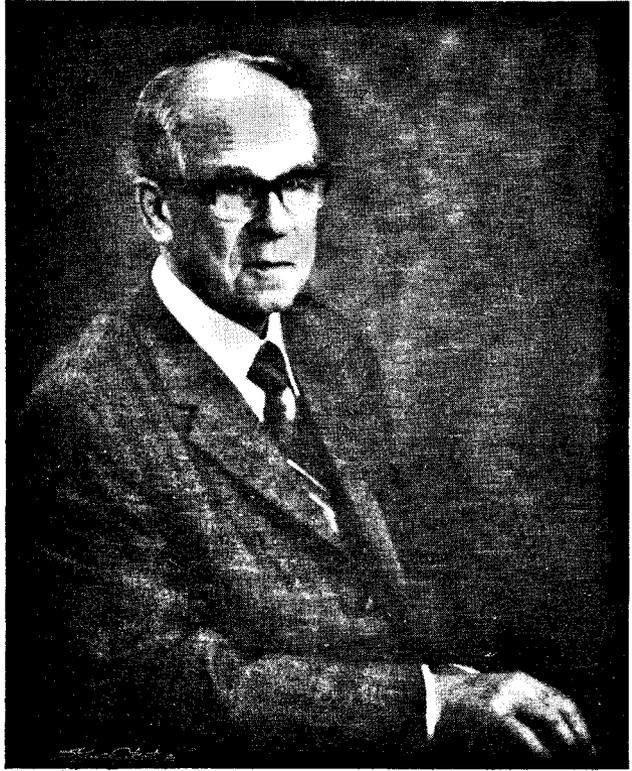


Pontus Palmgren 75 years



On 27 April 1982, Pontus Palmgren, the most distinguished Finnish ornithologist of this century, celebrated his 75th birthday.

No Finnish ornithologist has held so many important positions as Palmgren. Suffice it to say that he was ordinary professor in zoology at the University of Helsinki from 1940 until retiring in 1971, that he has been vice-president of the university and head of the Tvärminne Zoological Station, and that he has also served as permanent secretary of the Finnish Society for Sciences. In the Finnish Ornithological Society he held leading positions throughout a quarter-century, first as its secretary and editor of *Ornis Fennica* from 1931 to 1948, then as its president from 1948 to 1955. He is now honorary member of the society.

It is no manifestation of ornithological hybris if I venture to say that none of his activities has been more important than his achievements as editor of the present journal. "Ornis Fennica is one of the journals that deserve to be looked at first", I heard a competent judge, Prof. N. Tinbergen, remark at the time when the journal bore Palmgren's stamp. Palmgren did not only edit Ornis Fennica; when there was a shortage of manuscripts, he more or less wrote it. In every volume, indeed in almost every issue, from his start as editor until the outbreak of the war, there are ample traces of his pen. Let me pick out a few of these papers, giving instead of their German or Swedish titles a short indication of their contents:

1931: bird censuses in Muonio (Lapland)

1932: ornithological problems of current interest; on the territory theory; nest-site and habitat selection in three passerine species; an outline of a comparative study of the biology of the Chaffinch and the Brambling; the frequency of bird song at different times of the day; the Sparrow Hawk's choice of nest-site and nesting habitat; the proportions of left- and right-crossed bills in the Crossbill

1933: function of the legs in the Spotted Flycatcher and the Icterine Warbler, and its effect upon their habitat selection; the bird populations of two forest areas with remarks on the territory theory and the method of bird censusing

1934: nest-building in the Goldcrest; the expansion of the Reed Warbler into Finland; courtship display as an expression of the migratory drive in a caged Willow Warbler

1935: the birds of arable land on the Aland islands; an apparatus for recording *Zugunruhe* in birds; (together with H. Ahlqvist) migratory restlessness in caged birds in its relation to meteorological factors; *Erolia minutilla* found in Finland

1936: why do birds migrate at night?; the ecological significance of the anatomy of the legs in some passerine birds; (together with L. Siivonen) the influence of low temperature upon migratory restlessness in a caged Song Thrush in autumn; the Little Bunting found breeding in Finland; fluctuations in the population size of the Goldcrest

1937: a mass migration of birds and its possible causes; increasing temperature releasing migratory restlessness in a caged Robin in spring; (together with junior co-authors) experiments on ant mimicry

1938: the timing of migratory restlessness in caged birds; (together with junior co-authors) maze learning in some birds and small mammals; the bird population of the grounds of Tvärminne Zoological Station

1939: temperature isolation provided by the nests of some passerine species.

