the mammalia phylum—from a single cone through a triconodont stage is beset with weaknesses and improbabilities which render it untenable. The view there expressed that the Pro-mammalian molars "were of an indefinite multituberculate pattern," or, in other words (used in my letter), that they were "provided with many cusps not placed in one line," is *not* inconsistent with the admission that the common ancestors of the Marsupials and Placentals—and even (if we accept Prof. Osborn's latest statements) of the so-called "multituberculata"—may have already developed tubercular-sectorial lower molars, and perhaps tritubercular upper molars. Dr. Forsyth Major, whose careful observations deserve great consideration, has argued, in his letter of May 31, very forcibly against this "working hypothesis." I think it only right to say that the views expressed by him are identical with those which have been urged on me privately, and also expressed in lectures, by Prof. Lankester, under whose direction I made my investigation of the Stonesfield jaws.

The theory I support, then, merely comes to this: that many-cusped teeth of indefinite pattern (such as those of *Ornithorhynchus*?) gave rise to tubercular-sectorial lower and, perhaps, tritubercular upper teeth, some of which in turn gave rise to many-cusped teeth of definite serially tuberculated pattern (*Polymastodon*, &c.). Prof. Osborn declared that he had evidence of the latter step. The one mistake to which I plead guilty is that of having apparently endorsed in my letter Prof.

Osborn's view on this latter point. In reality I wished to be understood as admitting temporarily—and until further evidence comes to hand—a statement which I was not in a position to combat by the use of my own observations.

Oxford, June 4.

E. S. GOODRICH.

A Review Reviewed.

I AM rather astonished at the criticism of my use of the term mineraliser in my book on the "Economic Geology of the United States," made by a reviewer in a recent number of NATURE. Surely the sanction of the Century, Webster, and Worcester dictionaries, besides several scientific works, should be considered as warranting my use of the term, unless some very serious objection can be urged.

Since I am writing on the subject, I may say what perhaps should have been said in my preface, that the mineralogical part of the book, to which exception is taken by the reviewer, was not intended to teach mineralogy, but to call attention to a new aspect of the subject—the economic. The students for whom the book was mainly written, those at Cornell University, have, when they begin the study of economic geology, already studied determinative mineralogy and blowpipe analysis, and they have also studied rock-forming minerals from the geological standpoint. Here is the third standpoint, and experience in teaching shows that the plan is not superfluous.

Objection is also made to the absence of illustrations. But this is intentional, for I believe the class-room is the place for these. There we can use large illustrations, lantern-slides, and original maps and sections, which are vastly better than textbook diagrams.

I wish also to make an acknowledgment. As the reviewer points out, and as others have done before him, the chapter on mining terms and methods is weak and in places inaccurate. It was a serious error on my part (for which the book has suffered) not to have submitted this chapter, upon which I have only second-hand knowledge, to some specialist for revision. At present the only thing that can be done is to promise the elimination of the objectionable parts in a second edition, if one is called for.

RALPH S. TARR.

Cornell University, Ithaca, N.Y., June 29.

I WILL reply *seriatim* to the various points of Prof. Tarr's letter.

(1) *Term "Mineraliser."*—I still think the word objectionable in the sense used by Prof. Tarr. To most people it probably conveys the idea of something which converts or helps to convert another substance into a mineral. How can sulphur be said to "mineralise" silver by combining with it? Both the elements already exist as minerals in nature; and one might just as well say that the silver mineralised the sulphur.

(2) *Mineralogical part of the book.*—Prof. Tarr states that the object of this part of the book is not to teach mineralogy, but to call the attention of students to the economic side of the question; but this is no excuse for loose and careless writing, instances of which are far too numerous. We read on page 16: "When a metal is combined with silica (SiO_2), a silicate is formed." "Ores considered from the economic standpoint occur in beds or in veins" (p. 17); this would lead the student to infer that no other modes of occurrence are known. Iron pyrite "grades into copper pyrite, but when there is much copper present the colour becomes more golden" (p. 18) "Grade" as a neuter verb does not appear in my edition of Webster, but it probably is intended to mean "gradually passes into." This reading is confirmed on page 22, where we find "copper pyrites, which is in reality a sulphide of iron and copper combined, the proportion varying from an exceedingly cupriferous variety (chalcopyrite) to pure iron pyrites." Limonite is spoken of as "the rust of hematite" (p. 19). Tin ore "is found both as tinstone, in coarse granites or pegmatites, and as stream-tin" (p. 25). Is not stream-tin a form of tinstone, and may not tin ore be found in *fine-grained* granite and in slate?

Judging from the paragraph on page 26, the author is unaware of the existence of any oxidised ore of nickel. The student does not obtain a correct idea of dolomite by being told that it is carbonate of lime "combined chemically with magnesium" (p. 10). I think that these instances, and others might be quoted, justify my remarks.

(3) *Paucity of illustrations.*—If Prof. Tarr had adhered to