

*Recollections on the life and work of a
great immature-beetle pioneer, Fritz
Isidore van Emden (1898-1958)*

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ORAL PRESENTATIONS**Recollections on the Life and Work of a great immature-beetle pioneer,
Fritz Isidore van Emden (1898–1958)**

by his son Prof. H. F. VAN EMDEN

presented on his behalf by Maxwell V. L. BARCLAY¹⁾ & Beulah GARNER¹⁾¹⁾ Natural History Museum, London, United Kingdom; e-mail: m.barclay@nhm.ac.uk

Fritz Isidore van Emden (1898-1958) was a leading figure in the development of the study of immature beetles, with a suite of important publications, taxonomic, morphological and methodological. His extensive larval collection is now at the Natural History Museum, London. His son, the leading horticultural entomologist Helmut F. van Emden, offered to share his recollections of his father and his work. Regrettably, because of a medical operation Professor van Emden was unable to travel to Prague, so he asked Max Barclay and Beulah Garner of the Natural History Museum, London, to read his text out on his behalf. Beulah Garner and Max Barclay are completing a handbook for the identification of the British beetle larvae, based on F. I. van Emden's collection. They gave a presentation where they discussed the collections of the Natural History Museum with particular reference to that of F. I. van Emden, and progress on the production of the larval handbook, before reading out H. F. van Emden's recollections, which are reproduced in full below.

Reminiscences on my father, Fritz van Emden

My father, Fritz Isidore van Emden, was born in Amsterdam on 3rd October 1898. His father was a textile merchant, but the business became bankrupt two years later in 1890. The family then had to move to Germany and set in business again, since in the Netherlands it was illegal for a bankrupt to start a new business. As he grew up, my father noticed that insects were eating his father's stock, and this was how his interest in entomology began. Indeed, one of his first publications was a monograph on the insect pests of stored textiles and carpets.

His interest in entomology flourished with time. Although his PhD at Dresden University was on the care of young by the aquatic crustacean *Asellus aquaticus*, it was as an entomologist that he later found employment at the famous Zwinger Museum in Dresden. He built up an extensive personal collection of carabid beetles, and became increasingly aware of how little literature was available for the identification of their larvae. He began collecting beetle larvae in general, and these were to become his dominating entomological love for the rest of his life.

The advent of the Nazis cost him his position at the Zwinger. His mother was a Jewess, and for this reason he was debarred from German Civil Service employment.

By now he was married with two young sons, and had to look for employment elsewhere. He was offered a post at the Museum in Budapest, and had more or less decided to move the family to Hungary when Gilbert Arrow, a coleopterist at the Natural History Museum who had been most impressed with my father's reputation, persuaded him to consider London instead and secured a grant to fund his travel and other expenses. My father always said that it was the English steamed puddings that were the deciding factor, but in any event he decided to go

to London. So in 1936 my mother had to arrange the move of the family to England. I doubt if I would be alive to write this account today had we moved to Budapest!

Then came a major hiccup. The Keeper of Entomology pointed out to Arrow that Museum rules forbade employment of a specialist in a taxon where he had a private collection. Father would have to hand in his carabid collection (I'm not sure they knew about the larvae). My father refused, and by now we had burnt our boats in Germany. The solution agreed by the Museum and father was that he should transfer to the Commonwealth Institute for Entomology staff on the Diptera floor at the Museum. And so my father began from scratch with the taxonomy of tachinid flies, and developed a productive and internationally respected career in a totally unfamiliar taxon. Of course colleagues from overseas would expect to be able to talk with him about beetle larvae when they visited the Museum, and this was not regarded as a problem. Father was quite a polyglot. Fluent in English, German and French, he could hold his own also in Dutch, Italian, Spanish and even the artificial international language Esperanto. On one occasion a Romanian visitor defeated even my father's linguistic abilities until they realised they had both learnt classical Greek at school. That was probably the last time classical Greek was used as a living language, and to discuss beetle larvae at that!

Tachinidae were therefore his day job, but his life's ambition was to contribute to beetle larva taxonomy by working at home evenings and weekends. Thus, after the family supper most days, he would retire to his fully equipped study and extensive library to pursue his entomological passion. The larvae were kept in alcohol in glass tubes of the minimum necessary diameter for the species, and with a paper disc bearing a reference number in Indian ink rammed into the curved end of the tube. The open end of the tube was stoppered with cotton wool, and the tube kept inverted in a jar with a bed of cotton wool soaked in alcohol and with alcohol kept topped up to a centimetre or so above the cotton wool bed. The jar was divided into four sections by a plastic cross. Thus on locating the right jar and section, my father could locate any specimens he wished to work on by locating the correct number disc at the tube end with a magnifying glass.

The jars were kept in the dark in a Victorian cupboard brought from Germany, and the strength of its construction was proven by the fact that the collection survived three occasions during the war when the house was badly damaged during bombing raids.

Father would always work with music from a radio beside him, totally involved with his larvae. His taste in music was rather limited and could be described as "light classical" and he was completely unaware that his hand would reach out and change the radio station should his brain subliminally hear the words "conducted by the composer".

His technique in working out keys was to prepare a table with the species to be included as the rows, and a large number of empty columns. He would then look for any characters which varied between species, allocate a column to this character and then fill in the column with + or - against each species. Whenever possible, he would check every instar, and this often involved breeding from adults. He invented very simple rearing 'cages' with plaster of Paris walls and glass lids. These cages could be stood in water-filled trays to keep humidity within them high, and the house was full of such trays. Of course, he also used this system for breeding larvae he had collected to adult; it was a point of principle that he could be certain of the identity of his larvae when so few keys were available. When he had enough specimens he would boil the exoskeleton of one in potash, dissect it into parts, and mount these in Canada

balsam. He found the detail he could see on these slides with a monocular microscope very valuable. He illustrated the characters in his keys with many small drawings – in those days done with a fine pen and Indian ink on thick shiny card called “Bristol board”. I remember him teaching me how to draw a tapering seta with a stroke of the pen nib.

