

existence of animals of this group were described by Leidy, in 1872, under the name of *Uintatherium*."

Intricate questions of priority, such as those in which the nomenclature of many of the recent American palæontological discoveries is unfortunately involved, cannot be discussed and settled in brief abstracts; but I see that the above statement conveys a wrong impression, which I shall be glad to correct. Bones of some of these animals were discovered by Prof. Marsh and Lieut. Wann, of the Yale College exploring party, near Sage Creek, Western Wyoming, in September 1870, and described by the former in the following year (*American Journal of Science and Arts*, July 1871, p. 351), though referred provisionally to the genus *Titanotherium*. There seems, however, to be no doubt that Leidy's name, *Uintatherium* (*Proceedings of the Academy of Natural Sciences*, Philadelphia, 1872, p. 169; read July 30, published August 1), was the earliest of the new generic designations applied to any of the group, and therefore ought to be adopted for the whole, until it is clearly shown that any sufficiently important distinctions exist between them to warrant their separation into different genera.

March 18

W. H. FLOWER

Morell's "Euclid Simplified"

It is only quite recently that my attention has been directed to the review of "Euclid Simplified" in NATURE, vol. xiii. pp. 201-204. I shall endeavour to condense my reply to the criticisms contained in that review as much as possible, taking them in the order in which they occur, which will simplify the controversy.

And firstly, it is objected that "the title 'Euclid Simplified' is a misnomer, for the method of Euclid (the geometer) is departed from altogether." I reply by explaining that by far the greater part of the theorems and problems, and also the method followed throughout in "Euclid Simplified" are taken directly from Amiot's "Éléments de Géométrie" (15th edition, 1873). In his preface to another work, "Leçons Nouvelles de Géométrie Élémentaire" (1865), Amiot says: "Les éléments de géométrie que nous venons de réimprimer et cette seconde édition des Leçons nouvelles de géométrie, sont deux ouvrages différents. Le premier n'est que l'exposé de la géométrie des anciens; le second est un essai de géométrie générale, c'est-à-dire qu'il comprend non seulement les éléments d'Euclide, mais encore les principes de la géométrie moderne, qui est resumée et, pour ainsi dire, personnifiée dans les travaux de M. Chasles, notre géomètre par excellence." I infer that in adopting and following Amiot's "Elements," I have followed the ancients and Euclid, though shortened and simplified.

At a subsequent part of the review the writer is exposed to severe animadversions for his intention to produce what is represented to be an epitome of the brilliant discoveries of M. Chasles. This matter can also be set at rest by referring to the extract from the preface of M. Amiot, previously given. Mr. Morell has only projected a compilation and translation from Amiot's "Leçons Nouvelles," and from Rouché and De Comberousse (1^{re} Partie. Géométrie Plane. Appendice), also treating of modern geometry.

Passing from the title to the contents, I admit that the typographical errors are unfortunately numerous, nor is it possible to avoid this except by employing the best and most expensive printers. The misprints *maner* and *cord*, the omission of the word "side" before "of the equilateral triangle," and the passage relating to the quadrilateral *ABCD* must be referred to this category. The latter passage is translated from Legendre (edition 1868 [not 1872], p. 78), and requires the fourth side *AD* to be added, which has been omitted by the printer. For "without changing" read also "thereby changing"—in this case I confess an oversight of the writer.

I proceed next to meet the strictures of the reviewer relating to Gallicisms and the use of terms new to boys. In defence I might point to the Hellenisms and Latinisms in our School Euclid, and affirm that Gallicisms are more nearly akin to modern English.

I content myself with pointing to the employment of terms, condemned in "Euclid Simplified," by writers of approved excellence, including Gerard's "Elements of Geometry." It is objected that I write, p. 168, "The centre of similitude is the meeting-place." I find at p. 36 of Mr. Gerard's "Elements of Geometry," "The meeting point of two lines." . . . Again the terms "perpendicular to the centre, perpendicular to the middle," censured in "Euclid Simplified," ought to be taken in connection with the ensuing words: "to the centre of the straight line *AA'*" and "to the middle of *AB*." Thus ampli-

fied, the terms agree with those used by Mr. Wormell—"perpendicular to *DE* at its middle point *C*." "The perpendiculars to the sides of a triangle at their middle points." ("Modern Geometry," pp. 78-81.)

