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TITLE: Dead bees under lime trees.

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Any readers who wish to participate in the trials should send their names to the address below; they will then receive a sample of the product and a short questionnaire which they should complete and return. The product, called Wasp-eze, contains a cooling agent, a local anaesthetic, and an antihistamine. Write to: Potter & Clarke Ltd, 44a The Green, Warlingham, Surrey CR3 9YS, England.

OBITUARY NOTICES

Nora Baldensperger

Mlle Baldensperger, who died on 11 May after a short illness, soon after her ninetieth birthday, will be well remembered by beekeepers who attended the International Congresses in the 1950s. Nora Baldensperger was at that time the only official interpreter for the three languages used, English, French and German, and she brought a special warmth and friendliness with her to all the meetings. She was able to travel to the Congresses from her home in Nice until late 1960s, always much loved by the circle of friends she met there.

Nora’s father, ‘Père’ P. J. Baldensperger, was one of the great international figures in beeswax keeping between the Wars; there is an account of his activities by Professor E. F. Phillips in Bee World 1926/27, pages 97-98. Nora and her father worked together for many years, in beeswax keeping and in other things. During the Second World War they were banished by the Vichy authorities from the school where she taught in Antibes, to the Ariège; they returned after the War. To the end of her life, Nora was enthusiastically concerned with developments in beeswax keeping throughout the world, and especially with the people concerned; in a letter to the Editor shortly before her death, she said “I read with interest what happens in Bee World, and I shall be with you in thought when you go to Australia”.

Nora Baldensperger was elected an Honorary Member of the Bee Research Association in 1956.

A. Lecocq

Another figure from past decades who has died, in his 98th year, is M. Lecocq, who became active in beekeeping organizations after retiring from his post as headmaster. He was Editor of La Belgique Apicole for 23 years and held other offices in Belgian Beekeepers’ Associations. Like Mlle Baldensperger, he was a notable figure at International Congresses.

Rupert Lazenby

Rupert Lazenby, who served on the Council of IBRA since 1964, died suddenly on 7 April. He had spent many years in the fruit-processing industry, and travelled widely. He saw active service as an officer in both World Wars, and was captured at the fall of Singapore in 1942. His knowledge of fruit juices enabled him, at considerable personal risk, to produce a brew from tropical fruits which provided a valuable source of vitamins for his men.

Lazenby was a microscopist and an active member of the Quekett Microscopical Club. He was a pupil of H. A. Dade, the author of Anatomy and dissection of the honeybee, and it is largely as a result of his efforts that IBRA will reissue this book later in the year. Lazenby was a keen exponent of Dade’s methods, and he demonstrated at many courses and summer schools. Always willing to mount an exhibit at shows and exhibitions, he would provide patient explanations which fascinated his audience. To children visiting Hill House on an Open Day he was the kind gentleman at the entrance who explained the observation hive to them (Bee World 1974, p. 157).

Dead bees under lime trees

When the limes were in flower in England last year, many people were disturbed to see bees lying dead, paralysed or “drunk” under the trees. There were reports that the ground was covered with dead honeybees—or, more often, with dead bumblebees—and some other species were also affected. The damage was variously attributed to the nectar or pollen of the lime trees, to toxic chemicals, or to more mysterious sources. Most reports came from localities where the soil is quickly drained, and in any case the 1976 summer was exceptionally dry (page 102). The cause of this damage seems to be rather little known, although it was established in 1960.

The toxicity of the nectar and pollen of lime (Tilia) species is due to certain sugars in them, which are present in abnormally high amounts in dry years. These sugars disturb carbohydrate metabolism in bees of various species. The chief culprit is mannose, which von Frisch found was strongly toxic to honeybees, in 1930. Mannose is a common sugar, utilizable by many organisms (including man), but not by certain insects, in which it produces a “nontoxic disease”. The first stage in mannose metabolism is its transformation into mannose-6-phosphate by the enzyme hexokinase, which is present in bees. The second stage is the conversion of the mannose-6-phosphate (which is itself toxic to them) into fructose-6-phosphate by the enzyme mannosephosphate isomerase. But honeybees and some other bees have no more than a trace of this enzyme; in these bees, therefore, mannose-6-phosphate is formed but is not broken down again; it accumulates in the digestive system. More than this, hexokinase produces a faster reaction with mannose than with glucose and fructose, so the latter non-toxic sugars are not metabolized in the presence of mannose, and the sugar level in the blood falls.

Honeybees fed experimentally on the sugars galactose and rhamnose, as well as mannose, died similarly; the toxic sugars increased in the blood and thorax, while the levels of glucose and fructose dropped. The thoracic muscles were unable to function, so the bees could not move their wings and legs—and appeared paralysed. This is what had happened to the dead and “drunk” bees under lime trees. Some wild bees are more affected than honeybees, possibly because of their different feeding habits with regard to nectar and pollen.

