

the majority of them are dolichocephalic. The custom is still in full use among the hill tribes who live in the south-east corner of the Algerian plateau, and it is also reported from Montenegro; there are also traces of it in America.

The evolution of the saw is ably treated by Dr. Munro, who is careful to point out the permanence of shapes of implements, the early bronze saw being a direct copy of the antecedent flint saw.

There is no need to further emphasise the fact that Dr. Munro has produced a book which, though designed for the general reader, contains a good deal of new matter, and is a serious contribution to several important aspects of archaeology. It seems ungracious to pick out minor points for criticism, but it is desirable to distinguish between "rudimentary" and "vestigial" organs; those mentioned on p. 21 belong to the latter category. It is a pity to retain the name of "Bâton de commandement" (pp. 43, 49, 51) for objects which, judging from modern analogues, were in all probability arrow- or javelin-straighteners. A. C. H.

OUR BOOK SHELF.

The Tutorial Trigonometry. (The University Tutorial Series.) By William Briggs, M.A., and G. H. Bryan, F.R.S. Pp. viii + 326. (London: W. B. Clive, Univ. Corres. Coll. Press, 1897.)

IN this school-book of three hundred and twenty-six pages the authors have arranged a course on trigonometry which should be most useful to those studying this subject for the first time. The book may be roughly divided into three portions, dealing first with the trigonometry of one angle, then with that of two or more angles, and, lastly, with logarithms and the trigonometry of triangles. This arrangement seems to work out well, as it allows of the formation of a simple progressive course. The authors rightly lay some stress on the insertion of illustrative exercises, and many of these will be found in the text. In the chapter devoted to the trigonometric functions of a variable angle special attention has been drawn to the tracing of the curves, so that the reader is here introduced to a method which is of great importance not only in this, but in other subjects.

By a judicious arrangement of different sizes of type the comparative importance of the subject-matter, and also the fundamental formulae, can be easily observed at a glance. Numerous figures and examples are attached to each chapter, the answers being brought together at the end of the book.

As a course for schools, and for those who are working up the subject by themselves, the book can be recommended. W. J. S. L.

LETTERS TO THE EDITOR.

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"Species or Subspecies?"

THE article by Mr. Lydekker with the above title, in your issue of July 15, deserves some comment. The writer appears to think that the "lumpers" have gained a point; but his attitude, while professing to be a "lumper," shows how much progress the cause of the "splitters" has made in the last few years. It was not formerly a question of "species or subspecies?" at all, but whether what Mr. Lydekker would now call subspecies should be recognised at all in the nomenclature. Dr. Merriam's excellent researches have brought to light a great number of geographical races of our mammals, which were in

former years deliberately ignored. It is true that the older naturalists never possessed anything like such good series of specimens as he has had before him, but it is safe to say that even if they had possessed Dr. Merriam's material, they would have despised or overlooked many or most of the facts which could be deduced from it. When species were supposed to have been created separate, it seemed evident that minor divisions were comparatively of no account, and had nothing to do with real species whatever. At the present time, we recognise the fact that there must be every gradation between individual variations and specific characters, and the whole series of phenomena deserves our attention. The study of subspecies, of variations, and of individuals, are all part of the necessary work of the modern naturalist, and there arises the necessity for a nomenclature applicable to each branch or division of the general subject.

It is comparatively immaterial whether closely allied forms are called species or subspecies. What is important is that they should be differentiated and named. Now that even "lumpers" are apparently ready to recognise the facts in the nomenclature, "splitters" should consider their convenience as far as may be possible. It is certainly true that while the breaking up of the old generic and specific groups leads to better and clearer ideas of the facts of nature, these facts can be expressed just as well by the use of subgeneric and subspecific names as by the excessive multiplication of "genera" and "species." If, then, it is found that concessions can be made to non-specialists without any real loss of precision and detail, surely they should be made. The result will be to aid the outsider, without really inconveniencing the specialist.

At the same time, it is quite impossible to so arrange matters that terms of the same rank shall always express groups of equal value. In some genera the groups we must necessarily call species are much less distinct than those of other genera. In Jamaica, for example, as was long ago pointed out by C. B. Adams, the species of land shells are not as distinct as they are in England, and yet if "lumped" would give us "specific" aggregates which would be absurdly large and varied, not comparable at all with what we commonly understand as species. In other countries, e.g. Italy, we find well-marked species with numerous local subspecies. The three different conditions can be represented as below, the dots representing the specific or subspecific units.¹

English land shells:	.	.	.	.	.	.	.	.	.
Jamaica land shells:	.	.	.	.	.	.	.	.	.
Italian land shells:	.....	.....	.....	.....	.....	.....	.....	.....	.....

Again, it would be quite absurd to refuse to recognise species which can only be separated by the specialist. There are thousands of perfectly distinct species which an ordinary "layman" would confound. Mr. Lydekker seems to realise this when he thinks of the rodents; for as he well knows, there are not only distinct species, but quite distinct genera of these animals which are popularly confounded, and many cannot even be recognised off-hand by the specialist. No zoologist would have the courage to recommend a classification of the Rodentia, based on the differences observed by ordinary persons, as thus:—

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|------------|--------------|
| Genus 1. | Mouse. |
| Species 1. | House mouse. |
| 2. | Dormouse. |
| 3. | Field mouse. |
| Genus 2. | Rat. |
| Species 1. | Brown rat. |
| 2. | Black rat. |
| 3. | Water rat. |

T. D. A. COCKERELL.

Mesilla, New Mexico, U.S.A., July 31.

Distant Sounds.

Is it not possible that the sound of distant firing, mentioned by Mr. C. Mostyn in his letter in NATURE (p. 248), may be the same kind of phenomenon as is described in the *Annalen der Hydrographie und Maritimen Meteorologie*, 1897, p. 160, and is called "Mistpoeffers"? F. L. ORTT.

The Hague, August 11.

¹ In each class, a number of smaller dots might be added, if we desired to recognise what are commonly called varieties. Varietal nomenclature is not here considered, but it obviously is a necessity for students of evolution and variation, to whom a variety is often of more interest than a species. In discussing certain classes of cases, e.g. breeds of domestic animals, names are often required for individuals.