

A BIBLIOGRAPHY AND BRIEF BIOGRAPHY OF WILFRED S. FERNANDO, PROFESSOR OF ZOOLOGY, UNIVERSITY OF CEYLON, 1948-1963

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The Ceylon University College was formally opened on the 24th of January 1921 in Thurstan Road (now Cumaratunga Munidasa Mawatha) Colombo, with courses offered for the London Intermediate and Final (Arts and Science) Examination in addition to the First year Medical Examinations in Pure Science. One hundred and fifteen students were registered as students of the college. The first Principal of the college was Mr. R. Marrs who assumed duties at the beginning of the second academic year (1921-1922).

In 1924 Mr. D.R.R.Burt, a graduate of St. Andrew's University, Scotland was appointed Lecturer in charge of Zoology, and honours classes (special degrees) were commenced in zoology during the year 1925-26. Wilfred Fernando and Cyril Holmes were the students who graduated in 1928, and this was the first occasion when students from Ceylon University College were presented for the Honours Degree in Zoology awarded by the London University.

Wilfred Fernando, the son of Semage Marcian Fernando, Ayurvedic Physician of Dagedera, Galle had his education at St. Joseph's College, Colombo, a premier Catholic Institution—from the age of five until his admission to University College in 1924. He had a distinguished academic record in school where he won several prizes and passed the Cambridge Junior and Senior Examinations with distinctions and an exemption from the London Matriculation Examination. At St. Joseph's he was influenced by two outstanding teachers – Rev. Father M.J. Le Goc and Rev. Father J.B. Martin, the former a teacher of Botany and the latter, the teacher of Classics, both of whom were remembered with gratitude by Fernando.

Fernando entered the University College in 1924 and passed the Inter Science Examination in 1925 in Physics, Chemistry, Botany and Zoology. He was awarded an exhibition on the basis of his performance at this examination, which he continued to hold for three years when he read for an honours degree in zoology.

Mr. D.R.R.Burt was the Lecturer in charge of the Department of Zoology, and was assisted by visiting staff in the teaching and conduct of practicals. They were Dr. Joseph Pearson, D.Sc (Liverpool), FRS (Edin.), Director of the Colombo Museum and Marine Biologist of the Government of Ceylon, Mr. G.M. Henry, Entomologist of the Colombo Museum, and Mr. Barney, B.Sc (Dublin). Burt was a graduate of the University of St. Andrews in Scotland where he studied under the legendary D'Arcy Thompson and a Fellow of the Linnean Society. Pearson was a specialist in Marine Biology and Parasitology. Henry was a specialist in Entomology with wide experience, who later went on to write the very popular and standard work on the Birds of Ceylon.

According to Burt, Fernando was "a student of conspicuous merit" throughout his undergraduate career. He was an "observant collector in the field" and read many interesting papers, "the result of extensive private reading", before the College Biological Society. Fernando passed Botany as subsidiary subject in 1927 and graduated in 1928 with Second Class Honours in Zoology. He was already a Demonstrator (Temporary) in Zoology in June 1928, and recommending his confirmation as Demonstrator in March 1929 his Head, Dr. Burt, wrote that Fernando's "work is entirely satisfactory. His work as a teacher is sound and his work in the practical class is thorough. He is keen on his work and he has been of great

assistance to me both in the teaching and departmental work. The type of man whom I wish to have working with me in the Department of Zoology, and I recommend him for confirmation in his appointment”.

Fernando was awarded the Coomaraswamy prize for the best student in Science, and for his performance in the final examination, the prestigious Government Scholarship in Science for postgraduate studies in England. P.C. Sarbadhikari, a DSc from London, Fellow of the Linnean Society and Lecturer in Botany at University College, urged Fernando to do his postgraduate work with E.W. MacBride in London. Fernando joined the Imperial College of Science and Technology in October 1929, and worked under MacBride for his doctorate. He was awarded a Ph.D in July 1931 for his studies on “The embryology of Patella and other Marine Molluscs”. He was the winner in 1930 of the Sarah Marshall Scholarship awarded by the University of London, and also a Diplomat of the Imperial College. During this period Fernando had the privilege of meeting and discussing his work with the great German experimental embryologist Hans Spemann when he visited MacBride’s Laboratory.

