

Eristalis tenax
in Chinese and Japanese literature,
by *C. R. Osten Sacken.*

Since the publication of my Essay „On the Oxen-born bees etc.“ (Heidelberg, 1894), my distinguished Japanese correspondent in London, Mr. Kumagusu Minakata, has communicated to me many new, and very interesting, facts discovered by him in the Chinese and Japanese literatures concerning the fly *Eristalis tenax* in connection with the honey-bee. I deem it useful to give a general account of the results hitherto obtained by him in his researches on that subject.

For centuries the belief has been prevalent in China, and may persist even now, that bees use human urine in the preparation of honey, and Mr. K. M. very naturally attributes this error to the usual confusion between the bee and *Eristalis*. The people observed specimens of *Eristalis* crawling about out-houses etc., and, taking them for bees, arrived at that erroneous conclusion. The earliest mention of this superstition in Chinese literature which Mr. K. M. found quoted, occurs in an ancient author Téou Hung-King (452—536 A. D.) who was a Taoist recluse, and author of the work: „Other Records from the Illustrious Physicians“ (in Chinese: Ming-i Pieh-luh, in seven volumes). Taoists believe in his resurrection; he is probably the oldest historically authentic naturalist in China, and is said to have doubled the number of the 365 medical drugs mentioned in the book of Shin Hung, the mythological emperor, whom tradition considers as the founder of Chinese medicine. The passage from Téou Hung-King's work, as reproduced in Tokushin Kaibara's „Materia Medica of Japan“, 1708, Book XIV, p. 15, runs as follows:

„Generally speaking bees are all in need of human urine in honey-making. All flowers are prepared by them with human urine to ripen honey; the process being quite like that of „I“ — making with malt by men.“¹⁾ „Thus, if my view be correct,“ adds Mr. K. M.

¹⁾ „I“ is a sort of jelly-like sweetmeat, made of rice, with an addition of malt. It is called in Japan Ame, and I hear is now imported from Japan to Germany, where the physicians use it for feeding invalids. (K. M.)

„in attributing the origin of this story to the confusion of the honey-bee with *Eristalis*, the latter insect must have already been abundant in China in the 5th and 6th centuries A. D.“

„Later, in the 16th century, another writer, Li Schi-Chin, wrote in the same sense: „Honey-bees, gathering innocuous flowers, produce honey by preparation with urine. Indeed it is an instance of the offensive and rotten producing the sacred and mysterious.“ This Li Schi-Chin is perhaps the greatest naturalist China has ever seen. He published 1578 a „System of Materia Medica“ (Pan Tsáu Káng Muh) in 52 volumes, describing 1892 articles, which was really the „Systema Naturae“ of the Far East. All the so-called naturalists in China, Corea, and (till lately) in Japan, were nothing more than commentators of his work.“

„Still another author, Li Chung Tze (16th century?), in his „Explanations of medicinal properties“ (in Chinese: Yóh-Sing-Kíái) repeats the same story about bees and honey. The majority of druggists in China entertained that opinion formerly, and perhaps may do so even now.“

A passage quoted by Mr. K. M. in „Nature“, May 10 1894, (and after him by me in the „Oxen-born bees“ etc. p. 19) betrays the same confusion between *Eristalis* and the honey-bee: „Sie Tsái-Kang, a Chinese writer of the XVIIth century, in his „Miscellanies of the Five Phenomena“ (Wu Tsáh Tsú, 16 volumes, about 1610 ?; Japanese edition 1661, Book IX, p. 43) says: „In Chang Sha of Tsú I saw honey-bees without stings, so that when trifled with upon the palms they were quite harmless; having no difference from flies that was strange!“

About the latter author, Sie Tsái-Kang, Mr. K. M. adds that he was „a Chinese miscellany-writer of astonishing knowledge. He was a native of Min, now a portion of the Province of Fuh-Kiên; his „Wu-Tsáh-Tsú,“ literally: „Five mixed tables,“ or „the Miscellanies of the Five Phenomena,“ comprising books I—II, devoted to Heaven, III—IV to the Earth, V—VIII to Men, IX—XII to Things or Beings, and the last four books to Actions,¹⁾ is widely read in Japan and China for its concise statements and expositions of any facts and

