

—one group of letters being capitals, A, B, C, and the other group small letters, *a, b, c*. The introduction of this notation is ascribed by Moritz Cantor, in his "Geschichte der Mathematik," vol. iii., 1901, p. 561, to the Swiss mathematician, Leonhard Euler, who first used it in 1753 ("Histoire de l'Académie de Berlin, Année," 1753, p. 231). It is the purpose of this note to point out that this simple, yet important, innovation was made nearly a century earlier.

In the British Museum there is a pamphlet of a dozen small leaves, written in Latin. Upon one side of each leaf there is engraved writing (script). The pamphlet is a collection of formulas for plane and spherical triangles, with drawings. Apparently the process of engraving was resorted to because no type was available for the new symbols used. There is no title-page. The first page contains "Symbola," and, at the bottom, the name "Ri: Rawlinson." The place and date of publication are not given. On one sheet, which is larger than the rest and is folded, there are drawings and time-records to illustrate the passage of the moon over the disc of the sun in an eclipse of January 16, 1655, observed at Oxford. Here the name "Ri: Rawlinson" occurs a second time. Who was this man? It could not be Richard Rawlinson, the antiquarian, for he did not write on mathematics. There is no doubt that the author of the pamphlet is the Rawlinsong of whom Anthony A. Wood speaks in his "Fasti Oxonienses," edition P. Bliss, second part, London, 1820, p. 257, placing him in the Oxford list of "Doctors of Divinity" of the year 1661. The reference is as follows: "Sept. 9. Rich. Rallinsong or Rawlinsong of Queen's coll. chaplain to the duke of Newcastle, was created while the chancellor held the supreme chair in convocation.—He was an ingenious man, well skill'd in the mathematics, but had not preferment confer'd on him equal to his merits. He died in 1668, being then, as I conceive, rector of Pulborough in Sussex."

Thus it appears that the pamphlet was issued between 1655 and 1668. Some of the symbols are the same as those used by Seth Ward, Savilian professor of astronomy at Oxford, in his "Idea trigonometriæ demonstratæ," 1654. All of Ward's symbols were probably originally due to William Oughtred. Ward and Rawlinson used Oughtred's symbols for proportion,  $A : B :: C : D$ ; they used a slightly modified form of Oughtred's symbols for "maius" and "minus"; they designated by *b'* the complement of an angle *b*. Rawlinson introduced several new symbols. In case of triangles, he designated the sides by the capital letters, A, B, C, and the opposite angles by *a, b, c*, respectively. This is his most important innovation. The idea of this device was not generally adopted until re-introduced about a century later. Rawlinson went even further. With him, A was the maximum side, C the minimum. Moreover, he distinguished in his notation between plane and spherical triangles by writing the letters in different script. Each letter for spherical triangles was curved in all its parts; each letter for plane triangles had a conspicuous straight line as a part of itself. Rawlinson had symbols for angulus "obliquus," "acutus," "obtusus," "rectus," and "rect. et obl.;" he had symbols also for "datum," "latus," "complementum," "compl. com.," "latus op. angu.," "angu. op. lat.," "pars media," "quæsitum," "quadrans," "sinus," "tangens." Rawlinson's symbols for "parallelus," "perpendicu.," "triangulum," "radius" had been introduced into mathematics before 1655, and are still in use at the present time. His pamphlet lays extraordinary emphasis upon the use of symbols. He had what Thomas Hobbes called a "scab of symbols."

During the first half and middle of the seventeenth

century British writers introduced symbols into trigonometry to an extent unparalleled by contemporaneous writers in other countries, but our histories of mathematics do not reveal this fact.

FLORIAN CAJORI.

7 Gordon Street, London, W.C.  
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#### Measurements of Medieval English Femurs.

In a paper lately contributed by Dr. Alice Lee to *Biometrika* (vol. x., Nos. 2 and 3, November, 1914, p. 208), entitled a "A Table of the Gaussian 'Tail' Functions," the author does me the honour to criticise some statistics which I published in the *Journal of Anatomy and Physiology* (vol. xxxviii., p. 238), on the measurements and proportions of the medieval English femur, derived from the study of bones in the crypt of the Parish Church at Rothwell in Northants.

The criticism, which is undertaken from the point of view of the advanced mathematician, I am ashamed to say I can only partly follow, but it turns largely on the very difficult question of accurate sexing, and Dr. Lee brings forward mathematical reasons for believing that my sexing must be inaccurate.

That this may well be so I readily allow, though I am glad to see that when Dr. Lee has rearranged the sexes to suit mathematical requirements, the average measurements seem to be altered by only the fraction of a millimetre, an amount of no possible importance to the practical anatomist or anthropologist.

There is, however, one method of criticism against which my practical experience in crypts makes me anxious to warn mathematicians; it is the futility of expecting that the measurable bones in a crypt will show any proportion to the number of males, females, and children in the population.

Owing to their greater fragility the children's bones become disintegrated in the course of centuries long before those of adult females; while, for the same reason, those of females do not last as well as those of adult males.

Consequently, when Dr. Lee points out that my method of sexing would mean a predominance of 79 per cent. of males in the population, while hers would give a slight preponderance of females, I submit that my estimate is, in the circumstances, more likely to be in harmony with the proportions of measurable bones in the crypt.

If Dr. Lee could superintend the restacking of a crypt full of bones with a view to their preservation, as I have done on two occasions, she would be astonished at the load of damp bone meal and broken fragments which have to be returned to the churchyard. In this I am sure would be found the excess of female bones as well as most of the bones of the children, thus accounting for the preponderance of male bones left fit for measuring.

F. G. PARSONS.

St. Thomas's Hospital, S.E.

#### Pheasants and Gun-Firing.

ON December 16, in the morning, pheasants in the woods at Dunsby and Hacconby made the same loud cackling as those later on at Saxby, referred to in *NATURE* of February 4, p. 622; and keepers made the same remark that there was shooting out at sea. These places are within a few miles of whence I write—viz., Bourne, in Lincolnshire. H. COTTON SMITH.

The Abbey Vicarage, Bourne.