

swi ši ki 荆楚歲時記, written in the sixth century, the needles used by women on the festival of the seventh day of the seventh month¹ were made of gold, silver, or *t'ou-ši*.² Under the T'ang, *t'ou-ši* was an officially adopted alloy, being employed, for instance, for the girdles of the officials of the eighth and ninth grades.³ It was sent as tribute from Iranian regions; for instance, in A.D. 718, from Māimargh (north-west of Samarkand).⁴

The *Ko ku yao lun* states, "*T'ou-ši* is the essence of natural copper. At present zinc-bloom is smelted to make counterfeit *t'ou*. According to Ts'ui Fan 崔昉, one catty of copper and one catty of zinc-bloom will yield *t'ou-ši*. The genuine *t'ou* is produced in Persia. It looks like gold, and, when fired, assumes a red color which will never turn black." This is clearly a description of brass which is mainly composed of copper and zinc. Li Ši-čen⁵ identifies *t'ou-ši* with the modern term *hwan t'un* ("yellow copper"); that is, brass. According to T'an Ts'ui,⁶ *t'ou-ši* is found in the Č'ō-li 車里 *t'u-se* of Yün-nan.

The Chinese accounts of *t'ou* or *t'ou-ši* agree with what the Persians and Arabs report about *tūtiya*. It was in Persia that zinc was first mined, and utilized for a new copper alloy, brass. Ibn al-Faqīh, who wrote about A.D. 902, has left a description of the zinc-mines situated in a mountain Dunbāwand in the province of Kirmān. The ore was (and still is) a government monopoly.⁷ Jawbarī, who wrote about 1225, has described the process of smelting.⁸ The earliest mention of the term occurs in the Arabic stone-book of Pseudo-Aristotle (ninth century),⁹ where the stone *tūtiyā* is explained as belonging to the stones found in mines, with numerous varieties which are white, yellow, and green;

ši is only said to resemble gold, and the notion that brass resembles gold turns up in all Oriental writers. See also BEAL, *Records of the Western World*, Vol. I, p. 51; and CHAVANNES (*T'oung Pao*, 1904, p. 34), who likewise accepts the only admissible interpretation, "brass."

¹ Cf. W. GRUBE, *Zur Pekinger Volkskunde*, p. 76; J. PRZYLUKI, *T'oung Pao*, 1914, p. 215.

² *P'ei wen yün fu*, Ch. 100 A, p. 25.

³ Jade, p. 286; cf. also *Ta T'an leu tien*, Ch. 8, p. 22.

⁴ CHAVANNES, *T'oung Pao*, 1904, p. 34.

⁵ *Pen ts'ao kañ mu*, Ch. 8, pp. 3 and 4. Cf. also GEERTS, *Produits*, p. 575.

⁶ *Tien hai yü heñ či*, Ch. 2, p. 3 b.

⁷ P. SCHWARZ, *Iran im Mittelalter*, p. 252.

⁸ G. FERRAND, *Textes relatifs à l'Extrême-Orient*, p. 610 (cf. also pp. 225, 228; and LECLERC, *Traité des simples*, Vol. I, p. 322).

⁹ J. RUSKA, *Steinbuch des Aristoteles*, p. 175. J. BECKMANN (*Beyträge zur Geschichte der Erfindungen*, Vol. III, p. 388) states that the word first occurs in Avicenna of the eleventh century.