I remember how dismissive he was of keys which used comparative words like “larger” or “more rounded”, since usually they would be used to try to identify a specimen without a comparison being available. He felt characters had to stand on their own, so he would, for example, replace “longer” with a measurement on the same specimen, e.g. “at least half the length of the tibiotarsus”. He also avoided reference to structures which would change in shape with time. For example, the then main key to the soil-dwelling elaterids in the genus *Agriotes* was based on the “sharpness” of the mandible. As this changed from “sharp” after every moult to “blunt” by the end of each instar, an *Agriotes* larva of any species would be identified as three different species in the course of each instar.

Our holidays were day trips by rail to the countryside in the county of Surrey with a picnic, particularly to locations where particular beetles and their larvae might be found. An especial favourite was a valley at Box Hill with ant mounds on the slopes, in which my father hoped to find larvae of the pselaphid iniquiline *Claviger*. The adults were not uncommon, but finding the larvae became somewhat of an obsession. We collected ants with brood and their queen as well as adult *Claviger*, and moved them into a soil-less plaster of Paris nest. The earth with ant queen, workers and brood would be spread out before the damp plaster nest and a desk lamp lowered over the earth to dry it out. Each time we did this my brother and I would count the number of ants entering the nest per minute and watch how “the word got around” and this number escalated dramatically. I can remember my mother being furious that we were so absorbed that we continued counting instead of coming to the supper table. I tried the same thing with a student field course I ran in North Wales for the Zoology Department at Reading – do you know, we again found it hard to prise the students away when supper was ready!

Anyway, back to *Claviger*. In spite of repeated trips to Box Hill and setting up new plaster nests, there was no luck in getting the beetles to breed. My father re-designed the nest to enable the nest to accommodate root aphids on grasses in case the adult *Claviger* needed honeydew – still no luck. After many such attempts my father wondered whether perhaps the larvae lived elsewhere, and for reasons I cannot recall homed in on the flower buds of hawthorn bushes. He even obtained a licence for a colleague to shoot a few blue tits *Cyanistes caeruleus* so that he could look for the larvae in their guts, but again drew a blank.

As his 60th birthday drew ever nearer, father was really looking forward to retirement and the opportunity to work full time on his larvae with the aim of producing a Royal Entomological Society Handbook for British beetle larvae, but tragically he died from a brain tumour on 2nd September 1958, just a month before his due retirement date. He had of course hoped that one of his sons would carry on his work. My older brother, however, decided to concentrate on languages and finished up as a specialist in medieval French literature. Indeed eventually he applied for and was appointed to the Chair in French Studies at Reading University, where I was already long established. I was more interested in sciences, and took a degree in Zoology and Applied Entomology at Imperial College, London. My undergraduate research project was indeed a key to beetle larvae in the genus *Elater* [*Ampedus* in the contemporary concept]

(Elateridae), stimulated by my father finding the first couplet of the existing Victorian key unsatisfactory. It read “larva yellowish-brown” with the contrast “larva brownish-yellow”. At this time I still had an open mind about my future entomological career. However, a surprising observation on aphids during my PhD at Imperial College took my research career in a completely different direction, and I was drawn to the nutritional physiology of aphids and how this determined whether predators had any impact on aphid populations. Soon after I secured my first permanent position, at The University of Reading, I did publish a key to the larvae of tortoise beetles, but was roundly told off by my Head of Department and instructed not to waste any more time on taxonomy, a discipline that in his opinion was only suitable for those “not intelligent enough to do experiments”.

After my father’s death, I moved his collection of larvae to Reading, and at least kept it in good condition by checking it regularly and topping up the alcohol when necessary.

I was therefore glad when, in the early 1970s, the Museum asked me whether they could have the larva collection, to enable a new appointee to produce the Handbook that my father had hoped to complete in the retirement that never happened.

Unfortunately, after only a short time, the young entomologist concerned had to resign through ill health. Although a more senior colleague then did quite a lot of work, by the start of the 1990s the project had been kicked into the long grass. I was told it took the form of a brown paper parcel which hadn’t been opened for years. I regularly pestered four Heads of Entomology at the Museum in succession, all of whom said “leave it to me” without achieving any progress. I more or less gave up on ever seeing the promised Handbook, even when a few years ago I heard that a new generation of coleopterists at the Museum had picked up the project. The good news is that the Handbook is completed and expected to be published by the Royal Entomological Society in time for a copy to be presented to me, hopefully at the 2018 Verrall Supper. This is a dinner for entomologists held in London every year on the first Wednesday in March. I am really most grateful that Beulah Garner and Max Barclay at the Museum were prepared to add the completion of this Handbook to their already heavy workload, and that my father, through his collection, has made a major contribution to the Handbook that he was unable to complete himself.

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Bromeliads as beetle birthcentres in Brasil with remarkable news on Chelonariidae immatures

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Bromeliads is a magnificent group of plants representing a monophyletic family, the Bromeliaceae. The bromeliad lineage arose around 100 Mya, but the strongest species radiation shall have occurred from 12 to 20 Mya. Unless by a unique species from Africa, the whole family is endemic from the American Continent, and it is represented by more than 3,000