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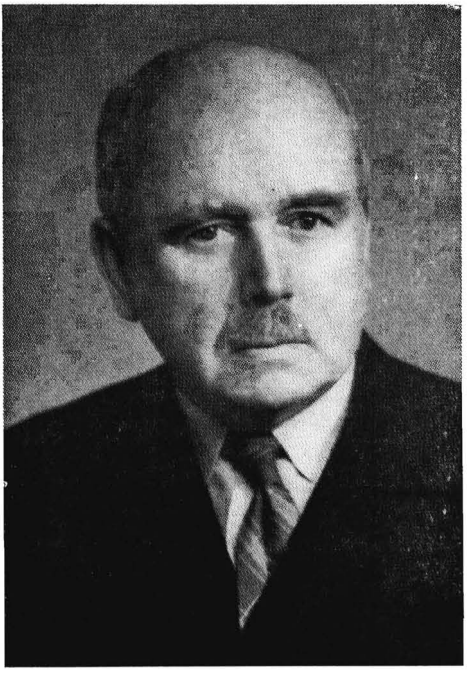

Harry Federley

HARRY FEDERLEY (1879 - 1951)

On 13 November 1951, Dr. HARRY FEDERLEY, emeritus Professor in Genetics of the University of Helsinki and member of the Executive Committee of the Lepidopterists' Society, died unexpectedly in Helsinki. In him we lost one of the most famous representatives of modern genetics and experimental lepidopterology.

defective

HARRY FEDERLEY was born in Viipuri in the former South-Eastern Finland on 22 March 1879, and was 72 years old at the time of his death. He graduated at the University of Helsinki, zoology being his main subject. After having taken his doctor's degree in 1907 FEDERLEY was given *licendia docendi* in zoology, 1909, and in genetics, 1915, at the same university. In 1923 he was appointed Professor of Genetics.

The Lepidoptera were the most important subjects in HARRY FEDERLEY'S research work during his whole life. In his youth he had already acquired a

good knowledge of species by diligent collecting work in different parts of Finland. His mind was, however, set to deeper investigations. In accordance with the theories of evolution at the turn of the century, he tried to discover whether Haeckel's biogenetic law could be applied to the succeeding instars of lepidopterous larvae. For this purpose he reared from eggs the many different Lepidoptera — mainly spinner moths — during several years and pictured their development in minute details in the most beautiful and masterfully coloured figures. This work was never finished, because FEDERLEY began to question more and more the main general applicability of the biogenetic law, and moreover because his results did not fit in with certain lamarckistic ideas of the evolutionists of that time.

While having to rear multitudes of caterpillars FEDERLEY also made various experiments with the chrysalids and imagos. Among others things he treated chrysalids with extreme temperatures and studied the effect on the wing colouring of the imagos. By using a microscope he could demonstrate changes in both form and size of the wing scales caused by the temperature treatment, this leading also to changes in the colouring and pattern of the wing.

Crossing-experiments made with the numerous moths obtained in his breeding experiments brought FEDERLEY'S investigations over to genetics, — the science which became his essential line.

FEDERLEY had chosen the genus *Pygaera* as the main subject of his crossing-experiments and this genus preserved a central position in his works more than 40 years. His most important paper "Das Verhalten der Chromosomen bei der Spermatogenese der Schmetterlinge Pygaera anachoraeta, curtula und pigra sowie einiger ihrer Bastarde" was published in 1913. It aroused much attention and has later on confirmed its position as one of the classic works in genetics. In this and some later works, apart from the *Pygaera* species, dealing with species hybrids of the hawk-moth genera *Smerinthus* and *Deilephila* and the spinner-moth genera *Dicranura, Cerura* and *Drepana,* FEDERLEY has thoroughly explained the heredity and chromosome conditions in species hybrids. Before that the significance of the chromosomes in heredity had not been fully realized. FEDERLEY was one of the first who purposefully tried to associate the results of crossing experiments and chromosome studies.

In crossings of *Pygaera* species FEDERLEY arrived at certain results which were not in conformity with the Mendelian laws. The constant intermediate heredity, stated by him in these cases, proved later to be a characteristic feature of many species hybrids. FEDERLEY also found the correct explanation of this phenomenon in the exceptional behaviour of the chromosomes in conjugation in the hybrid. Chromosomal conditions proved also to be responsible for the sterility common in species hybrids. Further, he found that the chromosomes conjugated to a different extent in the female and male of the same hybrid. This explained the different results in back-crossing depending on which sex of the hybrid had been used.

FEDERLEY'S lepidopterological studies were not limited to species hybrids only. Among others he has studied polymeric genes determining the wing colour. For this purpose he made extensive crossing experiments with the tiger moth *Spilosoma lutea* and its dark form *zatima.* He published further a large work on the chromosome conditions of Finnish Rhopalocera. By this

work he found species in all families with chromosome numbers differing remarkably from the modal number of the group. This and his observations concerning the crossings of *Dicranura* species showing that the chromosome numbers of certain hybrids are higher than the sum of the chromosome numbers of the parental species, point to the possibility that the centromere in the chromosomes of Lepidoptera might be what we call a diffuse centromere, distributed over the whole chromosome. This would make the fusion and fragmentation of chromosomes possible as structural changes during the chromosomal evolution in Lepidoptera.

FEDERLEY'S numerous papers, most of which were published in the main periodicals of the branch, made him known in the whole genetic and lepidopterological world. His long periods at foreign scientific institutions, and his active participation in the international congresses of the branches he represented, further contributed to this. He was also awarded many scientific honours. He was honorary doctor of the universities of Lund and Copenhagen and the honorary or correspondence member of numerous scientific societies both at home and abroad, as far as America and Japan. In the scientific life of his country he long held a very central position.

HARRY FEDERLEY was as a man a great personality. His ready intellect made it possible for him to solve the most complicated problems. He always remained true to himself and defended bravely, when necessary, the point of view he thought just. Through his kind and helpful disposition HARRY FEDERLEY gained many friends, who now after his departure from this life revere his memory in deep regret.

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Lepidopterological publications.

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1906. "Lepidopterologische Temperatur-Experimente mit besonderer Berücksichtigung der Flügelschuppen." *Festschr. f. J. A. Palmén* 2: No. 16: pp. 1-119. (Diss.)

1908. "Über den Albinismus bei den Lepidopteren." *Acta Soc. Fauna et Flora Fenn.* 31, 4: pp. 1-27. - "*Tapinostola elymi* Fr. och dess varietet *saturatior* Staud." *Medd. Soc. Fauna et Flora Fenn.* 34: p. 68.

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1916. "Chromosomenstudien an Mischlingen. III." *Öfv. Finska Vetensk. Soc. Förh.* 58 A, 12: pp. 1-17. - "Die Vererbung des Raupendimorphismus von *Chaerocampa elpenor* L." *Ibid.* 58 A, 17: pp. 1-13.

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1922. "Über einen Fall von Criss-Cross-Vererbung bei einer Artkreuzung." *Hereditas* 3: pp. 125-146.

1923. "Bilden Chromosomenkonjugation. Mendelspaltung und Fertilität bei Speciesbastarden einen Dreibund?" *Hereditas* 4: pp. 161-170. - "Über polymere Faktoren bei Lepidopteren." *Z. ind. Abst.-Vererb.lehre* 30: pp. 284-286.

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1927. "Ist die Chromosomenkonjugation eine conditio sine qua non für die Mendelspaltung?" *Hereditas* 9: pp. 391-404.

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