

John Joseph Cronin Buckley, D.Sc. 1904 - 1972

The premature death of Jack Buckley at the age of 67 has saddened his countless friends, students and colleagues, and a sense of loss will remain with us all for many years. No one ever had a word to say against him, but I doubt if he knew how affectionately he was regarded; his modesty was such that he belittled his own achievements and invariably gave more credit than was really due to his collaborators. He could not believe that he was a worthy successor to his chief the late R. T. Leiper, of whom he stood in constant awe.

Buckley was born in Dublin in 1904, the second son of John Joseph Buckley, Acting Director of the National Museum of Ireland, and was educated first at the Catholic University School and subsequently at the National University of Ireland. Many remember him from those days, perhaps more for his prowess on the rugby field than in the biology department. He was awarded, however, the Travelling Scholarship in Zoology, and two years after taking the M.Sc., he went to seek his fortune at the London School of Tropical Medicine. There in 1928, I first met him. His research flair was soon recognised by Leiper, and Buckley was appointed Wandsworth Scholar (1931–1934) and Milner Research Fellow (1934–1935) in the Department of Parasitology. He continued to play rugger and was a prominent member of the London Irish team.

Leiper's policy was to send his staff, and to go himself to the Tropics, and Buckley was accordingly assigned in 1931 to St. Vincent in the West Indies where in the early summer of 1933, he elucidated the full life cycle of the human filarial worm, *Mansonella ozzardi*, in its invertebrate host (*Culicoides furens*). Like other people who work on this insect, he was forced to use wild caught specimens for his transmission experiments, but showed that in the latter the infection rate was 25·5 per cent whereas in nature it was only 5 per cent.

Buckley returned to England and worked on helminths which he had collected in Venezuela and the Caribbean or were present in the departmental collection in London. In this way, he began to acquire a thorough knowledge of the systematics of these parasites, and at the same time he worked out further life cycles e.g. of *Syngamus* spp. A taste for the tropics had been developed, and Buckley travelled in 1935 to South East Asia and in particular to Malaya where he was to make further fundamental discoveries, both before and after

World War II. His mind was still drawn to the midge, and he soon incriminated *Culicoides* as the vector of *Onchocerca gibsoni* of cattle.

In 1938, Buckley was promoted to lecturer, and two years later he was sent to Kenya to carry out investigations on onchocerciasis. From this time dates my own intimate association with him during which I learned to appreciate his perfect qualities as a scientist, and his gentle modest character which hid a will of steel. Buckley's task was to find a method for the interruption of the transmission of onchocerciasis, and to delineate the places where it occurred in the territory. He found the highest incidence of the infection in the Kaimosi Forest, where 72 per cent of the inhabitants suffered from the disease. This focus lay in the Nandi country on which the local tribe had laid a curse after its occupation by European settlers many years before. Buckley was given one of the farms for his headquarters; it had been unoccupied for a year since the tragic death of the last owner, Lt. Col. Copeman. It was an unwise place for a superstitious Irishman to inhabit; the house was pleasant enough but it had an unusual feature, a cellar, and on most nights inexplicable noises came up to the living quarters. These eventually proved too disturbing for the intruder, who though full of physical courage, was less willing to face the Unseen. Buckley accordingly moved to Kisii, where onchocerciasis, malaria, blackwater fever, plague, and sleeping sickness raged, but nothing supernatural! He nearly died of malaria during this time, but in between attacks, he worked incessantly in the laboratory, or more often in arduous field work, "leaping like a goat and quite fearlessly, from rock to rock in mountain torrents and streams" (quotation from a letter of J. P. McMahon, mutual colleague and friend). He found new foci of the disease, and eventually discovered a method for the eradication of *Simulium neavei*, the local vector of the infection. This method was based on biological control, by eliminating an essential requirement for the breeding of the insect: complete removal of undergrowth and partial removal of trees from the banks of infested rivers. This bush-clearing was maintained, and after 6 years, *Simulium neavei* had completely disappeared. Buckley was one of the first to realise the importance of using techniques in insect control which do not involve pollution of the environment, though he expressed his outlook in another way—he preferred an elegant method rather than a DDT blunderbuss!

In 1944 Buckley left Kenya to carry out a helminthological survey in Northern Rhodesia, and finally returned early in 1945 to England by travelling down the Nile to Alexandria. The University of London then appointed him Reader in Medical Parasitology, and

in 1946, he succeeded Leiper in the Julien Courtauld Chair of Helminthology.

