

“Some years afterwards Father Matteo saw similar instruments at Peking, or rather the same instruments, so exactly alike were they, insomuch that they had unquestionably been made by the same artist. And indeed it is known that they were cast at the period when the Tartars were dominant in China; and we may without rashness conjecture that they were the work of some foreigner acquainted with our studies. But it is time to have done with these instruments.” (*Lib. IV. cap. 5.*)

In this interesting description it will be seen that the Armillary Sphere [B] agrees entirely with that represented in illustration facing p. 450. And the second of his photographs in my possession, but not, I believe, yet published, answers *perfectly* to the curious description of the 4th instrument [D]. Indeed, I should scarcely have been able to translate that description intelligibly but for the aid of the photograph before me. It shows the three *astrolabes* or graduated circles with travelling indexes arranged exactly as described, and pivoted on a complex frame of bronze; (1) circle in the plane of the equator for measuring right ascensions; (2) circle with its axis vertical to the plane of the last, for measuring declinations; (3) circle with vertical axis, for zenith distances? The Gnomon [A] was seen by Mr. Wylie in one of the lower rooms of the Observatory (see below). Of the Globe we do not now hear; and that mentioned by Lecomte among the ancient instruments was inferior to what Ricci describes at Peking.

I now transcribe Mr. Wylie's translation of an extract from a Popular Description of Peking:

“The observatory is on an elevated stage on the city wall, in the south-east corner of the (Tartar) city, and was built in the year (A.D. 1279). In the centre was the *Tze-wei** Palace, inside of which were a pair of scrolls, and a cross inscription, by the imperial hand. Formerly it contained the *Hwan-t'ien-e* [B] ‘Armillary Sphere’; the *Keen-e* [D?] ‘Transit Instrument’ (?); the *Tung-kew* [A] ‘Brass Globe’; and the *Leang-t'ien-ch'ih*, ‘Sector,’ which were constructed by Ko Show-king under the Yuen Dynasty.

“In (1673) the old instruments having stood the wear of long past years, had become almost useless, and six new instruments were made by imperial authority. These were the *T'ien-t'ee* ‘Celestial Globe’ (6); *Chih-taoue* ‘Equinoctial Sphere’ (2); *Hwang-taoue* ‘Zodiacal Sphere’ (1); *Te-p'ing kinge* ‘Azimuthal Horizon’ (3); *Te-p'ing weie* ‘Altitude Instrument’ (4); *Ke-yene* ‘Sextant’ (5). These were placed in the Observatory, and to the present day are respectfully used. The old instruments were at the same time removed, and deposited at the foot of the stage. In (1715) the *Te-ping King-wei-e* ‘Azimuth and Altitude Instrument’ was made;† and in 1744 the *Ke-hang-foo-chin-e* (literally ‘Sphere and Tube instrument for sweeping the heavens’). All these were placed on the Observatory stage.

“There is a wind-index-pole called the ‘Fair-wind-pennon,’ on which is an iron disk marked out in 28 points, corresponding in number to the 28 constellations.”‡

—Mr. Wylie justly observes that the evidence is all in accord, and it leaves, I think, no reasonable room for doubt that the instruments now in the Observatory

But we have noted in regard to this (Polo's *Pianfu*, vol. ii. p. 17) that a college for the education of Mongol youth was instituted here, by the great minister Yeliu Chutsai, whose devotion to astronomy Mr. Wylie has noticed above. In fact, two colleges were established by him, one at Yenking, *i.e.* Peking, the other at P'ing-yang; and astronomy is specified as one of the studies to be pursued at these. (See *D'Ohsson*, II. 71-72, quoting *De Mailla*.) It seems highly probable that the two sets of instruments were originally intended for these two institutions, and that one set was carried to Nanking, when the Ming set their capital there in 1368.

* The 28 *sieu* or stellar spaces, above spoken of, do not extend to the Pole; they are indeed very unequal in extent on the meridian as well as on the equator. And the area in the northern sky not embraced in them is divided into three large spaces called *Yuen* or enclosures, of which the field of circumpolar stars (or circle of perpetual apparition) forms one which is called *Tze-Wei*. (*Williams*.)

The southern circumpolar stars form a fourth space, beyond the 28 *sieu*.—*Ibid.*

† “This was obviously made in France. There is nothing Chinese about it, either in construction or ornament. It is very different from all the others.” (*Note by Mr. Wylie*.)

‡ “There follows a minute description of the brass clepsydra, and the brass gnomon, which it is unnecessary to translate. I have seen both these instruments, in two of the lower rooms.”—*Id.*