

## From my entomological life

M. Fischer

## Из моей энтомологической жизни

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**Abstract.** The paper presents a short description of the author's entomological life from the beginning of his career at the Natural History Museum in Vienna up to the present. First contacts to colleagues round the world, priorities of taxonomical research work, activities at university as well as for the public, function as editor of book series are reported. Besides, collecting and working trips are reported, decorations and prizes are mentioned. The author's mental position with respect to his profession is explained. A list of publications since his retirement is given.

**Резюме.** В статье дано краткое описание энтомологической жизни автора от начала его карьеры в Естественно-историческом музее в Вене и до настоящего времени. Рассказано о первых международных контактах с коллегами, о целях и задачах таксономических исследований автора, о его общественной, университетской и редакторской деятельности, о научных и экспедиционных поездках, о наградах и поощрениях. Объясняется ментальная позиция автора в аспекте его профессиональной деятельности. Приводится список работ автора, опубликованных после его выхода на пенсию.



## Introduction

My career was started, when I began as unpaid trainee in the Hymenoptera collection on November 21, 1954, and when I was employed on February 1, 1955. Strictly speaking, it starts with my ances-

tors. My grandfather began to study Zoology in Vienna, but had to interrupt it. He was much interested in plants, especially medical plants, and in insects. This interest in nature was passed to my father. He was also interested in medical plants and insects. When he was young, he collected beetles and other insects in Austria and in Bohemia, his ancestors' home country, and Sicily, where he was as prisoner of war during World War I.

#### **First contact with Entomology.**

When I was a child in basic school (6–10 years old), my family used to spend the summer holidays in a village in Lower Austria. Sometimes my father showed me a beetle or an ant when we went for walks in forests or in meadows. These were my first contacts with insects.

During World War II, there was little chance to work with insects. But immediately after the war, I made collecting trips with my father and my elder brother around Vienna, and later also in more remote areas. We made a small collection of beetles and other insects. My father taught me how to collect insects, the right way to kill them, mount them on pins or cards, and label them correctly. He gave instructions for the use of insect boxes and how to handle them, and, last not least, how to keep them free from dermestids and fungus. He taught me insect morphology, the use of identification keys and other basics. This way I became familiar with many things, that I was not so thoroughly taught later at university.

#### **My university period.**

I studied science and philosophy at the University of Vienna between 1947–1953. I passed the examination for teaching in Natural History and Philosophy at secondary schools, and successfully completed a doctoral thesis on the life history of the bark beetle *Xyleborus (Xyleborinus) saxeseni* Ratzeburg. I took zoology as main subject, and botany as subsidiary subject. I finished my academic education as Doctor philosophiae and Magister rerum naturalium in July 1953.

#### **Employment as zoologist.**

At first I worked a year as a teacher. Then, after a lot of initial difficulties, I had a chance to move to the Natural History Museum of Vienna. Since there were two vacancies in the curatorial staff, Diptera and the Hymenoptera, I was allowed to choose between them. I decided for the latter. I started to work on November 21, 1954 (without salary). The definitive starting date of my employment was February 1, 1955. I remained curator of the Hymenoptera collection for the next 40 years until my retirement at the end of 1994.

It was a long way between beginning employment and retirement. On January 1, 1958 the appropriate minister appointed me administrator of the Hymenoptera collection. My position became definitive on March 1, 1961. After some smaller advancement I was made "Wissenschaftlicher Oberrat" (Scientific Councillor, the predicate "Wissenschaftlicher" was later cancelled) on January 1, 1973. In this position I was appointed Director of the 2nd Zoological Department (Entomology) by the State President on February 28, 1976. On July 1, 1982 I reached the highest position possible in my career, and I was given the title "Hofrat" (Privy Councillor). I was often addressed as Professor by my students at university as well as many people in Austria and abroad; however, I was never appointed Professor.

The duties of a curator in the museum were as follows: care for the collection, e.g. keep and organize order in the collection; increase its value by accumulating important and interesting specimens; manage scientific and administrative correspondence; care for the special library; look after research guests; maintain contact with supraordinate bureaucratic levels up to the ministry; maintain contact with the public, care for the public exhibits, guide tours in and around the museum; co-operate in the museum's general programs. Of course, an entomologist at the museum has to become a specialist in a certain group. I regarded scientific research in a given taxonomic group as the most pleasant duty, with publications (scientific and popular ones), collecting trips, and fieldtrips around Austria and abroad.