The war years had restricted to some degree Buckley's activities but he quickly took up the reins, indulging his systematic taste by describing abnormal parasites in giraffe, wallaby, lemurs and leopard cats. These indirectly led him to his greatest works, the effects of infection of the "wrong" host with nematode parasites, and a new range of zoonotic infections in filariasis.

In collaboration with J. F. B. Edeson and R. H. Wharton of the Filariasis Research Laboratory, Buckley investigated in 1955 and succeeding years the life of the filarioid worms with sheathed microfilariae in various animals in Malaya. They discovered an extensive focus of infection near Kuanton on the Pahang coast, in which parasites resembling *Wuchereria malayi* were found in kra monkeys (*Macaca fasciculata*), in langurs (*Presbytis melalophos*), in the slow loris (*Nycticebus coucang*), and in cats and dogs as well as man. In addition to the known species a new parasite, *W. pahangi*, was identified in some of this material. Thus for the first time, adult specimens with malayi-like microfilariae were found in non-human hosts and a zoonotic element in this form of filariasis was confirmed. Buckley with his customary caution stated that cross transmission experiments alone would give an answer to this important epidemiological problem; in 1958 cats were experimentally infected from a human source and in 1960 in the reverse direction.

These and similar experiments involved the use of a human volunteer, and although Buckley did his best to conceal the fact, he was the volunteer in several of the experiments. In July 1955, he was inoculated in Pahang with 20 infective larvae obtained from *Mansonioides uniformis* which had fed on a kra monkey exhibiting a microfilariaemia of the malayi type. No parasites ever appeared in his blood, but 3 months after the injection marked eosinophilia occurred, accompanied by a persistent and distressing cough. He returned to England and observations were continued. The symptoms gradually declined and in May 1957 he received a further 30 infective larvae derived from mosquitoes which had fed on an infected cat. Similar signs and symptoms arose and became so severe that at the end of August Buckley reluctantly consented to receive Banocide treatment, and he was promptly cured. Most of this time he remained at work in the laboratory and his colleagues observed his fortitude with admiration and distress. It seemed unlikely that he would suffer any permanent damage from these infections, and

although his subsequent ill-health and premature decease have been ascribed to this effect, filariasis was not in fact the direct cause. It may well however have contributed by lowering his general resistance.

Buckley concluded from these results that tropical eosinophilia is caused by an infection with filarial worms of an animal origin; he assumed that the larvae took 10–14 weeks to reach sexual maturity, when microfilariae congregated in the lungs (and elsewhere) to give rise to the chronic cough and to produce an allergen responsible for the eosinophilia. The microfilariae never managed to reach the circulation. Such a filarial aetiology of tropical eosinophilia had already been postulated by the Malayan parasitologist, Danaraj, but Buckley's heroic experiments confirmed this hypothesis.

Buckley, not content with this work, in October 1958, again inoculated himself with filarial larvae from mosquitoes which had fed on a man with malayi-type parasites in his blood. To his surprise, he developed much the same syndrome as that which arose after the inoculation of larvae of *non*-human origin, and he could only conclude that the allergic reaction was due to the intense sensitisation resulting from the previous experiments.

In 1957, G. S. Nelson and R. B. Heisch recorded the presence of sheathed microfilariae in the blood of dogs and cats on Pate Island, north of Lamu and off the Kenya Coast. Buckley was much intrigued by this discovery and was even more interested, when a year later similar parasites were found in genets in the same place. Adult worms were retrieved from all three hosts and Buckley with his Kenya colleagues described the nematode under the name of *Wuchereria patei*.

The observations on the Malayan and East African material led Buckley to the conclusion that a new generic name was needed to accommodate the parasites of the "malayi" group, and he defined it taxonomically at the sixth International Congress of Tropical Medicine and Malaria, held in Lisbon in 1958. There was much opposition at first to the erection of yet another genus (*Brugia*) in human filariasis, but the distinctiveness of the adult was unquestionable and it soon became accepted in the literature.

Buckley's last expedition to the Tropics was in the summer of 1959, when he and his faithful assistant, F. R. N. Pester, went to

Uganda to work with G. S. Nelson on the transmission of *Onchocerca volvulus* to animals ; unfortunately without success, though interesting observations on the epidemiology of the disease in a remote part of the country were made.

Soon after this visit, the shadows began to fall, and increasing ill-health forced him to cancel projected trips abroad, including his participation in the seventh International Congress of Tropical Medicine and Malaria in Rio de Janeiro in September 1963. A cruel paresis affected his lower limbs, and associated with it, he suffered intolerable pain. Drugs alone ameliorated to some extent the latter, but his spirit remained unbroken and even in the worst paroxysms no words of complaint ever escaped his lips.