The breadth of Palmgren's interests is striking as is the ease with which he penetrated into fields which would have taken a less talented person years to master. Several special circumstances serve to explain this ability. As the son of a prominent botanist and university professor, he became interested in nature while still a schoolboy. Moreover, he obtained a knowledge of physics and mathematics, unusual among ornithologists at that time, which proved very useful. Finally, he had a very strong constitution and could seemingly keep going for ever on excursions, especially when on skis. His students invented the parachor $1 \text{ Pkm} \geq 2.5 \text{ km}$, where P stands for Pontus Palmgren.

Let us, on the other hand, not forget the difficulties with which he had to contend in his scientific work. The thirties, especially their beginning, were a period of economic difficulty. The support available to Palmgren for his laboratory work was almost ridiculous. He had trouble even in providing his caged birds with food, and the apparatuses that he used to register their *Zugunruhe* were built by himself (sometimes, though, with the aid of that legendary preparator and Jack-of-all-trades J. Grönvall) using children's Meccano sets. Sad to say, history seems to repeat itself. Today, in Palmgren's old division of the department of zoology, the yearly allowance is hardly sufficient for the purchase of a single standard microscope for teaching. At the same time, the shop windows abound in all kinds of unnecessary luxuries, and the political parties receive generous support for their propaganda. This led to Palmgren's dry remark, in his memorable farewell lecture as a professor, that although the *canalis neurentericus* in the vertebrate embryo generally closes at an early stage, it seems to remain open in certain political decision-makers.

The main themes followed by Palmgren may be summarized as (1) bird censuses, both in the breeding season and throughout the year, (2) functional anatomy of the legs and its importance in habitat selection, (3) birds nests: building, site, temperature isolation, (4) migration problems, especially the correlation between *Zugunruhe* and meteorological factors, (5) expansion of new species into Finland, (6) daily rhythm, (7) other ecological or etho-ecological problems, especially territory, (8) natural selection: the question of mimicry, etc.

Even more important was, however, his methodological approach to the science of ornithology. With him, tables, diagrams, statistical analysis and experiments entered our ornithology. In this case one is entitled to use the often misplaced expression of "change of paradigm". Palmgren's innovations came to stay, with the exception of the experiment, which has been sadly neglected during the last decades.

Palmgren's achievements should be judged against the background of the previous history of zoology in Finland. At the time of Linnaeus, an important

student of bird migration worked in the old university of Åbo, Professor Leche. Then in 1874 (German edition 1876) J. A. Palmén published his Ph. D. thesis on the migratory pathways of birds, which strongly influenced international ornithology in the following decades. Later, Palmén became professor in zoology, but did not publish much in ornithology, at least not at the same scientific level. Through an appeal to the amateur ornithologists he brought about the publication of a number of local bird faunas, which together gave a picture of the distribution and habitats of Finnish birds; one of the most important faunists was a member of the Palmgren family, Rolf Palmgren, later director of the Helsinki zoo. The only ornithologist of international distinction between Palmén and Palmgren was Ivar Hortling, a linguist and high school teacher by occupation, but also a talented student of bird migration. Zoological teaching at university level, mainly under the influence of the prominent comparative anatomist Prof. Alexander Luther, concentrated on morphology with some summer teaching at the Tvärminne Zoological Station on the invertebrate fauna of the Baltic. In the course on invertebrate morphology much time was wasted in searching for the duct of Laurer in the trematod *Distomum lanceolatum*. Nobody ever saw it, except, of course, the professor and, in a dim and distant past, presumably Mr Laurer. In genetics, the study of chromosomes dominated, though Dobzhansky's *Genetics and the Origin of Species* was used as text-book in Helsinki soon after its publication. In the second half of the thirties, when I read zoology, I do not remember having heard a single word about natural selection, except from the youngest lecturer — Pontus Palmgren. At his lectures the student also, for the first time could become acquainted with ecology and ethology, and Palmgren gave the first field course in ornithology ever held in this country and probably in Scandinavia.