My first instructor at the museum was the famous zoologist, Max Beier. He was well known as specialist of the Pseudophyllinae and pseudoscorpions. The last 6 years of his active employment he was director of the Zoological Department of the museum. There were some more or less permanent guests as researchers in the Hymenoptera collection; the most important of them was Leopold Fulmek, a zoologist

who worked in the field of plant protection. He identified natural enemies of injurious arthropods, especially parasitic Hymenoptera. His main interest was Ichneumonidae, so he cared especially for the Ichneumonidae collection of the museum when he was in retirement at the station for plant protection (his previous profession). He and Beier thought that I should specialize in Braconidae, and so I did. They thought that I should continue the work of Josef Fahringer. I became the first researcher of Terebrantes in the collection.

The next step was to choose a research field within the braconid flies. Helpful was the book of Otto Schmiedeknecht "Die Hymenopteren Nord- und Mitteleuropas". I found there a note, that the book's author regarded the genus *Opius* as the most difficult of all braconid flies. This note made me curious, and I started the study of the Opiinae. Strictly speaking, there was nobody to introduce me and I had to find my way in the study the taxonomy of Hymenoptera, and especially the Braconidae, completely by myself.

#### **First international contacts.**

The first hymenopterist I met was Hanns Bischoff from the Museum of Natural History in Berlin. He visited Vienna in 1955. He met Max Beier and visited also me. He was the first scientist to write me a letter. I sent him an unpublished manuscript of Bruno Pittioni on bees of Eastern Austria and asked for corrections to make it ready for a publication. In the following years I gained contact with many hymenopterists and braconid workers, who were in charge of important collections, all of them we can call "classics" today: G.E.J. Nixon (London), C.F.W. Muesebeck (Washington), A.W. Stelfox (Dublin and Newcastle), D. Guiglia (Genova), M.W.R. de V. Graham (Oxford), Z. Bouček (Prague), J. Noskiewicz and W.J. Pulawski (Wroclaw), J. Papp (Budapest), C. Watanabe (Japan), P. Stary (Prague), E. Königsmann (Berlin), M. Mackauer (Frankfurt), M. Čapek (Brno), and others.

On the occasion of the 11th International Congress of Entomology 1960 in Vienna, I met some workers personally for the first time. Amongst them was Dr. G.A. Viktorov of Moscow. Professor V.V. Popov, another member of the USSR delegation, gave me a medal with an engraved portrait of Darwin. I have it still with me. I met for the first time Nixon, Kerrich, Čapek, Fullaway, and many more.

The first representative of the former Soviet Union, I came in correspondence with, was Prof. N.A. Telenga, who then lived in Kiev. He described a few *Opius* species, and he let me have them on loan for examination. From then on, I had continuous contact with braconid workers of the former USSR. I was very grateful to him, since I could use his keys for identification of Braconinae and other Cyclostomi groups.

Shortly after making contact with Prof. Telenga I had my first correspondence with my friend Prof. Vladimir I. Tobias, whose 75th birthday we celebrate this year. He soon turned out to be the leading braconid worker of Russia and adjacent countries. The comprehensive publications of N.A. Telenga had identification keys in German at the end, but in order for me to understand Tobias' descriptions and keys, I decided to learn Russian. Russian is extremely difficult for German speaking people, but I could translate Tobias' texts very well. My first correspondence with Vladimir dates from the late 50s of the past century, at about the same time that his first publications appeared. We exchanged entomological material, and Vladimir was always ready to help me, although it must have been very troublesome for him at times. Later, when travel between Russia and Western countries became easier couriers would sometimes allow Vladimir and I to exchange specimens, and I sometimes had the privilege to meet Vladimir in Vienna and in Budapest when he visited with Jenő Papp.