Since 1946, Buckley had edited this Journal, and when he vacated the Julien Courtauld Chair in 1966, he worked nearly full time at it. The remainder of his day was spent in examining and sometimes describing helminthological material which poured in from all over the world. He was not a prolific writer, but his papers were always presented in the most lucid English, and like his lectures, were so easy to understand. His last paper which redescribes *Dipetalonema finlayi* of the viscacha from Peru is still in press for the Festschrift honouring the 80th birthday of his old colleague, Henri Galliard.

Buckley avoided publicity at all cost ; he used to say "Leiper wouldn't like it," but reticence was deeply engrained in his nature, and he avoided talking about himself, unless directly pressed. He was governed by two strong principles—his attachment to Ireland and his devotion to the Roman Catholic faith. He spent the late summer nearly every year in Ireland, and until fairly lately in visiting his old mother in Dublin. He was so glad when she regained her sight at a very advanced age, by removal of cataracts, and became able to read again. His religion helped him greatly to bear the disease which had crippled him in the last 12 years of his life. He was strict in his observances, but ready to joke for instance about the Pope's dispensation allowing meat to be eaten on Fridays. His philosophy was simple, though he tried to adhere to the tenets of Teilhard de Chardin.

Buckley's modesty was reflected in the apparent absence of any ambition. When the directorship of the Department of Parasitology at The School became vacant in 1951 on the retirement of Col. H. E.

Shortt, he refused to accept it although he was the senior professor. But he was kind enough to take on any appointment or task as a favour to a friend. Women were attracted by his shyness, and as a true Irishman, he was fully sensible of their charms, but he never married.

The last thing that Buckley sought was recognition, for how could he, when he thought there was nothing to be recognized? Nevertheless, he received honours with natural pleasure. He was glad when he was made Professor Emeritus of the University of London, and still more pleased, when only shortly before his death, he learnt that the National University of Ireland had conferred on him the degree of Doctor of Laws *honoris causa*. In the introductory address, his old friend, Fergus O'Rourke, referred to his heroic work as being in the long tradition of Ireland's contribution to tropical medicine. He was delighted when he was awarded, jointly with J. P. McMahon, the O'Connor Prize of the International Federation against Filariasis for the work on onchocerciasis. But Buckley is honoured most by the high esteem in which he is held by parasitologists throughout the world of science.

The specialists will remember him best and longest by his discoveries in helminthology. His friends had more intimate glances into his personality, and this inadequate tribute concludes with some of my own experiences with him, which may throw a little more light into his unusual mind and spirit.

Buckley was a solitary type who nevertheless welcomed visitors. He was specially glad to have the company of anyone who stayed a few days (and nights!) in the haunted house in Kaimosi. After we had come in from the forest as darkness fell, we would have drinks and dinner of a sort. He was spartan in his habits, never ate much himself, and delicacies were unlikely to appear on the table. Deep silence reigned outside, and to avoid talking, he would play Chopin or Dvorak on his portable gramophone. He was very fond of music and in what better surroundings could one listen to it? During my visit, the nights remained undisturbed, unless I returned to my tent in the forest; then, the following morning he would have a tale to tell. Between his transfer from Kaimosi to Kisii, Buckley spent some time in Kisumu, where I lived and often used to play tennis with him, for by this time he had given up rugger and yet was still quite an athlete. In fact, when I again met him on the Riana River

near Kisii, it was difficult to keep pace with his agility along its rocky banks and up or down the waterfalls.

My next trip with Buckley was of quite a different character, when we were both professors at The School. It was in August 1953 that I had the pleasure of travelling with him to the 5th International Congress of Tropical Medicine and Malaria in Istanbul. We had decided to take ship from Marseilles, but a total strike at the last moment had paralysed France and we went instead by train from Ostend to Genoa via Germany and Switzerland. We spent the day in Genoa visiting the old Cemetery and waiting for the Turkish Ship. We boarded it in the evening, and among the passengers we found our friends, the Vaucels from Paris and the Schwetz's from Brussels. The first stop the next morning was Naples, and we disembarked to see the church of St. Januarius whose blood liquefies once a year, but unfortunately not in the Summer. The next port was the Piraeus, but the ship only stopped for 4 hours and we had barely time to race to the top of the Acropolis and get back before it sailed—a somewhat inadequate introduction to Greece for both of us barbarians. We spent the last day at sea revising our respective papers for the Congress and arrived at the Golden Horn in the evening. Although there were only 350 people at the Congress, this was more than the hotels of Istanbul could cope with, and the fantastic scenes which ensued are another story ; I don't remember seeing Buckley again in Turkey.

