

and who comments on his boldness in attempting, as it were, "to leave heaven as a heritage to posterity," should have enumerated only 1600 stars visible in the fine sky of Italy!* In this enumeration he had, however, descended to stars of the fifth, while half a century later Ptolemy indicated only 1025 stars down to the sixth magnitude.

Since it has ceased to be the custom to class the fixed stars merely according to the constellations to which they belong, and they have been catalogued according to determinations of place, that is, in their relations to the great circles of the equator or the ecliptic, the extension as well as the accuracy of star catalogues has advanced with the progress of science and the improved construction of instruments. No catalogues of the stars compiled by Timocharis and Aristyllus (283 B.C.) have reached us; but although, as Hipparchus remarks in the fragment "on the length of the year," cited in the seventh book of the *Almagest* (cap. 3, p. xv., Halma), their observations were conducted in a very rough manner (*πάνυ ὀλοσχερώς*), there can be no doubt that they both determined the declination of many stars, and that these determinations preceded by nearly a century and a half the table of fixed stars compiled by Hipparchus. This astronomer is said to have been incited by the phenomenon of a new star to attempt a survey of the whole firmament, and endeavor to determine the position of the stars; but the truth of this statement rests solely on Pliny's testimony, and has often been regarded as the mere echo of a subsequently invented tradition.† It does indeed seem remarkable that Ptolemy should not refer to the circumstance, but yet it must be admitted that the sudden appearance of a brightly luminous

* "Patrocinator vastitas cœli, immensa discreta altitudine, in duo atque septuaginta signa. Hæc sunt rerum et animantium effigies, in quas digessere cœlum periti. In his quidem mille sexcentas adnotavere stellas, insignes videlicet effectu visive" . . . Plin., ii., 41. "Hipparchus nunquam satis laudatus, ut quo nemo magis approbaverit cognitionem cum homine siderum animasque nostras partem esse cœli, novam stellam et aliam in ævo suo genitam deprehendit, ejusque motu, qua die fulsit, ad dubitationem est adductus, an hoc sæpius fieret moverenturque et eæ quas putamus affixas; itemque ausus rem etiam Deo improbam, adnumerare posteris stellas ac sidera ad nomen expungere, organis excogitatis, per quæ singularum loca atque magnitudines signaret, ut facile discerni posset ex eo, non modo an obirent nascerenturque, sed an omnino aliqua transirent moverenturque, item an crescerent minuerenturque, cœlo in hereditate cunctis relicto, si quisquam quæ cretionem eam caperet inventus esset."—Plin., ii., 26.

† Delambre, *Hist. de l'Astr. Anc.*, tom. i., p. 290, and *Hist. de l'Astr. Mod.*, tom. ii., p. 186.