http://www.geology.19thcenturyscience.org/books/1858-Humboldt-Cosmos/README.htm

Arabs to a knowledge of Indian algebra, enabled them also to obtain, in the ninth century, Indian numerals from Persia and the shores of the Euphrates. Persians were established at that period as revenue collectors on the Indus, and the use of Indian numerals was gradually transmitted to the revenue officers of the Arabs in Northern Africa, opposite the shores of Sicily. Nevertheless, the important historical investigations of the distinguished mathematician Chasles* have rendered it more than probable, according to his correct interpretation of the so-called Pythagorean table in the Geometry of Boëthius, that the Christians in the West were familiar with Indian numerals even earlier than the Arabs, and that they were acquainted with the use of nine figures or characters, according to their position value, under the name of the system of the abacus.

The present is not a fitting place to enter more fully into the consideration of this subject, which I have already treated of in two papers (written in 1819 and 1829), and presented to the *Academie des Inscriptions* at Paris, and the Academy of Sciences at Berlin ;† but, in our attempts to solve a historical

* Chasles, *Aperçu Historique des Methodes en Géométrie*, 1837, p. 464–472 ; also in the *Comptes Rendus de l'Acad. des Sciences*, t. viii., 1839, p. 78; t. ix., 1839, p. 449 ; t. xvi., 1843, p. 156–173, and 218–246; t. xvii., 1843, p. 143–154.

† Humboldt, *Ueber die bei verschiedenen Völkern üblichen Systeme von Zahlezeichen und über den Ursprung des Stellenwerthes in den Indischen Zahlen, in Crell's Journal für die reine und angewandte Mathematik*, bd. iv. (1829), s. 205–231. Compare, also, my *Examen Crit. de l'Hist. de la Géographie*, t. iv., p. 275. The simple enumeration of the different methods which nations, to whom the Indian arithmetic by position was unknown, employed for expressing the multiplier of the fundamental groups, furnishes, in my opinion, an explauation of the gradual rise or origin of the Indian system. If we express the number 3568, either perpendicularly or horizontally, by means of "indicators," corresponding to the different divisions of the abacus (thus, $M^3C^5X^6I^8$), we shall easily perceive that the group-signs (MCXI) might be omitted. But our Indian numbers are, however, nothing more than these indicators —the multipliers of the different groups. We are also reminded of this designation by indicators by the ancient Asiatic.Suanpan (the reckoning machine which the Moguls introduced into Russia), which has successive rows of strings, to represent thousands, hundreds, tens, and units. These strings would bear in the numerical example just cited, 3, 5, 6, and 8 balls. In the Suanpan there is no apparent group-sign ; the group-signs are the positions themselves; and these positions (strings) are occupied by units (3, 5, 6, and 8) as multipliers or indicators. In both ways, whether by the figurative (the written) or by the palpable arithmetic, we arrive at the value of position and at the simple use of nine numbers. If a string be without any ball, the place will be left blank in writing If a group (a member of the progression) be want