

OBITUARY



Thomas Risley Odhiambo (1931–2003): an appreciation*

In 1965, a short communication appeared in *Nature*, 'Metabolic effects of corpus allatum hormone, in the desert locust, *Schistocerca gregaria*', soon followed by 13 excellent monographic papers, in the leading journals of the time (1966–1970). These papers dealt with hormonal control of reproductive physiology in the male desert locust, with T.R. Odhiambo as the sole author. This impressive scientific contribution came from Odhiambo's (TRO's) PhD thesis, conducted at Cambridge under the supervision of Professor Vincent Wigglesworth, the guru of insect physiology. Sir Vincent considered TRO as the best PhD student he ever had. This series of papers was the grand premier of TRO in the field of insect physiology – and we all looked forward to his next efforts. Indeed, already in 1966, TRO published

papers dealing with the feeding behaviour and reproductive physiology of the tsetse fly, the vector for African sleeping sickness, this time from the University of Nairobi, where he moved after completing his PhD. The selection of the insects he worked with was not accidental. The desert locust and the tsetse fly are major African pests, and TRO's involvement with these pests continued throughout his career. Even when he was overloaded with administrative commitments, he always found time to make significant intellectual contributions to research on these and other insects.

TRO was born in Alego, Nyanza Province, Kenya on 4 February 1931. His early education took place in various places, including Maseno Secondary School, where he was outstanding in academic subjects, and showed leadership and great diversity in his non-academic activities. He was captain of the hockey team; conductor and trainer of the school

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choir; founder of the school's newspaper and of the Maseno School Philosophical Society. Upon graduation, TRO proceeded to Makerere University College, Kampala, Uganda, where he studied for his BSc Degree in Botany and Zoology (1950–1953).

After graduation, Odhiambo worked at the Tea Research Institute in Kericho, Kenya, and subsequently became curator of the insect collection of Severe and Kawanda Research Stations in Uganda in 1956. During a period of 3 years at this job, he concentrated on the taxonomy of Miridae bugs (Hemiptera) of East Africa and published over 20 papers, describing several new genera and dozens of new species. In 1959, he was awarded the Independence Scholarship of Meritorious Studies by the Ugandan government. He spent 6 years (1959–1965) at Cambridge where he completed both his natural science studies (MA) and PhD. In 1965, he began his career at the University College, Nairobi as a lecturer, rising to Full Professor in 1970. Already as a student at Makerere, but much more so after joining the African academic world in Nairobi, TRO was constantly agonizing about the status of science in Africa since the 15th century. He was cognizant of Africa's cultural history with leadership in mathematics, astronomy and engineering in ancient Egypt around 2300 BC and again at Carthage, Timbuktu and Zimbabwe. Yet, after the 15th century, the scientific enterprise seemed to have disappeared in Africa. TRO had a strong conviction in Africa's native potential: if only proper environmental conditions would be available, they would re-emerge. He lamented over the increasing brain drain from Africa, as talented students, receiving fellowships to study abroad, are reluctant to return home where they cannot apply their newly-acquired skills. Odhiambo believed that scientists like him could be instrumental in changing the scientific conditions in the entire African continent.

In 1967, he was approached by the editor of *Science* to write a review on the status of science in Africa. This article made a plea for establishing several large "centers of excellence" staffed by leading world authorities in particular scientific disciplines who would mentor a large number of bright young postgraduate and postdoctoral fellows from Africa and tropical developing countries, to build the first generation of professional scientists. Strong encouragement for launching such a centre came from Carl Djerassi, Professor of Chemistry at Stanford, who was the chairman of the National Academy of Science's Board on Science Technology in International Development. Djerassi had presented a paper at a Pugwash Conference on 'Science: A high priority? Research centers in developing nations.' He pointed out that a developing country becomes developed when

original research emanates from it, and suggested that even in the absence of the prerequisite indigenous scientific manpower, a research centre could be established featuring (i) an international cadre of postdoctorate research fellows; (ii) overall scientific direction by a group of part-time directors from major universities in developed countries; (iii) a selection of research areas with possible ultimate economic pay-off and a maximum multiplication factor.

These ideas agreed very well with Odhiambo's, who proposed to Professor Djerassi the launching of a Centre of Insect Physiology and Endocrinology (later changed to Ecology), in Nairobi. Djerassi, who had just recently founded the Zoecon Corporation to explore applications of insect endocrinology for vector control, was enthusiastic. He, in turn, approached the American Academy of Science (the home of the American Pugwash Committee) to help launch the centre. They contacted several foreign academies and research institutes – among them the Royal Society of London, the Dutch Academy, the Max Planck Gesellschaft and the Royal Swedish Academy. In a joint planning meeting in Nairobi, ICIPE was established in 1969. Eventually, 21 national academies became sponsors of ICIPE, and they provided the long-distance research directors. TRO was the first director of ICIPE and headed it successfully for 25 years. In the early years, external directors, all leading names in their fields, supervised ICIPE's research. They visited 2–3 times a year, spent their sabbatical years there, and sent their postdoctoral fellows to spend 2–3 years at ICIPE.