¹⁾ The „Five Phenomena“ are: Heaven, Earth, Man, Things (or Beings), and Action. Under „Man“ all the characters, both bodily and mental, of mankind are treated. Under „Things (or Beings)“ are comprised animals, plants and artificial productions (such as viands, beverages, implements, furniture etc.). Under „Action“ are understood all the manners and conduct of individuals, and the general events, whether religious or political. (K. M.)

acts, brought down from immemorial times. In Book XV we have his allusion to the Japanese intention to invade China, the plan having partly been achieved by their invasion of Corea between 1592—98. Also in Book IV he speaks about the conquest of Loo Choo by the Japanese, the event happening in 1609. In Book XV, he says that the dynasty of Ming was then reigning over 240 years. This dynasty was founded in 1368, so that, 240 years after, would bring us, according to the Chinese method of computation, to 1607. But as he says, „over 240 years,” it will be safe to put the date of the publication of his book at about 1610 A. D., and not much after it, because no mention is made in his work of the founding of the present Manchurian dynasty in 1617.”

In his researches Mr. K. M. has not yet come across any passage indicating a belief in the origin of bees from dead oxen, and he seems to doubt of its having existed in China, although, owing to the vastness of Chinese literature, it is impossible for him as yet to form any definite conclusion. Cattle-breeding in China must have begun very early; the ideographic sign for cattle must have been introduced in very remote times, as this sign enters as a component in many other signs, for instance, in those for plough, herdsman, rhinoceros etc., and is also used to signify: „the Governor.” The mythological Emperor Shin Hung, to whom the nation attribute the founding of agricultural and commercial pursuits, as well as the first investigation of the medical virtues of herbs, is described as a person whose head was like that of a bull. In their old institutions, the nation favoured emperors and dukes by granting them the right of killing cattle, which right other nobles could only make use of on the occasion of public ceremonies, religious and political. In such ceremonies cattle, including sheep and swine, formed the „Three Sacrifices,” added to which dogs, horses and fowl made up the „six domestic animals”.

There is a singular resemblance between the Chinese literature and that of the Middle Ages in Europe, both in the method of mere compiling of facts, and in the blind belief in ancient authors. Mr. K. M., in this instance, quotes very happily the saying of the old Chinese sage Mencius: „To believe in all the books is worse than being without a book!”

In regard to the question about the composition of honey and the confusion of the honey-bee with *Eristalis tenax*, the Japanese nation was far in advance of its neighbours. The above quoted Tokushin Kaibara (1630—1714), a moralist and naturalist, author of the „Materia Medica” of Japan (Yámato Honzô, Kyôto, 1708, 16 vol.

book XIV, p. 15), refutes the assertion of Chinese authors about the peculiar habit of bees in preparing honey. Kaibara was one of the pioneers of natural history in Japan after the revival of learning. The above-quoted work was completed when he was 79 years old. Another Japanese work, by Ryôan Terashima: „The illustrated Cyclopedia of Three Systems of Japan and China“ (Wakan Sansai Dzue), probably the greatest Cyclopedia Japan has ever produced (published 1713 in 105 volumes), contains (Book 53, p. 540 of the new edition 1884) not only a description of *Eristalis tenax*, but a very distinct description and figure of its larva (on p. 520). Mr. K. M. renders these two passages as follows:

„A kind of fly, shaped like a bee, but bigger, round and fat, coloured yellow and black; the worm, feeding on ordure, after moulting, changes into this insect. They are abundant in the season when turnips blossom; the nectar of herbaceous flowers they suck; they do no harm either by sting or by bite. They hum with their wings, whose sound is like saying „Bun Bun“ (which is the Japanese name of the fly).“

„The larva, vulgarly called in Japan Kuzo-Mushi (that is, dung-worm), grows among ordure in summer; at first it resembles a pupa (of a silkworm?), and is white in colouring; when grown old it is gray and articulated, having a long tail (comp. the figure); it moves



without regularity;¹⁾ its form resembles the silique of a radish;

¹⁾ The suggestion that „a pupa“ means here that of a silkworm, belongs to Mr. K. M. „It moves without regularity“, according to him, is expressed by a sign which at the same time means foolishly, without apparent aim.