#### **My specialities.**

I did not want to work in any peripheral group of little interest and little significance. I was willing to revise a difficult unit of Braconidae with worldwide significance. The Opiinae were just the right taxon. Moreover, some of them had economic importance as parasitoids of injurious insects. This soon facilitated collaboration with Salvatore Monastero in Sicily (Palermo), who used *Opius concolor* Szépligeti (= *siculus* Monastero) in the biological control of the Olive fly *Dacus oleae* Gmelin, a serious pest of the olive tree. I was also invited by Charles Ferrière in Geneva to study the morphological variability of *O. concolor*. As parasitoids of the maggots of Diptera I gave the Opiinae the trivial name "Madenwespen" (Maggot wasps).

I soon decided to expand my taxonomic program. I started revisionary work with Alysini, a group obviously near to the Opiinae from a phylogenetic point of view. They are characterized by exodont mandibles. Therefore I coined the term “Kieferwespen” (Jaw wasps). There are two tribes, the Alysini with three cubital cells in the forewing, and the Dacnini with only two cells. The trivial names are therefore “Dreizellen-Kieferwespen” (Three-cell-jaw-wasps) and “Zweizellen-Kieferwespen” (Two-cell-jaw-wasps). They are parasitoids of cyclorrhaphous Diptera like the Opiinae, and many characters of taxonomic value are similar. Also the life cycle is similar. The preimaginal stages of both groups develop in the puparium of Tephritidae, Anthomyiidae, Agromyzidae, Phoridae, Drosophilidae, and related host families. I tried to work out a diagnostic system of the Alysini for the world fauna at the generic level, and to describe a great deal of the fauna at the specific level. It turned out, that the diversity of the Alysini is at least as great as or even greater than that of the Opiinae. The members of the so-called “*Aspilota*-group”, (and also the genera around *Chorebus*) are especially small and numerous. Several scientists had described species, but I think that I was the first and the only one to compile most species into a comprehensive diagnostic system.

#### **Acceptances of my work.**

I think that my work was largely accepted by the international community of braconologists. Workers from all round the world sent me material of Opiinae and Alysini and continue to do so. This way I was able to survey a sample of the world fauna and I have described many new taxa from all zoogeographical regions. Unfortunately, the Vienna collections were rather poor in exotic braconids and I had few assistants to mount insects. Therefore it proved advantageous to deal with borrowed material.

Many institutions entrusted me with their material to work on it. I examined much material of the British Museum from Brazil; the South African Opiinae collected by Erasmus Haeselbarth (now in the Zoological State Collection in Munich); North American Opiinae and Alysini of the collections of Henry Townes (now American Entomological Institute; I knew Townes personally), and the Canadian National Collection, curated by William (Bill) Mason. I saw much material from Budapest, Russia, the Ukraine, the Canary Islands, and the Netherlands (from many parts of the world through our friend Cornelius van Achterberg).

#### **Publications.**

I have published a total of 320 titles, most of them on the taxonomy of braconids. The most important of these are the Opiinae of the Nearctic region (1964, 1965), three volumes on the Opiinae of the world (1972, 1977, 1987), a book on the Opiinae of the Oriental and Australian region (1966), World Opiinae in Index of Entomophagous insects (1971), and a lot of general publications on Alysini (Alysini). I wrote a few smaller articles together with international collaborators, for example, Prof. Tormos and his co-workers (Spain), and presently I am reviewing the Turkish Opiinae with Prof. Beyarslan. Some of my publications have dealt with popular items such as entomological exposition (1984), or the history of the Museum (1976). I took part in the so called “Splendour volume” (“Prachtband”), for which I wrote the paragraph on the Insect collections of the museum of Vienna and their development. Finally, I have written articles to honour colleagues when they retire or upon their death.

#### **Decorations.**

My work has been recognized several times; the first distinction was in 1964. I won the “Kardinal-Innitzer-Preis” (Cardinal-Innitzer-Prize) for my revision of the Nearctic Opiinae. This publication was a curiosity in that it was written by an Austrian author, in German language, on North American insects, published in Poland (Polskie Pismo Entomologiczne), and decorated by the Catholic Church!

I won the Theodor-Körner award in 1967, and the Adolf Schärf prize in 1969 (both authorities were presidents of Austria). Then followed some distinctions from Austrian Federal countries, among them the Cultural Prize of Lower Austria (1970).