Hand in hand with his indefatigable authorship of smaller articles, Palmgren published a series of larger treatises in the Acta of Societas pro Fauna et Flora Fennica, of which his father, Alvar Palmgren, was the devoted and successful president. Palmgren's Ph.D. thesis (1930) on the numbers of birds in the Finnish forests, and its smaller counterpart on the numbers of birds of the lakes of Åland (1936), were pioneering works. A single major census had been carried out in Finland before, that of Sundström on the birds of the Tvärminne archipelago (1927), but it was published only after the author's tragic death, too late to influence the following development of our ornithology, and, with all its undeniable merits, made use of rather inexact methods. Palmgren dealt extensively with the reliability of his methods and, since then has repeatedly reconsidered census methodology, most recently in this journal 1981, more than half a century after his first censuses.

As the basis of his censuses Palmgren used the forest types of A. K. Cajander (professor in forestry and prime minister at the outbreak of the war). Cajander uses the undergrowth as an indicator of the productivity of the forest (hence, *Sanicula*, *Oxalis-Myrtillus*, *Myrtillus*, etc. types), a matter of the utmost importance in a country where wood is a valuable raw material for the export industry. Palmgren's censuses of the bird fauna of lakes were founded upon the lake-type theory of limnologists like Thienemann and Naumann, whose eutrophic and oligotrophic lakes differ with respect to the amount of nutrients.

The final aim of Palmgren's census work was to integrate the bird populations in a general survey of the organic production and energy flow in the biota. Nobody since then has aimed at such ambitious goals, and more than half a century afterwards, his great ideas still belong to the future.

Palmgren's data also threw light on the autecology of the bird species, showing their abundance in different habitats, and thereby raising the question of the factors controlling habitat selection. Only two years after his thesis (1932) he was ready to provide an answer with respect to two selected species, the Goldcrest and the Willow Tit. The former has a very restricted ecological amplitude, breeding in Finland only in forests with a considerable proportion of spruce, whereas the tit is at home in forests of a very different character. The specialized way in which the Goldcrest places its nest undoubtedly plays a role in its predilection for spruce, but another factor is the way the two species move in trees of different architecture. The Goldcrest cannot hang upside down for long periods at the tips of birch branches, as does the tit. This inability is mainly due to the anatomy of the *tibialis anticus* muscle, which is under strain when the intertarsal joint is bent as the bird clings upside down. A minute change in the position of the loop through which the tendon of this muscle passes, and of its insertion, and the Goldcrest would have been a perfect climber. Palmgren shows that the amount of invertebrates per weight unit of branches is about two and a half times larger in birch than in spruce or pine, and that the Goldcrest takes the prey it happens to find in its *Nahrungsmilieu* without being selective. It is, therefore, not lack of food, but inability to obtain it, which excludes the Goldcrest from the birch forest. Palmgren's study is still unrivalled in the literature on habitat selection in birds, and the only biological investigation worthy of being compared to it is, to the best of my knowledge, that of his father on the occurrence of the Buckthorn (*Hippophae rhamnoides*) on different types of shores (1913).

After his appointment as professor in Zoology, Palmgren's work changed somewhat in character. The greater part of his ornithological output now consisted of general surveys, part of them published abroad, which were the

result of lectures that he had been invited to give. Among these articles may be mentioned the studies on the distribution and habitat selection of the birds of Northern Europe (1938), ecological problems in ornithology (1941), population size as a factor in bird evolution (1942), and finally an extensive summary of his studies on *Zugunruhe* (1944). To these also belongs a survey of the extinction of bird species caused by man (1944), which, in spite of all the attention recently paid to nature conservation, still seems to give the very essence of the problem.