The description in which the young larva, in its purity and whiteness, is quaintly compared to the pupa of a silkworm, and contrasted with its dirty condition during its later development, puts me forcibly in mind the expressions of Réaumur, in describing the same larva in the same conditions, just a quarter of a century after Terashima: „son corps si propre, si blanc et si transparent lorsqu'il était dans l'eau devient bientôt opaque, sale et grisâtre“ (Réaum. Mém. IV, p. 454, 1738).

developing wings it turns into a big fly, resembling the bot-fly, and then it is commonly called „Bun-bun“. There is a magic poem for keeping away this fly. When the bill with this poem is posted about the entrance of outhouses, on the same day the flies disappear; observe that the bill should be posted upside down. The poem says: „An auspicious day this 8th of the fourth month shall be in the present year: on this day the dung-worms with long tails will be condemned.“ The existence of such folk-lore as early as 1713, shows that the larva was known to occur in Japan a long time before the Cyclopædia's compilation. And it also proves that, in and about 1713 at the latest, the Japanese knew quite well that the long-tailed dungworm was the larva of the „Bunbun“. It is rather strange to find that while Terashima gives a comparatively full account of *E. tenax* in his Cyclopædia, Kaibara, whose „Materia Medica“ was published during Terashima's life-time and only five years before the publication of his Cyclopædia, does not mention *E. tenax* in connection with his criticism of Chinese ideas about the production of honey. That he is acquainted with *E. tenax* appears in his book XIV, p. 12, in the article „Abu“ (Bot-fly), where he says: „a variety of bot-fly abundant about grass and trees is shaped like a fly, but bigger, and sucks flowers, but does no harm to men, cattle and horses; sometimes it stings men (?), but without giving pain.“ This certainly must mean *E. tenax*, as even to-day, in some provinces, people do not call it „Bun bun“, but „Hana-Abu“, which means „flower bot-fly“. It is evident therefore that although Kaibara refuted the Chinese opinion about the preparation of honey, he did not know that the origin of this belief lay in the confusion of his „flower bot-fly“ with a honey-bee! Terashima, on the contrary, was fully aware of the difference between the bot-fly and *Eristalis tenax*.

„In certain respects, in the manner of flying and in the sound of the buzzing, the drone-fly „bun-bun“ may resemble a bot-fly (*Gastrophilus*) more than a bee, but not in the general appearance. Nevertheless, in Japan, even a rustic school-boy will distinguish these two insects very well.“

So far Mr. K. Minakata! The confusion between 1^o the bee and 2^o the drone-fly on the one side, and 3^o the bot-fly on the other, in the eastern world, naturally brings to mind the confusion which I hope to have unravelled between 1^o the honey-bee, 2^o the oxen-born bee (*Eristalis*), and 3^o the horse-born hornet (bot-fly, *Gastrophilus*), among the Greeks and Romans (Comp. On the Oxen-born bees etc. Suppl. V, p. 53).

Two more communications from Mr. K. M. about entomological

matters in Chinese and Japanese literature may also be introduced here, although they have no direct reference to *Eristalis tenax*. Taking notice of two short articles in „Nature“ (June 1 and 22 1894) about „clouds of flies“, he remarks that the same phenomenon is recorded to have occurred in Japan in May 626 A. D. and in 660 A. D. I have already quoted (Oxen-born bees, etc. p. 37, foot-note) the statement of Mr. K. M. that, besides the honey-bee and the silk-worm, other insects (the ant, the cicada, the glow-worm and the cricket) have been very early recorded in the writings of the Chinese; while one of the most anciently referred to in the history of Japan is probably the Dragon-fly, after which the first Emperor Jimmu named his empire „the region of the Dragon-fly“, as early as 630 B. C.

I feel impelled to give a public expression of my gratitude to Mr. Kumagnsu Minakata for the great pains he has taken with the research which has procured the materials for the present paper.

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Zeitschrift/Journal: [Berliner Entomologische Zeitschrift](#)

Jahr/Year: 1894

Band/Volume: [40](#)

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