The Republic of Austria decorated me twice. In 1980 I was given the “Goldenes Ehrenzeichen für Verdienste um die Republik Österreich” (Golden Badge of Honour for Merits for the Republic Austria), and in 1990 the “Goldenes Ehrenkreuz für Wissenschaft und Kunst” (Golden Cross of Honour for Sci-

ence and Art). These two decorations were granted by the President and presented to me by the Minister for Science and Research. I consider this last award as especially important as an acknowledgement of my scientific merits over a lifetime of research.

#### **Public activities.**

Besides my research, I conducted guided tours of the museum, or more commonly just of the Zoology section. These tours were for school classes, adults, and special groups such as invalids. Sometimes I conducted guided tours in and around the building to teach about the history of the building and the development of the Natural History Collections in Vienna.

With the help of my fellows in the department I organized the special entomological exposition "Insektenflügel — Insektenflug" (Insect wing — Insect flight), which was the greatest insect exposition ever made in this country. It presented survey of the Insect kingdom in general, and the winged insects were traced back to their roots in carboniferous age. We showed the development of the insect wing as a new organ of the insect body, and how wings develop within an individual. We showed that wing articulation is one of the most complicated anatomical structures in the animal kingdom. We illustrated and explained different wing types including direct and indirect flight. We presented wing reduction; partial reductions as in ant workers or female velvet ants, and complete reduction as in Phthiraptera and Aphaniptera (Siphonaptera). Last but not least we demonstrated the vast diversity and beauty of the insect wing and their modifications as elytrae, scaly wings (butterflies), transparent wings and bizarre forms. The exposition was first shown in the Vienna museum, but travelled then from town to town in Austria and in Switzerland.

#### **Teacher at University.**

I was first invited to qualify as a university lecturer in 1976, but I could not accept the invitation at that time, because I was just appointed director of the Department of Entomology. However, I accepted the second invitation 1979. I performed my initial lecture before the relevant commission in November on the systematics of the Opiinae wasps. In the 21 years from 1980 to 2001 (42 semesters) I presented lectures on diverse entomological topics. My program covered surveys of the insects in general, the amazing diversity of the Hymenoptera and Diptera, The holometabolous and hemimetabolous Insects, Parasitic insects, Social insects, Plant lice, and the Homoptera (Auchenorrhyncha and Sternorrhyncha). A special interest of mine besides the braconids, is the social insects. Dear Vladimir, let me tell you an idea on this topic.

In my program I had a title "Bees, Wasps, Ants — the other Crown of Creation". Here I tried to show parallels between human and insect societies, and the strategies that led to the extraordinary success of both groups. Since it turned out that the social insects provide most of the biomass in terrestrial habitats (up to 80%, see the great book of E.O. Wilson), it is clear that social behaviour is in large part responsible for the amazing success of living beings. Mankind is often given the title of "Crown of the Creation". But I regard social insects as the "First" or "The other Crown of Creation", that which belongs to the invertebrata. I recognize the ants as the absolute culmination of social development among insects. The keys seem to be co-operation, division of labour, and a highly developed communication system. Just as it is with *Homo sapiens*.

In my position as University docent I mentored several students in writing their doctoral or diploma theses. They worked on subjects concerning the taxonomy of Hymenoptera or Coleoptera. Three of them are now employed in the scientific service of the Vienna Natural History Museum. Among them is my follower in the Hymenoptera collection.

#### **Editor of "Handbook of Zoology (Insects)" and "The Animal Kingdom, Invertebrates".**

In the early years of the 1980s I was made Editor of the above cited book series by the Publishers Walter de Gruyter (Berlin — New York). It was Dr. Weber's idea because of my close relationship with Max Beier, curator of several insect orders in Vienna (he was the editor before me), and my understanding of the book series.

### Special events.

Of many special events there are three I want to mention, the 11th International Congress of Entomology in Vienna, the hundred years' jubilee of the foundation of the Museum, and the entomological exposition "Insect Wing — Insect Flight".