The lime species most implicated seem to be Tilia tomentosa (argentea) and its cultivar T. petiolaris, T. orbicularis and T. cordata. T. miqueliana has been recommended as a late species for planting instead of T. petiolaris, for this reason.

The severity of the effect varies from season to season, and from place to place, being greatest in dry years and on well drained soils. The following facts have been reported from Switzerland. In the Innerskirchen region of Canton Bern, colonies of honeybees were weakened considerably during the 1922 lime flowering; according to some reports this happened every year. In 1925 a beekeeper in Herbiglen said he lost 50% of his flying bees during the flowering of Tilia argentea. In 1943 many paralysed bees were found in an apiary at Liebefeld-Bern, at the end of June and throughout July. They were crawling on the gravel paths, dragging the abdomen and unable to fly. Bees examined contained lime nectar and pollen; under Tilia cordata
trees nearby were many dead and paralysed honeybees, humble bees and some solitary bees. When *Tilia tomentosa* followed *T. cordata* in flowering, dead and paralysed bees were found under those trees. Other similar events occurred in Switzerland that year, and it was established that the effects were not due to any recognized bee disease.

There was an even earlier reference in England: "In 1908 the bodies of innumerable bees, poisoned by the flowers of *T. petiolaris* at Tortworth, had so much manured the ground under its outer branches, that a very green ring of turf was visible in the autumn following, and was noted by the Earl of Duce to be even more conspicuous in 1909."

Later in the year, after flowering has finished, honeydew produced on the leaves and branches of lime trees can upon occasion be toxic to honeybees. There was a severe outbreak at Lübeck in northern Germany in August 1928, when heavy showers washed the honeydew off the leaves and bees collected it on the street and in the gutters. This was followed by a high mortality of bees in hives that had stored the honeydew in the combs, probably due to the sugar melezitose in the honeydew. The honeydew of *T. platyphyllos* proved toxic to bees when it was fed to them.

A few groups of plants are sources of nectar and honey that is toxic to man, although bees are not adversely affected. Most such plants are Ericaceae; they include species of *Rhododendron*, *Azalea*, *Andromedea* and *Kahnia*. Although such honeys from toxic nectar are of scientific interest, they are extremely rare; rarer still are species of *Rhododendron*, *Azalea*, *Andromeda* and *Kahnia*. These honeys are toxic to man, such as that excreted by the aphid *Scolypopa australis* on the New Zealand tree *Coriaria arboarea*.

References


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**International Commission for Bee Botany**

This Commission (ICBB) and IBRA have worked closely together for many years, and have now signed an agreement which provides a formal link between them. In future *Bee World* will comprise the official organ of the Commission, and a section *ICBB News* will be published in some or all issues. This section is also likely to interest *Bee World* readers who are not Members of the Commission, since there are many interests in common.

ICBB was set up by the International Union of Biological Sciences in 1950, and is a permanent statutory Commission of IUBS. It has six Working Groups, which link together specialists in different parts of the world who work on the same subject. The Working Groups, and their Convenors, are:

- **Honey research:** Dr. G. Vorwahl, German Federal Republic
- **Nectar secretion:** Professor H. Ziegler, German Federal Republic
- **Honeydew:** Professor W. Kloft, German Federal Republic
- **Bee protection:** Ing. J. J. Pettinga, Netherlands
- **Mediterranean bee flora:** Dr. P. Lavin, France
- **Pollination:** Dr. S. Norgaard Holm, Denmark

One of the activities of the Working Groups is to arrange meetings between specialists. Among the largest of these have been the International Symposia on Pollination, since 1960 arranged in collaboration with IBRA; the Third was in Prague in May 1974 and the Fourth will be in Maryland, USA, in October 1978.

This year IBRA is following the example of ICBB, in setting up its own first Working Group (page 5). Arrangements have been made to ensure that both the Working Groups and the meetings by ICBB and IBRA interlock with each other, without duplication. A recent meeting of specialists concerned with red clover pollination, arranged by the ICBB Pollination Working Group, is reported on page 104.

One responsibility of ICBB has been the international standardization of methods for the pollen analysis of honey. *Methods of melissopalynology*, prepared by the Commission, was published in *Bee World* in 1970 and as reprint M58, but it is out of print. Thanks to financial support through ICBB, it will be published in a revised form in the next issue of *Bee World*, and reprinted for wider distribution and reference.

The President of the Commission is Dr. J. Louveaux, and Dr. Anna Maurizio, who was President for the first 25 years, is Past-President; both are on IBRA Council. Dr. Eva Crane, Director of IBRA, is the Vice-President of ICBB. ICBB has recently decided to use English as its official language, although over half its members are in continental Europe. The decision will certainly enlarge its membership in English-speaking countries; membership is open to scientists actively working on or interested in any branch of bee botany. Details can be obtained from the Secretary, Dr. J. N. Tasei, Laboratoire d’Ethologie et d’Ecologie des Insectes, INRA, 86600 Lusignan, France.