bles. In the 13th century, Nasir Eddin published Tables of the Stars, dedicated to Ilchan, a Tartar prince, and hence termed the *Ilchanic* Tables. Two centuries later, Ulugh Beigh, the grandson of Tamerlane, and prince of the countries beyond the Oxus, was a zealous practical astronomer; and his Tables, which were published in Europe by Hyde in 1665, are referred to as important authority by modern astronomers. The series of Astronomical Tables which we have thus noticed, in which, however, many are omitted, leads us to the *Alphonsine* Tables, which were put forth in 1488, and in succeeding years, under the auspices of Alphonso, king of Castile; and thus brings us to the verge of modern astronomy.

For all these Tables, the Ptolemaic hypotheses were employed; and, for the most part, without alteration. The Arabs sometimes felt the extreme complexity and difficulty of the doctrine which they studied; but their minds did not possess that kind of invention and energy by which the philosophers of Europe, at a later period, won their way into a simpler and better system.

Thus Alpetragius states, in the outset of his "Planetarum Theorica," that he was at first astonished and stupefied with this complexity, but that afterwards "God was pleased to open to him the occult secret in the theory of his orbs, and to make known to him the truth of their essence, and the rectitude of the quality of their motion." His system consists, according to Delambre,[43] in attributing to the planets a spiral motion from east to west, an idea already refuted by Ptolemy. Geber of Seville criticises Ptolemy very severely,[44] but without introducing any essential alteration into his system. The Arabian observations are in many cases valuable; both because they were made with more skill and with better instruments than those of the Greeks; and also because they illustrate the permanence or variability of important elements, such as the obliquity of the ecliptic and the inclination of the moon's orbit.

.. We must, however, notice one or two peculiar Arabian doctrines. The most important of these is the discovery of the Motion of the Sun's Apogee by Albategnius. He found the Apogee to be in longitude 82 degrees; Ptolemy had placed it in longitude 65 degrees. The difference of 17 degrees was beyond all limit of probable error of calculation, though the process is not capable of great precision; and the inference of the Motion of the Apogee was so obvious, that we cannot

43 Delambre, *M. A.* p. 7.   44 *M. A.* p. 180, &c.