As professor in zoology, Palmgren felt obliged to make a survey of the entire field of this science, and articles of his, usually printed lectures, may be found on such varying themes as the minimum stimuli registered by the sense organs, the structure and function of the cell, human evolution, and the success of insects in the struggle for existence.

Most of Palmgren's work from about the late thirties on, was, however, devoted to the study of spiders. His interest in this group of animals may well have been stimulated by his Goldcrest studies — small passerines are keen arachnologists. Palmgren has published works on the anatomy, senses, ecology, and ethology of spiders, but his *magnum opus* in arachnology is a large systematic handbook of the spider fauna of Finland (8 parts 1939—77). It is said that Palmgren, when looking for a place to buy a summer cottage, carefully scrutinized his map showing the intensity of spider collecting in different parts of Finland, and then chose Mäntyharju, which was a white spot on the map. He also extended his collecting trips to the Alps and other areas of interest for comparison with Finland. About 30 years ago, I received an amusing proof of the impression his work with spiders had made on his colleagues. I happened to meet the well-known arachnologist Petrunkevitch, who started to question me about his Finnish colleagues, remarking that Palmgren was presumably an old chap, but Prof. Järvi still fairly young. In fact, it was Palmgren who was still fairly young, whereas Prof. Järvi was old enough to be his father, but the body of Palmgren's arachnological publications was already so impressive that it gave the impression of being the work of a lifetime.

When judging Palmgren's work in arachnology, and partly also in ornithology, one has to remember the strong Linnean tradition, surviving to the present day in Sweden and Finland, that the scientist should strive for a comprehensive knowledge of the fauna and flora of his own country. This tradition has been reinforced in Finland by patriotic motives. The politically and culturally exposed position of our country invests the study of its natural history with a meaning which may be lacking in larger and more powerful countries, whose independence seems assured for ever. Pontus Palmgren is a great patriot.

The new avenues of research opened by Palmgren encouraged a considerable number of ornithology students. In the 15-year period 1936—51, no less than ten Ph.D. theses in ornithology were published¹⁾, all of them to a greater or lesser degree inspired by Palmgren. This number should be compared with the total of two theses (Palmén's and Palmgren's own) published during the nearly 300 preceding years of Finnish academic history. Even without a χ^2 -test, the difference will be evident to most readers. Today, when the quality demands on the Ph.D. thesis have decreased, the numbers of students have increased, and the wealth of the country has multiplied, the achievement of ten theses in 15 years may seem relatively modest. In a historical perspective, however, it may well be almost unique.

The first generation of followers and pupils of Palmgren has reached retirement age, but the younger generation, now approaching the peak of their careers, are in most or all cases to some extent his spiritual grandchildren, even though they themselves may fail to realize this.

¹⁾ G. Bergman (1946), E. Fabricius (1951), L. v. Haartman (1945), O. Kalela (1938), P. Kuusisto (1941, published posthumously), E. Merikallio (1946), S. Nordberg (1936), A. Pynönen (1939), L. Siivonen (1939), J. Soveri (1940).

References

A list of Pontus Palmgren's zoological publications is given in this issue.

In writing about Palmgren's allowance for his laboratory work, I have quoted his mimeographed manuscript of a lecture given at the meeting of Scandinavian ethologists in Helsinki, September 1979.

The present article is an extension of a shorter one published in Swedish in *Ornis Fennica* 1977.

On Alvar Palmgren's personality and achievements as a botanist, see my obituary in *Memor. Soc. Fauna Flora Fennica* 1961—62, 38:46—63.

On Palmén, Hortling, and the history of the Finnish Ornithological Society, see my article in *Ornis Fennica* 1974, 51:1—9.

On Palmén, see further e.g. I. Hortling in *Ornis Fennica* 1923, 3:42—49, and P. Palmgren, *ibid.* 1943, 22:97—100.

Leche's work *De commoratione hybernali et peregrinationibus hirundinum* is reviewed by me in O. Hildén, J. Tiainen & R. Valjakka (editors): *Muuttolinnut*, Helsinki 1979.

Lars von Haartman

This double issue of Ornis Fennica is dedicated to Emeritus Professor Pontus Palmgren on the occasion of his 75th birthday on 27 April 1982.