

perhaps the diminutive of *rutilus*, "golden red," or "glittering," an adjective applied to Arcturus; but this term is by no means appropriate for  $\beta$ . The *Arabo-Latin Almagest* of 1515 reads *rutillico*, adding *propinque cillitico*, this last unintelligible unless explained by the Basel edition of 1551 as *pene axillam seu scapulam*; so that we may perhaps consider the alternative title to be from the barbarism used to show the star's position on the shoulder of the figure. Indeed, Bayer said of it, *Rutilicum barbari dicunt*. Ideler, however, asserted his belief that it was from *rutellum*, the diminutive of *rutrum*, a sharp instrument of husbandry or war, in Roman times, that Hercules in some early representations, especially on the Arabic globes, is carrying. The *Century Cyclopaedia* gives **Rutilico** as a rarely used name.

$\beta$  was the Chinese **Ho Chung**, In the River, while the 4th-magnitude  $\gamma$  was **Ho Keen**, Between the River.

Its spectrum is like that of the sun, and the star is approaching our system at the rate of about 22 miles a second.

$\zeta$ , 3.1 and 6.5, is a remarkable binary with a period of only  $34\frac{1}{2}$  years, the distance between the stars ranging from  $0''.6$  to  $1''.7$ . According to Belopolsky, it is approaching us at the rate of nearly forty-four miles a second,—the greatest velocity of approach or recession so far ascertained.

$\theta$ , 4.1, with adjacent small stars, was **Tien Ke**, Heaven's Record.

$\chi$ , Double, 4.8 and 7, light yellow and pale garnet.

**Marfak**, **Mirfak**, **Marsia**, **Marfic**, and **Marsic** are all found for this star,—as for  $\lambda$  Ophiuchi; but it properly is **Marfik**, from **Al Marfik**, the Elbow; the titles written with the letter *s* probably coming from early confusion with the letter *f*. The Dorians similarly called it *Kύβιτον*, the Elbow.

In China, with two other stars near by, it was **Tsung Tsing**, an Ancestral Star.

Ptolemy and the Arabian astronomers located it on the right elbow, but Smyth on the left; Heis places it in the right hand, as did Bayer; while Burritt has Marsic in the proper place, but letters it  $\chi$ .

$\lambda$ , 4.8, deep yellow.

**Masym**, **Maasym**, **Maasim**, **Mazym**, **Mazim**, and **Masini** are from the Arabic **Misam**, the Wrist, although Ptolemy as well as most of the stellar map-makers located  $\sigma$  on that part of the figure; but Bayer, probably by an oversight, gave the title to  $\lambda$ , not far from the left shoulder, and hence the mistake which still survives. Burritt applied Masym to this lettered

star at the elbow, and duplicated it at the one on the hand, omitting the letter; but this title had appeared in the *Latin Almagest* of 1515 and the *Alfonsine Tables* of 1521, not as a proper name, but simply indicative of the position of the star  $\alpha$ , which, though now unnamed, should bear that title instead of  $\lambda$ . The same word is used in those works to describe the positions of  $\theta$  and  $\eta$  Aurigae in the similar location, but is there written **Mahsim**. The *Century Cyclopedia*, by a misprint for  $\lambda$ , uses Masym for  $\chi$  Herculis in the left hand of the giant.

$\lambda$  also was **Chaou**, one of the early feudal states of China.

The Sun flies forward to his brother Sun;  
The dark Earth follows wheel'd in her ellipse.

Tennyson's *The Golden Year*.

Although Johann Tobias Mayer of Göttingen seems to have been the pioneer, in 1760, in the efforts to ascertain the direction of the sun's motion among the stars, yet Sir William Herschel was the first successful investigator as to this, about 1806, and he settled upon the vicinity of  $\lambda$  as the objective point of our solar system, the **Apex of the Sun's Way**; and his determination was, in a great measure, confirmed by later astronomers.

Some recent observations, however, change this: either to  $\nu$  of this constellation, to the group of small stars four or five degrees north of west from  $\nu$ , to the immediate vicinity of Wega in the Lyre, or to the neighborhood of Arided, near the tail of the Swan,—yet all in the same general quarter of the heavens. Thirty-five separate determinations of this Apex, made from 1783 to 1892, locate it variously between  $227^{\circ} 18'$  and  $289^{\circ}$  of right ascension, and between  $14^{\circ} 26'$  and  $53^{\circ} 42'$  in north declination; the weight of authority being in favor of some point<sup>1</sup> in Hercules near the boundary between it and Lyra. The *velocity* of the sun's motion is found by Potsdam computers of spectroscopic observations to be from  $7\frac{1}{2}$  to  $11\frac{1}{4}$  miles a second; this is more reliable than the value deduced by other methods.

The **Sun's Quit**, the point in the heavens opposite to the Apex, according to Todd, lies about midway between the stars Sirius and Canopus.

$\mu^1$ , a 4th-magnitude triple, half-way between Wega of the Lyre and  $\alpha$  Hercules, was the Chinese **Kew Ho**, the Nine Rivers.

The distance between the large star and its 9th-magnitude companion is

<sup>1</sup> Professor Young thinks the Apex in about  $267^{\circ}$  of right ascension and  $31^{\circ}$  of declination, but that the data are not yet sufficient to give a very close determination of either the sun's speed or direction, since the problem is embarrassed by the probability of systematic motions among the stars themselves. Results so far obtained are to be regarded only as rather rough approximations.