Running ICIPE was quite an art. The elite participating institutions expected mostly basic science, while the donors pushed for more applied aspects. TRO's charisma, intelligence, diplomacy and patience enabled him to navigate this ship successfully. To this day ICIPE remains unique in executing research programmes that fulfill the training requirements of its many university partners, while concurrently meeting the needs of farmers. The institute retains some of the best physical facilities for scientific research and development on the continent. The centre has three basic objectives that have largely remained unchanged:

1. To create a body of basic knowledge of key tropical pests and disease vectors that adversely affect the welfare of the people of Africa, their crops and livestock;
2. To transform these discoveries and innovations into strategies for managing pests or exploiting beneficial insects; and
3. To ensure that a motivated, highly talented human capital in insect and related areas of science is built up, so "as to enable Africa to

sustain herself and to lead the entire pan-tropical world in this area of endeavor" (his words).

With regard to the first objective, TRO established research and development programmes on important pests of field crops such as stemborers, termites and the desert locust; on disease vectors, yellow fever and malaria mosquitoes, and sandflies; and on livestock pests, tsetse flies and ticks. Today, ICIPE continues work with many of these same pests, but, at the recommendation of its collaborators and donors, is concentrating on fewer field crop pests and has introduced the area of horticultural pests that is of more recent interest for its income-generating potential for African farmers. Studies on tsetse and malaria vectors have been reinforced by projects on the chemical ecology and behaviour and genomics of these insects. New programmes on commercial insects (bees and silkmths) and on environmental biodiversity conservation have been added, based on the recognition, as TRO put it recently, that "only 0.03% of all insects are actually harmful to humans. The rest are essential parts of our ecosystem."

With respect to the second objective, ICIPE continues to refine, expand and adapt several of the technologies first developed during TRO's tenure, such as the NGU tsetse traps, and biological control of stemborers, but adding new approaches and technologies as more of the basic information from research becomes available. A special Technology Transfer Unit has been established to help bring the ready-to-use output from R&D to farmers at grassroots level. We know he was pleased with this concept, because TRO had recently expressed that researchers should have much more contact with the communities they are meant to serve.

The third objective of human and institutional capacity building is perhaps the one sphere in which ICIPE has been most unique among research organizations. In 1983, TRO launched a very successful programme for training MSc and PhD scientists, the 'African Regional Postgraduate Programme in Insect Science' (ARPPIS). By the time TRO left ICIPE, over 120 PhD students had enrolled. These students perform their research at ICIPE, but receive their degrees from one of the (now 28) African universities participating in the ARPPIS network. Since TRO's retirement, 45 more PhD students have enrolled with full sponsorship, and another 65 enrolled with their own funding. Over 100 have received their MSc degrees.

Supported predominantly by the governments of the Netherlands (through the Direct Support to Training Institutions in Developing Countries Programme, DSO-SII) and Germany (through the German Academic Exchange Service, DAAD), ARPPIS is considered by many to be a flagship capacity building programme addressing

development problems in the tropics. TRO's legacy in building the human capital to solve Africa's problems lives on, and the ARPPIS and other graduates are now filling prominent positions in universities, government departments and research institutions, private companies, and international organizations throughout the continent. Most of the ARPPIS graduates have not succumbed to the temptation to become part of the 'brain drain', and are still working in Africa. TRO's concept of ICIPE as a centre of "scientific excellence" has proven itself and can serve as a model for similar centres in other disciplines.

TRO's aspirations for recruiting science for the development of Africa were not restricted to pest control. He thought of means to increase priority of science in the policies of the African countries. To this end, he was involved in establishing the Third World Academy of Sciences, which was officially launched in 1985, and spearheaded the setting up of the African Academy of Science (AAS) in 1987, which he chaired until 1999. TRO also recognized that scientific publication is an integral part of scientific research and that African scientists need to be heard. He thus created the infrastructure that includes two journals, *Insect Science and its Application* (now the *International Journal of Tropical Insect Science*) and *Discovery and Innovation* (the latter covering the complete scientific spectrum) and the publishing facilities of the Academy Publishers (of the AAS) and ICIPE Science Press. He also understood the compelling reasons for exposing children to science at an early age and thus established *ChiSci Scientific Publications*. He himself wrote six children's science books.

Odhiambo's kudos are numerous. Among others, he received honorary doctorates from seven universities. He was the first to receive the African Prize for Leadership for the Sustainable End of Hunger (shared with President Abdi Diop of Senegal in 1987), and the Albert Einstein Gold Medal (1991). In launching its *Vision and Strategy 2003–2012: Meeting the Needs of a Changing World*, on 26th March 2003, ICIPE honoured Thomas Odhiambo for his vision and exemplary dedication to putting in place a science-based development paradigm in Africa that holds great promise in providing generic solutions to a multitude of problems in the tropics. He will be sorely missed by his friends and colleagues the world over.

"When I count my blessings, knowing TRO closely was certainly one of them."

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