

addition, it was found possible to represent the measurements of the platforms in exact numbers of Sumerian cubits.

In view of this last observation, as well as the existence of a single common relationship between the platform areas of at least one Mesopotamian *Ziggurat* and those of odd-numbered Magic Squares, it would appear reasonable to infer that such Magic Squares may have been designed as a means of secretly recording the platform plan of this particular variety of one of the most ancient forms of Temple in the world.

A further important inference—from the point of view of the growth of “scientific” knowledge in Neo-Babylonia—may also be drawn from the name assigned to the Borsippa *Ziggurat*, viz. :— *E-ur-imin-an-ki* (Temple of the Seven Rulers of the Heavens and the Earth). It is difficult not to conclude that the name indicates an astrological association between the seven platforms of the building and the then recognized seven wandering stars—the Sun, the Moon, and the five planets, Mercury, Venus, Mars, Jupiter, and Saturn; and, if this is so, the increase made by Nebuchadnezzar in the number of platforms, as well as the numerical relationship that has been demonstrated between the areas of the platforms, points to a greatly-increased local interest in mathematical astrology. It can now hardly be doubted that Rawlinson’s description¹ of the Borsippa *Ziggurat* as a “quadrangular representation of the old Chaldean planisphere” correctly sums up Nebuchadnezzar’s objective when ordering the original more ancient tower to be remodelled.

¹ Journ. Royal As. Soc., XVIII (1861), p. 18.

John Mesue and his Work

BY D. M. DUNLOP, M.A.

Symphorianus Campegius, in an edition of the Latin corpus of Mesue Junior (Lyons, 1540), gives the floruit of John Mesue as *circa* 1154. John Mesue actually flourished *circa* 800. The main facts of his life are well known from Arabic sources, notably Ibn abi Usaibi’ah (13th century), who makes much use of Yūsuf b. Ibrahim, a contemporary of John Mesue. The date *circa* 1154 does not come from the source indicated for Mesue Junior, the *De medicis et philosophis Arabibus* of Leo Africanus (16th century), which was not published till 1664. It was not invented by Symphorianus, but should come from Latin MSS. of the corpus. There is no Arabic account of Mesue Junior, nor are any Arabic MSS. known which contain the original of the corpus.

That Arabic sources were used for the corpus is certain, from the presence in it of such barbarous Latin words as *robub*, *loch/lohoc* (whence *looch*, *lok*, still in pharmaceutical use in French), *zubendech/zeudech*, cf. *zeudech Mesuae* in Vesalius (Hyrtl). In view of the fact that John Mesue is (incorrectly) connected with Damascus by the Latins, Constantine Africanus (11th century), who appears to have invented the figure of Joannes Damascenus, author of medical texts (Steinschneider), is indicated as author of the Latin corpus. On the other hand, the latest authority in the corpus is Avenzoar (d. 1162), cited *De Simplicibus* c. xii (*De Absinthio*). We seem to be thrown back on the view that the corpus of Mesue Junior is the work of a Latin doctor, unspecified, using Arabic sources.

John Mesue left a number of works in Arabic, of which 44 are listed by Ibn abi Usaibi’ah. Some of these may be the basis of the Latin corpus. Four have been edited by Paul Sbath: the *Book of the Times* (1933), the *Medical Axioms* (1934), *Simple Aromatic Substances* (1936), and the *Book on Barley-water* (1939). An important contribution on the ophthalmology of John Mesue

was made by Prüfer and Meyerhof (*Der Islam*, 1916). The Medical Axioms exist also in at least two mediaeval Latin versions, one probably by Constantine Africanus (11th century), the other probably by Gerard of Cremona (12th century).

The Medical Axioms deal with dietetics, pathology, diagnosis and therapeutics, excluding anatomy, physiology and surgery. (We know, however, that Mesue wrote on anatomy from actual dissection.) The basis is Galenic ("humoral" pathology, etc.). There is a tendency to an intellectualist approach, but Mesue's practice was based on experience and common sense as well as theory. One finds hardly a trace of superstitious or magical remedies, though there are occasional errors of fact. No reference is made to drastic remedies like the "ustio Arabica" of European doctors, as late as the 17th century (Hyrtl). On the whole this work evidences a sober intelligence, and here and in statements by Hunain b. Ishāq in his Letter on the Translations of Galen we see a different Mesue from the sardonic figure of anecdotes in Ibn abī Uṣaibī'ah. As the earliest Arabic medical writer known to them, he is sometimes called the "Evangelist of medicine" by the Latins. The date of the Axioms is *circa* 830.

The Curve of Cultural Interchange Between China and the West

By D. JUSTIN SCHOVE, B.Sc.

The historical geography of trade routes is important in the early history of science. Cultural communications between China and the West took place especially along the "Silk Road" which led by the Jade Gate and the Tarim Basin to North Persia and the Fertile Crescent. A graph of travel along this route compiled from miscellaneous sources had been published recently¹.

In the 6th century B.C. diffusion of ideas was taking place along this route especially *from West to East*. Thus, Babylonian star observations had reached China at least by c. 525 B.C.; iron reached China by the same route in the same century and is specifically mentioned by 513 B.C. Shortly afterwards other Western ideas such as the ox-drawn plough and coffins as in Egypt are adopted in China. Mounted archers reached China before 300 B.C. and cavalry² soon replaced chariotry in warfare all over Eurasia; in China c. 200 B.C., but in Britain not until the defeat of Boadicea. Pythagorean musical ratios and the statement of the "theorem" ascribed to him reach China in the late 3rd century B.C. Meanwhile the use of gold and the ideas of alchemy based on Babylonian chemistry, as Dubs has shown,³ had developed in China about the 4th century B.C.

The known development of the Silk Road took place from 200 B.C. to A.D. 300. Curves (shown) of Western and Chinese science indicated an over-all tendency to decline at Alexandria and to increase in China, where in the 2nd century A.D. the inventions of paper and a seismograph were developed.

About A.D. 300 unrest on the steppes seriously interfered with the Silk Road and with science both in the West and the East. China and the West

¹ D. Justin Schove. *Chinese Raininess Through the Centuries. Meteorological Magazine*, London, 78, 1948, p. 14.

² Professor Dubs has pointed out that cavalry in the modern sense—horsemen who can use a sword or lance—arose only after the invention of the stirrup. Cf. K. A. Wittfogel and C. S. Feng, *History of Chinese Society: Liao* pp. 505-507.

³ Professor H. H. Dubs. *The Beginnings of Alchemy. Isis* 38, 1947, 62-86.