A brief mention of MacBride, Fernando’s research supervisor, is not without relevance here. MacBride was born in Belfast and studied Zoology under Adam Sedgwick at Cambridge University, as an exhibitioner of St. John’s College. He graduated with first class honours in 1891 in both Zoology and Botany in Part II of the National Science Tripos. He was made a fellow of his college in 1893, but went to Canada in 1897 to become the first Professor of Zoology in McGill University, Montreal. MacBride left McGill in 1909 to work with Sedgwick, who had now moved to occupy the Chair of Zoology at Imperial College, London. He succeeded Sedgwick in the Chair of Zoology at Sedgwick’s death in 1914.

MacBride was an outstanding Zoologist, a DSc and FRS. He was a superb micro-anatomist and embryologist, with numerous publications including the widely used classic – A Textbook of Invertebrate Embryology. MacBride had a deep and lasting influence on Fernando, who always spoke of him with reverence and affection.

Fernando returned to Sri Lanka (then Ceylon) in 1931 and was appointed Assistant Lecturer while Dr. Bhatia who was a Lecturer in the Department of Zoology returned to his substantive post in India the same year. Mr. D.R.R. Burt who was Lecturer in charge of the Department of Zoology was appointed Professor of Zoology in 1940, and Fernando was promoted to Lecturer in 1942. The University of Ceylon was established in 1942 with the amalgamation of the Ceylon University College and the Ceylon Medical College. Professor Burt resigned in 1947 to take up a position in the University of St. Andrews, and Wilfred Fernando was appointed Professor of Zoology in 1948, the first Sri Lankan to hold this position. In his inaugural address “Zoology in Ceylon” delivered at King George’s Hall on 29 July 1948, Fernando tracing the development of the discipline in the country stressed the “need for more opportunities in the country for a knowledge of Zoology and the employment of Zoologists”. He closed his address with a quote from the scriptures - “The harvest truly is great but the labourers are few” (Fernando 1949).

Fernando read widely and drew on several sources for his lectures, which were delivered rather rapidly, and he covered the board with diagrams executed in a variety of colours. His lectures to the first year students in Science and the Pre-medical course were very comprehensive and served as a good introduction to the subject, especially to those students who wished to specialize in Zoology.

The honours programme, or Section B as it was then called, was his main concern and he taught the Invertebrate and Vertebrate Zoology courses, in addition to his specialties- Entomology and Embryology. He also directed the reading in specialized topics, and students of this era will recall that among the many journals constituting required reading were the Quarterly Review of Biology and Biological Reviews.

Fernando’s tenure as Professor saw the gradual expansion of the Department, an increasing number of students and a growing interest in Zoology with a widening of the scope of the subject as well. Disciplines such as Animal Ecology, Cell Biology, Comparative

Animal Physiology, and the modern trends in Genetics were beginning to have a larger impact in the Zoology curriculum. The training in zoology continued to be very sound with many of Fernando's students going on to work in Sri Lanka and abroad in various capacities with distinction.

He was editor of Section B (Zoology) of the Ceylon Journal of Science for a brief period. The deep sea Galathea Expedition (1950-52) presented a Silver Medal to Professor Fernando on 9th October 1956 as a "token of appreciation of material contribution to the success of the Galathea Expedition".

Fernando, despite his teaching and research prowess, was not without his detractors and differences with his colleagues and the University Administration. His "unbending attitude" at times and "brusqueness" did not go down well with the authorities. There was even a Commission of Inquiry into maladministration of the Department, which resulted in a complete vindication of his position with the charges not being substantiated. Nevertheless, he ceased to be Professor and Head of the Department of Zoology on 19th February 1963 at the age of 56 despite appeals, objections and protests. He gave his last lecture on the 19th afternoon attended by the zoology special students and his junior colleagues, and he ended it with the words "all good things must come to an end".