But for nearly 25 years from 1947, we were thrown together in the Department of Parasitology in London. It was always such a pleasure to see him (it made one's face light up), and during this quarter of a century, never once did we have the slightest friction, or to put it in a fairer way, not on a single instance did he exhibit annoyance or displeasure at my various unreasonable requests or respond other than kindly to my fits of irritability. He was the perfect colleague. Although perhaps we had not too much in common, it was always delightful to lunch with him in the Senior Common Room and listen, over a bottle of wine, in the earlier days to his most recent exploits in gliding and how far or how high he had travelled, and more recently to reminisce over our tropical experiences and the Somerset Maugham characters who figured in them. We turned our eyes to the gloomy old Gower Street in whose lodgings and cheap hotels he had spent the best part of 40 years. His sudden decision 8 or 9 years ago to migrate to the Irish Club in Eaton Square was a wise one, for there, he was surrounded by his own countrymen and was able to live in rather more comfort. In these surroundings, he

delighted to entertain his friends most hospitably. I last saw Buckley at the end of January when I called in to ask if he would like me to bring back any special material from Borneo, where I was going for two or three months. On April 12th, a few days after my return, he died. In the words of McMahon, "I was stunned and could not think of anything else for days."

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LIST OF PUBLICATIONS

- BUTLER, J. BAYLEY & BUCKLEY, J. J. C., 1927.—"*Catenaria anguillulae* as a parasite of the ova of *Fasciola hepatica*." *Sci. Proc. of the Royal Dublin Soc.*, 18, 497–512.
- BUCKLEY, J. J. C. & CLAPHAM, PHYLLIS A., 1929.—"The invasion of helminth eggs by Chytridiacaen Fungi." *J. Helminth.*, 7, 1–14.
- , 1930.—"On a lungworm, *Crenosoma potos* n.sp. from the Kinkajou, *Potos flavus* (Schreber)." *J. Helminth.*, 8, 229–238.
- , 1931.—"An observation on human resistance to infection with *Ascaris* from the pig." *J. Helminth.*, 9, 45–46.
- , 1931.—"On a new species of *Rhabditis* found in an ice-chest." *J. Helminth.*, 9, 107–204.
- , 1931.—"On two new species of *Enterobius* from the monkey *Lagothrix humboldtii*." *J. Helminth.*, 9, 133–140.
- TRIFITT, M. J., BUCKLEY, J. J. C. and McDONALD, W. A., 1932.—"On a new parasitic protozoon associated with a sickness in a bilharzian intermediate host." *J. Helminth.*, 10, 45–52.
- BUCKLEY, J. J. C., 1933.—"Some helminth parasites from domesticated animals in Southern Rhodesia." *J. Helminth.*, 11, 109–114.
- , 1933.—"A note on the development of *Filaria ozzardi* in *Culicoides furens* Poey." *J. Helminth.*, 11, 257–258.
- , 1933.—"Some observations on two West Indian parasites of man." *Proc. R. Soc. Med.*, 27, 134–5.
- , 1933.—"On *Syngamus nasicola* Linstow, 1899 from sheep and cattle in the West Indies." *J. Helminth.*, 12, 47–62.
- , 1933.—"*Necator suillus* as a human infection." *Brit. Med. J.*, 699–700.
- , 1934.—"On the development, in *Culicoides furens* Poey, of *Filaria* (= *Mansonella*) *ozzardi* Manson, 1897." *J. Helminth.*, 12, 99–118.
- , 1934.—"On *Syngamus ierei* sp. nov. from domestic cats, with some observations on its life-cycle." *J. Helminth.*, 12, 89–98.
- , 1935.—"Some observations on *Necator suillus* Ackert and Payne, 1922." *J. Helminth.*, 13, 67–76.
- , 1937.—"On a new species of *Stephanofilaria* causing lesions in the legs of cattle in the Malay Peninsula." *J. Helminth.*, 15, 233–242.
- , 1938.—"On a dermatitis in Malaya caused by the cercariae of *Schistosoma spindale* Montgomery, 1906." *J. Helminth.*, 16, 117–120.
- , 1938.—"On *Culicoides* as a vector of *Onchocerca gibsoni* (Cleland & Johnson, 1910)." *J. Helminth.*, 16, 121–158.