The present Natural History Museum, a magnificent building on the Ringstrasse and built in "new renaissance" style, was erected 1872–1881. Emperor Franz Joseph signed on April 30, 1876 the organizational plan of Ferdinand von Hochstetter, which designated five departments (Botany, Zoology, Mineralogy, Geology, and Ethnography). This was the birth of the Museum. 100 years later we planned to celebrate the Museum's centennial. In 1974 I was chosen to be part of a four-person committee to organize this event. I was to write an article on the history of the museum. There were two of us to manage the matter. So I contacted old colleagues, who knew many things personally from the period immediately after World War I. To elucidate the old history, beginning from the acquisition of the Bajou collection in about 1748, I had to make trips to diverse and numerous libraries to study old documents. We produced, I think, a very fine article, which was printed in the jubilee volume of the "Annalen des Naturhistorischen Museums". I was rather content in my role as the museum's historian.

### Excursions, collecting trips, working stays.

I made collecting trips every year in Austria beginning in the vicinity of Vienna. During the nineteen fifties we received no travel stipends and my salary was very modest. From this period, some of my colleagues remember the locality "Spitzzicken", a small village, about 130 km distant from Vienna. My friend and colleague W.J. Pulawski mentioned this locality always, when I met him. Later, I collected in all provinces of Austria. I produced some publications on the Opiinae and Alysiinae of the relevant federal countries. Because we received only small travel stipends, I was unable to make great excursions.

From 1968–1975 I worked at the Alpine Research Station Obergurgl of the University of Innsbruck on the braconids of the high Alpine region. Several times I was the guest of the Forest Entomologist Erwin Schimitschek in South Tyrol and I collected there often.

When I was appointed director of the Entomology I organized, together with my colleague Fritz Kasy, lepidopterologist, excursions to special localities in eastern Austria. Kasy was greatly interested in natural reserves. He discovered several localities worth preserving and fought for their protected status. One of these localities was the "Zitzmenndorfer Wiesen" near Lake Neusiedl. Zitzmannsdorf. This was a village in the Burgenland (most eastern province of Austria), which was destroyed 300 years ago by the Turks. A few ruins still exist today. The rare moth *Chondrosoma fiduciarium* ("Steppenfrostsprenger") occurs here. It is the most westerly location of this Central Asiatic species. It was known by Kasy's predecessor Zerny, who made an application to the local government to protect this area. However, in the year 1944, during World War II, no answer was given. About 1980, 35 years after the war, Zerny's application was sent to the Museum, with the attached note "to be brought to a close after the war"! This was already done.

Outside of Austria, I made several journeys to Poland together with my family, and collected in the Carpathian Mts, the Pieniny Mts and in the virgin forests of Bialowieza. Here I was accompanied by Mirosława Dylewska, who showed us the territory with the well known bison population. We visited Wrocław and met W.J. Pulawski and Jan Noskiewicz. Wojciech accompanied us to the Institute in Warsaw, and he showed us many sites amongst them the monument to Henry Wieniawski, a famous Polish violin virtuoso. In Krakow we met not only Mrs Dylewska, but also the coleopterist Szymczakowski and his father. He found us accommodations in Zakopane in the Carpathian Mts.

In 1965 I took part in the 11th "Wanderversammlung deutscher Entomologen" (Ambulant Meeting of German Entomologists) in Dresden. I presented a lecture on the systematics of the Opiinae. Then I made an excursion to Berlin and visited the museum and Dr. E. Königsmann. I spent a night in the surgery room of the museum, which was always used for guests. The next morning I had to reach a train to travel home. But I found myself locked in the room and I was stuck there for a considerable time.

In the year 1990 I took my first trip to Finland, and went four times more in the following years. The last journeys I made with my wife. We met there Martti Koponen, who worked also with braconid

flies. We collected together in Finland. An excursion with the Finish Entomological Society brought us near the polar circle, and we got to know Prof. Nuorteva, a Forest Entomologist, and his family.

### **Retirement.**

According to Austrian law, public servants must retire by the end of the year when he is 65 years old. Therefore, I retired at the end of 1994. The authorities of the Museum granted me an honourable leaving. Amongst others, my friend Dr. H. Schönmann performed for me a ceremonial address, and it is he, who wrote the laudation in the Annals of the Museum (see literature).