Histology and microscopic techniques were Fernando's forte, and his competence was doubtless honed during his period at the Imperial College. What was written of Fritz Jacoby in an obituary in the Times (London) of October 24, 1991, could well apply to Fernando: "one of the old school histologists who armed with no more than a microscope, a little ancillary equipment and a variety of stains and reagents were able to elucidate the most minute details of tissue structure, and hence, function".

A full list of his publications is appended at the end of this article, and a few comments on his research would suffice here. His research findings were published in journals such as The Annals and Magazine of Natural History, The Ceylon Journal of Science, Journal of Parasitology, Proceedings of the Royal Society, Proceedings of the Zoological Society, London, The Quarterly Journal of Microscopic Science, and Spolia Zeylanica.

His work on *Viviparus* gets special mention in the book "Larvae and Evolution, Toward a New Zoology" by Donald Williamson (1992) which should be read for the wealth of information it has in its pages as well as for its novel and stimulating idea of "the transfer of genetic material between animals that are not closely related". He writes of Fernando's work thus: "we cannot leave the mollusca without mentioning the strange case of *Viviparus viviparus*, a freshwater prosobranch gastropod with direct development. At least six biologists have published accounts of the embryology of this species, and all have agreed that, in contrast to the vast majority of molluscs, it is a deuterostome, in which the blastopore becomes the anus. Some of the authors have claimed that the mesoderm originates from the ectoderm, but Fernando's detailed and careful study leaves no doubt that it originates from the endoderm. *Viviparus* therefore starts development as an enterocoelous deuterostome but ends up as a conventional mollusc". Fernando's work on the molluscs also included studies in reproduction and the origin of larval kidneys. Hyman (1951) refers to some of his work in her volume on the Mollusca.

The temnocephalids are an interesting group of Tubellarian Platyhelminths, with a geographic distribution mainly confined to the southern continents, and having disputed affinities and taxonomic status (Williams, 1981, 1986). Fernando published a series of papers on the Temnocephalids of Ceylon (Sri Lanka), and his work is referred to in Grasse's *Traite de Zoologie*, tome IV, (a whole page is devoted to Fernando's drawings of the embryonic development and origin of the endoderm in *Scutariella (Caridinicola, indica)*). Hyman (1951) too refers to his findings in Volume II of her monumental series on the Invertebrates. Breckenridge and Nathanael (1988) dedicated their publication on *Paracaridinicola* to Fernando in recognition of his research on Temnocephalids.

Descriptions of helminth parasites from a range of animal hosts has been one of the dominant thrusts of Parasitology over the years, and the description of new parasite species has not diminished in number to this day. Fernando made his contribution to this area of research too in a series of papers titled "Contributions to Ceylon Helminthology".

Ceylon (Sri Lanka) has long been considered an entomologist's paradise, and naturalists have here a seemingly endless supply of insects to be described, identified and catalogued. This is a tradition that goes far back to the early period of Natural History and colonial times in Sri Lanka with the 'opening' of the country to the European powers, the development of agriculture-especially plantation agriculture, and the institutionalization of agricultural research. Fernando (1949), with understandable bias, states that "perhaps the most interesting branch of Zoology is Entomology – the study of insects, and Ceylon has plenty of them". He taught the special course in Entomology for the final year Section B (Honours) students, some of whom went on to become internationally recognized entomologists.

Fernando's research in the last years of his tenure in the University of Ceylon was published in a series of papers as "Contributions to a knowledge of the insects of Ceylon", and "New species of insects from Ceylon".

Mention must be made of his anatomical and histological studies of insects and insect development, particularly his study on the development and homologies of the mouthparts of the head louse (Fernando, 1933) which work is cited in the standard text of Imms (1960), and where it is stated *inter alia* that "mouthparts are difficult to investigate owing to their minute size and delicacy of structure"

Fernando's facility with a microtome knife and histological procedures, the naturalist's curiosity, his wide reading and scholarship, and also the ability to read original texts in German (an attribute certainly developed while working with MacBride who spoke and read German fluently) all contributed towards his research output. We must also remind ourselves that all this was achieved in a period where there were no big research grants and funding agencies, research assistants and post graduate students, conferences, seminars and workshops, and all the other supporting infrastructure we associate with the research enterprise in the Universities today. The evaluation of his work should bear this in mind as well.

