THE SPIRITUAL FOUNDATIONS OF BEEKEEPING by Iwer Thor Lorenzen. Translated from German by Paul King

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This booklet, inspired partly by Rudolf Steiner's lectures on bees, is one of several published by beekeepers who have a background in anthroposophy. It contains an I I-page foreword Gareth John of the Natural Beekeeping Trust and a short afterword by Michael Thiele. By contrasting the holistic scientific approach of Goethe with the reductionist approach of Newton, John shows how a totally different mind set is required for keeping bees in accordance with their nature and thus healthy in the long term. Lorenzen's preface extends this: a real understanding of the bee requires the moral development of the beekeeper with the 'higher Self overcoming the lower self in thinking, feeling and willing' and a 'conceptual foundation born out of the spirit of anthroposophy'. Here is an author, as early as 1938, calling for an apicentric ethic to replace the utilitarian one now prevailing.

Lorenzen introduces three main themes: the bee-flower relationship, colony cohesion and the possibilities for the beekeeper resulting therefrom. Given the universally recognised coevolution of bees and flowers their interaction is justifiably given first place in his chapter on plant-bee nutrition, physiology and biochemistry including some alchemy (sulphur process) and reference to the animal organism as a threefold entity of nerve-sense, metabolic-limb and rhythmic systems. The relatively weak digestion of bees renders them dependent on pollen and nectar for easy digestibility. In honey, a fermented product, bees finish a process taken only to a certain point in the plant.

The chapter on the treatment of bee diseases recommends chamomile and yarrow for dysentery. Lorenzen rightly cautions against use of sugar unless it is brought nearer the flower process with added herbal teas and even honey. However, sugar lacks so many of the health promoting honey micronutrients, some only recently identified, that it would be difficult to render it a honey substitute. The book has many such indications that would justify future research, e.g. whether the bee's haemolymph is excessively acidified by feeding sugar and what are the optimal doses of the suggested herbal remedies. This chapter ends with the conjecture that defective protein metabolism in queens causes foulbrood. The pathogen is only a necessary but not sufficient cause. Lorenzen suggests requeening as a cure. This would not be permitted in the UK.

I found the chapter on the 'origin of the honeybee' the most intriguing. Based on fossil, morphological, behavioural



and now molecular evidence, the current view of bee origins is that it is a wasp which, at some time in the Cretaceous, has switched for feeding its brood from preying on other small arthropods to pollenivory, its closest sisters being the Crabronidae wasps. 1 Lorenzen is not satisfied with this neo-Darwinist explanation that involves a jump from carnivory

to vegetarianism, preferring Steiner's indication that, quoting Lorenzen, 'the honey bee evolved from the fig wasp', i.e. from the Chalcidoidea. However, Chalcidoidea are phylogenetically far more remote from bees than Crabronidae.1 Incidentally, Steiner used the term 'bee' in this indication, i.e. presumably an ancestor of the approx. 20,000 current bee species, not 'honey bee', which we commonly regard as comprising only the genus Apis. The rest of the chapter has nine pages on fig history, biology and cultivation plus a further indication from Steiner on when, where, how and by whom the wasp-bee transformation was made.

In the bee colony chapter, the largest, drawing on indications on bees in several of Steiner's early lectures (1905-1908). Lorenzen explores undoubtedly the most fascinating and marvellous feature among bees namely eusociality, the highest form of sociality whose origin in the corbiculate bees, including Apis, is still being researched. The life history of a honey bee colony, its cohesion, warmth and harmony, is placed in the context of the four 'bodies' of an organism: physical, etheric, astral and I, the latter comprising the bee's sublime group soul which expresses itself as an individuality even at colony level. Indeed, apiologists now recognise what they call 'colony personality'. In a normal colony with an healthy queen, the organ of colony cohesion, the sexually innocent workers channel their energies into nourishing the colony and supporting the queen's prolific brood production. Here speaks Lorenzen: 'Selfless forces of love expressed as soul warmth, and high wisdom manifesting powerfully in activity, define the group souls of bee colonies in which the soul forces are under the full rulership of self-consciousness.'

A highlight of the chapter on appropriate beekeeping techniques is Lorenzen's caution against modern artificial queen breeding. A recent paper from China confirms that queens made from the bee's own emergency queen rearing capability are inferior and may be contributing to the global increase in honeybee colony failures. But we would not support Lorenzen's condoning brood comb transfer between colonies as the horizontal pathogen transmission it may entail favours pathogen virulence.

One final comment: Lorenzen presents Darwinism as erroneous, but in recent papers apiologists have urged beekeepers to be more Darwinian in their beekeeping, i.e. letting natural selection weed out colonies which without chemical treatments cannot resist the Varroa mite that is causing colony losses on a massive scale worldwide. One such paper, well worth considering by all beekeepers, is hosted on the website of the Natural Beekeeping Trust.2

^{1.} Branstetter et al. (2017) Phylogenomic Insights into the Evolution of Stinging Wasps and the Origins of Ants and Bees. Current Biology 27, 1019–1025. 2. http://www.naturalbeekeepingtrust.org/darwinian-beekeeping.