equal parts, and each of these into sixty. Max Miller has shown ("What can India teach us?) that this division probably originated in Babylon, and notes that even the metric system still respects the division into sixty on the dial plate of our watches.

The radius of the circle is read in a peculiar way, in terms of the circumference, using but one unit for both, viz: one minute of a degree, of which they reckon the circumference to contain twenty-one thousand six hundred, and the radius three thousand four hundred and thirty eight, giving a reading time to the nearest minute. This is as near as they come in their trigonometric table, and makes π equal to 3.14136. Later the Brahmins knew that π equaled 3.1416 and so employed it.

They knew and crossed with pleasure the Pons Asinorum, the square on the hypothenuse, etc., of our early youth. They used constantly a formula that the Greeks *never* discovered, namely, to find the area of a triangle when its three sides are known [$\sqrt{s(s-a)(s-b)(s-c)}$]. This is said, and no doubt with truth, to have been first invented in Europe, by Tartaglia, of Brescia, in 1500, A. D.

In their trigonometric calculations they use only two tables, sines and versed—sines, and all the names referring to these contain the word signifying the chord (jya) of an arc; hence, radius of sine 90° is called trijya, equals triple arc. The Greeks had no sines and reckoned solely by help of the chords. Anything further than that the Arabs get full credit for, as they do for the digits, which are purely Hindoo, because Europe just heard of it through the University of Cordova, at the time when Arabian learning in Spain was far in advance of Bologna, Paris and Oxford. The table of sines shows them to every twenty fourth part of the quadrant; versed-sines the same. The rule for computation of sines by means of their second differences, shows a refinement of method, first practiced in Europe it is said by the English mathematician Briggs, in the sixteenth century.

The significant fact to my mind is this: The invention of trigonometry is a step of great importance and difficulty. The Hindoos worked this out for themselves and practiced a science of which Greece apparently did not dream. As a recent author says: "He who first formed the idea of showing in tables the ratio of the sides and angles of all possible triangles, must have been a man of profound thought and extensive knowledge." Of course these results represent them at their best, not in the infancy of the science. Playfair says of their rule for the computing sines, "it has the appearance, like many other things in science of Eastern Nations, of being drawn up by one who was more deeply versed in the subject than may be at first imagined, and who knew much more than he thought necessary to communicate." It has in final form the look of a compendium for practical calculators.

The earliest notices in Europe of these matters came through an ingenious English mathematician, Reuben Barrow, who was living in India and collecting manuscripts. Some of these he sent to Prof. Dalby, of the Royal Military College, with interlinear translations, and the later made them known to many persons in England and on the continent about 1800. In 1813 Sir E. Strachey, in the East India Company's service published a translation of a work by Bhaskara, the greatest name among Hindoo mathematicians, who lived about 1150, B. C. There is a correct but inadequate account of him in Webeis' history of Indian Literature, where the date of his birth is learnedly discussed but not settled. He was their greatest and last star, after his day no further progress was made, mainly on account of invasion of the land; later the natives became the instructors of their Mohamedon conquerors, and it is in Arabic that we must look for further and independent advancement. The works of the later translated into Latin (and bad Latin at that,) formed the daily food of the European astrologers in the middle ages.

In Dr. Morgan's "Paradoxes," a work of quaint