He was of the view that "the carrying out of a piece of research on a simple problem is the duty of the undergraduate", (Fernando, 1949), and that teachers had a responsibility to train the young for research. Among the essential requirements for the teacher/trainer he listed, was the rather strenuous exhortation to have " a working programme of a whole day throughout the week, throughout the month, all the year round with a sacrifice of leisure for labour", (Fernando, 1949).

With the current worldwide interest in biodiversity and natural history, and the need to resuscitate and strengthen the neglected discipline of taxonomy, Fernando's publications could serve as a stimulus and source of interest to a new generation of zoologists in Sri Lanka.

Wilfred Fernando died on the 14th of August 1998, leaving a wife Catherine, a daughter, two sons, four grand children and a great grandson. In keeping with his retiring and unobtrusive ways his remains were cremated on the same day at a private funeral.

SCIENTIFIC PUBLICATIONS OF WILFRED FERNANDO

- 1930 Variations in the distribution of the spermatic and ilio-lumbar veins in *Rattus rattus kandianus* Kelaart. *Spolia Zeylanica*. 16(1), 97-106.
- 1931 The origin of the mesoderm in the gastropod *Viviparus* (=Paludina). *Proc. Roy. Soc. B*. 107, 381-390.
- 1932 Contributions to Ceylon Helminthology 1. *Paradistomum lanka*, sp. nov. a parasite from the gall bladder of the Unicorn Lizard of Ceylon. *Ceylon J. Sci. Section B* (Spolia Zeylanica) Vol. XVII, 2, 139-146.
- 1933(a) Contributions to Ceylon Helminthology 2. *Phaneropsolus lakdivensis*, sp. nov., A trematode from the Ceylon slender Loris (*Loris tardigradus*). *Ceylon J. Sci. Section B. Zoology and Geology* (Spolia Zeylanica), Vol. XVII, 3: 149-154.
- 1933(b) Contributions to Ceylon Helminthology 3. *Mesocoelium burti*; sp. nov., *Mesocoelium marsii*, sp. nov., and *Haplorchis pearsoni*, sp. nov. *Ceylon J. Sci. Section B. Zoology and Geology*. Vol. XVIII. 1. 9-18.
- 1934 Studies on the Temnocephaloidea - 1. The female reproductive apparatus in *Caridinicola indica* and *Monodiscus parvus*. *Proc. Zoo. Soc. Lond.* 1: 251-257.
- 1934 Studies on the Temnocephaloidea 2. The embryology of *Caridinicola indica*. *Proc. Zoo. Soc. Lond.* 2. 827-850.
- 1943 The anatomy and histology of the alimentary canal of *Tridactylus variegatus* Latr. *Spolia Zeylanica*, 23, (2) 71-78.
- 1945 The storage of glycogen in the Temnocephaloidea. *J. Parasitol.* 31 3, 185-190.
- 1946 Studies on the pulmonates of Ceylon 1. The storage of galactogen and glycogen in the gonad and albumen gland of *Achatina fulica*. *Ceylon J. Sci. Section B. Zoology*. XXIII, 2, 97-104.
- 1946 The distribution of Vitamin C. in *Caridinicola indica* Annandale. *Ceylon J. Sci. Section B, Zoology*. XXIII, 3: 113-118.
- 1948 Studies on the Pulmonates of Ceylon 2. The origin of the larval kidneys of *Achatina*, *Glessula* and *Opeas*. *Ceylon J. Sci. Section B, Zoology* XXIII, 3. 153-174.
- 1949 Zoology in Ceylon (an Inaugural address delivered at King George's Hall, University of Ceylon on July 29th 1948). *University of Ceylon Review*. VII 1. 1-11.
- 1950 Notes on the alimentary canal and malpighian tubules of the firefly *Luciola mauretanica*. *Ceylon J. Sci., Section B, Zoology*, XXIV, 49-60.
- 1950 *Tridactylus ceylanicus* sp. nov. (Insecta, Orthoptera, Tridactyloidea). *Ceylon J. Sci. B*, XXIV, 1. 47-48.