Before I dismiss this question of terminology, I wish to suggest that recent works on geometry in high repute, especially those I have just named, introduce very fully terms with which boys are not at all acquainted, and which are new in English. I briefly enumerate a list of these new importations: Escribed, escribed, explements, intercepts (used as a noun), circumscriptible, intangence, bisectrix, extangent, median, a plane lune, octant, and many more which cannot be introduced here for want of space.

Considering the further criticisms, I beg to explain that no notice of the Association for the Improvement of Geometrical Teaching was inserted in the preface because absence from England and ill-health had severed me from all knowledge of its proceedings and of its Syllabus.

If the enunciations are loosely and inelegantly worded, Amiot must bear the blame which attaches in a greater degree to our translations of Euclid.

Further, the objection made to my use of the terms "capable angle" must extend to the use of the same term in Gerard's "Elements," p. 310.

In the definition of the parallelogram the printer has omitted "and parallel," words which I find in my MS. The term lozenge is used as synonymous with rhombus by Wormell ("Elementary Course of Geometry," p. 65), and Gerard, p. 235. The definition of the circumference is that of Amiot ("Elements," p. 40) and Gerard (p. 76). That described by the reviewer as the common school-boy definition is Wormell's, p. 28. The expression "a circumference is generally described in language by one of its radii" is thus given in Amiot: "On designe ordinairement une circonférence par l'un de ses rayons." I shall pass over the criticisms about "the" and "a" as too minute, also the remark about major and minor arcs met by Def. 36. Problem VII. shows any boy of ordinary intelligence how to bisect a line.

Derivation in notes is not treated syntactically, and can also be dismissed. But the remarks of the critic about the use of *R* as meaning right angle are met by referring to Wormell's (p. 173) use of *GCM* as greatest common measure. The term pentadecagon is used by Gerard (p. 202).

The proof of the ratio of two rectangles $\frac{R}{R'}$ is Legendre's; and

at p. 67, after showing that $\frac{R}{r} = 4$, he adds: "Ainsi le rectangle *R* contient quatre fois le rectangle pris pour unité" (*i.e.*, *r*). This conclusion in my book is criticised.

The reasoning to Theorem VI. (p. 148), which is called defective in the review, only errs by excess of proof. I have little more to add. The "Essentials of Geometry" are almost entirely a translation of a useful Spanish work by noted mathematicians.¹ The 205 exercises are throughout from Amiot, and as these 205 exercises are literally all from Amiot, it is a serious charge to say, like the reviewer, that many of them are objectionable in geometry. In Exercise 30 "a" quadrilateral is a misprint: read "this."²

J. R. MORELL

"Weight" and "Mass"

THE correspondence which has recently appeared in NATURE on this subject has great interest for those engaged in teaching Physics. I confess I regretted to learn that "gravity" had been diverted from its long recognised meaning in science—that pointed out by Mr. Stoney—at Glasgow, to be employed for one of the meanings of the word "weight." The symbol "*g*" is "gravity" represented by its initial letter, so that if the meaning of the word be changed, consistency would require that the symbol should be altered. I find, practically, no difficulty in restricting the word "weight" to the sense of force, insisting on the use of the phrases "mass of so many pounds, ounces, or grammes," and "force equal to the weight of a mass of so many pounds, grammes," &c.; for which, after some time, I allow the use of the phrase, "the weight of so many pounds."

On another point of nomenclature I would suggest that those who, like myself, think it necessary to use the British units coordinately with the metric, should adopt some analogue to the

¹ Their names will be given when I recover the book or get another copy.
² The work of Mr. Wormell to which reference is made in this letter is (with one exception) his excellent "Modern Geometry," published by Murby.