Just at the period of my leaving, the administration of the Museum was altered. The Museum was dismissed in independence of the ministry. It was a troublesome way. So I was happy, that I was no longer involved in administrative and bureaucratic problems and that I could continue my taxonomic work as before. I was able to publish several articles since 1995. And I hope that I can contribute more in the future.

### **My mental disposition.**

What I did not mention as yet is my interest in music. I started to play violin at the age of seven. I passed the entrance examination in 1948 for the violin at the Music Academy of Vienna (now University of Music and Interpretative Arts), and I studied there nearly five years till 1952. Then I had to decide: music, or science. I decided for the latter, but music remained — my love.

Besides sciences, I studied also philosophy, and I passed the final examination of teacher at higher schools in 1953 for the disciplines Philosophy and Natural History. I learnt the history of philosophy from the ancient Greeks to the beginning of the 20th century. For the examination I had to study Immanuel Kant, and his most important critic, Arthur Schopenhauer. I mention this because we remember this year the 200th anniversary of Kant's death (February 12). The most important philosopher of central Europe became known as the "Scholar of Königsberg" (now Kaliningrad, Russia). His philosophy, known as "criticism", had a definite influence on my entomological life. It was like a school of critical thinking for all aspects of cognition. You will find in my system, first for the genus *Opius*, a certain symmetry to cover all aspects of the diversity of taxa (see my four opiine sections A, B, C, D). I also borrowed from Aristotle logic with respect to identification keys. Thesis and antithesis have to stand in relation and contrast with each other. This means (a) that there should be no third option, and (b) as a consequence, if possible, only one character or at least a clear main character should dominate each theses. Unclear decisions may cause pairs of characters in a contrary contrast. A simple example may be the contrast between black — red. What about other colours? Such a contrast cannot be easily accepted in an artificial, "open system", when you have to be "open" to insert new taxa in a key. Or you have to emend the key. I tried to create a system which covers all (?) possibilities in advance. This is a theory. Nature provides us with intermediate continuous characters. They are the main reason for misunderstandings, and the questionable delimiting of species.

A further element of the necessity of such a structure of a diagnostic system, I realised in the worldwide process of evolution. The evolution of a certain group takes place in many areas at the same time and independently. The same or similar characters can be developed in many different localities independently, not necessarily at the same time and perhaps in different sequence. Consequently evolution may produce similar forms, which may not be traceable to a common ancestor.

I developed a similar system for the Alysiini wasps that is scattered in a few smaller publications. I always knew that it was an artificial one. I knew for example very well that for instance *Aphaereta* and *Phaenocarpa* plus *Asobara* are very near to each other phylogenetically before others published it. But in my diagnostic system they remain in different groups. For the recognition of taxa it does not matter if a character is plesiomorphic or apomorphic, as long as it works.

Please note on the margin: Even Nixon realized that perhaps the Dacnusiini may be a natural group, but certainly not the Alysiini. In spite of that, we use the conception of the Alysiini as a tribe up to the present.

What are we therefore obliged to do? Immanuel Kant tried to detect the limits of our possible cognition, e.g. to distinguish between what we can recognize, and what we cannot. He called "transcendent" what is beyond such limits, and considered it the field of speculation. Taxonomic research tries to reach

the limits of defining different forms, which we hope, are species. I tried to execute this method on the species level by means of observation of the external morphology of adult individuals in insect collections. This is all that a museum taxonomist can do.

I know very well, that there are now more possibilities for investigating taxonomy, for example by molecular-biological methods. But they are certainly not applicable for the hundreds of thousands of different forms in the insect kingdom. We will be asked for names of given individuals in the future and we will give answers on the basis of our present methods and systems. So, I think, dear Vladimir, that our work will remain valuable for a long time into the future.

Besides, I would like to thank all my colleagues, who have read this article and with whom I have been in contact for their friendship and assistance over the years. May they all have much success in the future!

A last word to you, dear Vladimir. Arthur Schopenhauer was the most important critic of Kant. And he wrote as follows about his darling Kant: "I measure a tower's height by the length of its shadow". May future entomologists judge our life-works in a similar way!

Finally, I wish to thank my friend Vladimir very heartily for the close co-operation over several decades!

#### **The papers by Dr. M. Fischer published behind 1994.**

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