- 1950 Note an abnormality in the reproductive system of *Achatina fulica*. *Ceylon J. Sci. B.* XXIV, 61-62.
- 1950 The vesicula seminalis of *Glessula ceylonica*. (Mollusca, Pulmonata). *Ceylon J. Sci. B.* XXIV, 2, 123-126.
- 1950 *Cyclocoelum (Pseudhyptiasmus) sinhaladvipa* sp. nov., a parasite from the nasal sinus of the Ceylon Jungle Fowl (*Gallus lafayetti*). *Ceylon J. Sci. B.* XXIV, 2 127-130.
- 1952(a) Studies on the Temnocephalida of Ceylon. I. *Caridinicola platei* sp. nov. *Ceylon J. Sci. (B)*, XXV, 19-22.
- 1952(b) Studies on the Temnocephalida of Ceylon. 2. *Monodiscus macbridei* sp. nov. *Ceylon J. Sci. (B)*, XXV, 23-27.
- 1953 Notes on two larval (nymphal) linguatulids from Ceylon. *Ceylon J. Sci. (B)*, XXV, 155-156.
- 1957 *Sphecophila ravana* sp. n., a new termitophilous cockroach from Ceylon. *Ann. Mag. nat. Hist.*, 12th Series, X, 81-84.
- 1957 Contributions to a knowledge of the Insects of Ceylon 1. Two new species of Collembola. *Ceylon J. Sci. (B)*, XXV,3, 197-199.
- 1957 Contributions to a knowledge of the Insects of Ceylon 2. *Ectatoderus sandarasagarai* sp. nov. (Orthoptera, Gryllidae). *Ceylon J. Sci. (B)*,XXV, 201-202.
- 1957 Contributions to a knowledge of the Insects of Ceylon 3. *Sphingolabis indumathie* sp. nov. (Dermaptera, Platylabiidae). *Ceylon J. Sci. (B)*, XXV, 203-205.
- 1957 Contributions to a knowledge of the Insects of Ceylon 4. Note on an abnormality in the alimentary system of *Periplaneta orientalis*. *Ceylon J. Sci. (B)*, XXV, 207-208.
- 1957 Contributions to a knowledge of the Insects of Ceylon 5. New parasitic Hymenoptera (Chalcidoidea). *Ceylon J. Sci. (B)*, XXV, 209-219.
- 1957 Contributions to a knowledge of the Insects of Ceylon 6. *Platylabia legoci* sp. nov. (Dermaptera, Platylabiidae). *Ceylon J. Sc. (B)*, XXV, 221-222.
- 1957 New species of insects from Ceylon I. *Ceylon J. Sci. biol. Sci.*, I, 1, 7-18.
- 1957 New species of *Dulichius* from Ceylon. *Ceylon J. Sci. biol. Sci.*, I, 1, 19-22.
- 1957 New species of insects from Ceylon. 2. *Ceylon J. Sci. biol. Sci.*, I, 1, 73-76.
- 1958 New species of insects from Ceylon. 3. *Ceylon J. Sci. biol. Sci.*, I, 2, 85-93.
- 1959 New species of insects from Ceylon. 4. *Ceylon J. Sci. biol. Sci.*, 2, 2, 89-97.
- 1959 Two new cockroaches of the genus *Sphecophila* from Ceylon. *Ceylon J. Sci. biol., Sci.*, 2, 2, 244-248.

- 1960 New species of insects from Ceylon 5. *Ceylon J. Sci. biol. Sci.*, **3**, 123-130.
- 1960 New species of insects from Ceylon 6. *Ceylon J. Sci. biol. Sci.*, **3**, 235-242.
- 1961 New species of insects from Ceylon 7. *Ceylon J. Sci. biol. Sci.*, **4**, 41-44.
- 1962 *Myrmecophilus haeckeli* sp. n. a new myrmecophilous gryllid from Ceylon. *Ceylon J. Sci. biol. Sci.*, **4**, 73-76.
- 1962 The gastric caeca and proventriculus in the Blattidae. *Ceylon J. Sci. biol. Sci.*, **4**, 88-95.

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