

EARLY DAYS AT THE KAMLOOPS BUG LAB

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My introduction to professional entomology began in 1932, while camping in Vancouver Island's Forbidden Plateau. I was seeking a rare butterfly for a California collector when I received a telegram asking if I would be interested in helping a certain Eric Hearle solve a blackfly problem at Jasper Park Lodge. He had heard of my interest in insects through William Downes of the Dominion Entomological Laboratory, Victoria, who had earlier judged my insect collection at a fall fair. Although it was late in the summer, I deemed the trip advisable. I was agreeably surprised to be treated as guest of the Lodge together with Hearle, his wife and their two children, while we tested the efficacy of various oil emulsions in the blackfly infested streams. Hearle had found working by himself was too much of a strain because of a severe heart condition that resulted from his having been gassed in World War I.

In answer to a request from B.C. ranchers, the Dominion Department of Agriculture moved Hearle from Indian Head, Saskatchewan, to Kamloops in 1928, to establish a Livestock Insect Laboratory. Years later the Kamloops station was renamed the Veterinary Medical Entomological Laboratory.

Hearle's office was located in the Kamloops Post Office building, but for tick rearing studies a former undertaker's parlour on the main street was rented for \$5.00 per month. He had a capable stenographer, Margaret Hall and one technician assistant, Ted Moilliet, until I came on staff as a summer student in 1933. Ted and I batched in this ghostly insectary along with sheep, rabbits and guinea pigs until it was destroyed by fire in 1934. Hearle died the same year at the age of 45. He was a prodigious worker, taking in his stride early field and taxonomic studies of ticks, warble flies, horseflies, mosquitoes, blackflies and no-see-ums. His notes on the life histories and control of these pests were published posthumously in a 100-page bulletin in 1938, under the title, "Insects and Allied Parasites Injurious to Livestock and Poultry in Canada".

The day of the insectary fire coincided with a visit by our chief from Ottawa, the Dominion Entomologist. The opportunity was taken to purchase 13 ha of land 5 km west of Kamloops in an area known as Mission Flats, from a Mr. Vowles. The old log house on the property, which was constructed by the original owner, a Mr. Cunliffe, provided a sanctuary for our expanding menagerie of animals and much needed laboratory space. The office remained in downtown Kamloops. Under the summer supervision of G.J. (George) Spencer, Professor of Entomology at the University of British Columbia, we embarked into the intriguing study and control of tick paralysis.

Spencer had been spending his summers at an old log schoolhouse north of Kamloops on the Lac Du Bois rangeland studying grasshoppers which he fondly referred to as "gropers". His colorful personality was known and revered by entomologists and students alike. The latter he called his "troops" which he ordered around with military authority. His desk always bore innumerable vials of insects known as "beasts" which were preserved in "pots". He had a childlike and enviable admiration for each and everything that crawled, jumped or flew. The humblest of organisms would often cause him to evoke the rapturous praise, "Isn't it a be-e-a-a-u-utiful beast!".

Spencer was born and spent his early days in India. Thus, he made wondrous curries that perhaps caused his pate to be so hairless and shiny. To quote him, "Water beetles would land on it". His driving was atrocious. Many times he had to be rescued from mud holes and ditches. Eventually, he gave up his driver's licence. To most of us, this seemed a very wise decision. One summer, Spencer had a fine, mechanically-minded though painfully loquacious helper named Ivor Ward. Ward, who usually assisted Ronald Buckell, devised and fabricated a grasshopper bait spreader.

The Field Crop Insect Section, with Ronald Buckell in charge, was established in 1939, when the Dominion Entomological Laboratory was moved from Vernon to Kamloops. Buckell has been shell shocked in World War I. He was a shy bachelor who by his own account was courted, according to his embarrassment, only by a lovesick grassland porcupine. Buckell and Spencer did much of their rangeland work in the distant Chilcotin area of the Cariboo. Those were the days of Model T and Model A Fords which, of necessity, had their running boards equipped with spare gas and water containers. Buckell even had a second gas tank installed under the back seat of his vehicle. When Ottawa chiefs visited it was always appropriate to show off this spectacular but dusty and muddy back country. They were always fed chocolate bars, canned meat, bread and cheese lest they might discover the fictitious Chilcotin village called "Open Hole", that regularly appeared on their expense accounts, was indeed non-existent. The myth of "Open Hole" was craftily devised to recover the cost of the above-listed foods which had to be carried with them because there were very few places that served meals in this vast, unpopulated, rangeland area. It mattered not, because camp-out expense accounts were never large. However, once I was chastised for innocently submitting a 10 cent lunch claim for a bunch of bananas after I had batched one month while on assignment at the University of British Columbia for only \$5.00. It was feared that I might establish a precedent. Actually, I was most surprised to learn that the Department would pay for meals while on field assignment because I was earning the magnificent sum of \$110.00 a month.

Following graduation with my Masters degree in 1936, I was appointed a full-time employee. The same year Moilliet resigned to help his brother on a sheep ranch and was replaced by George Holland. Here evolved another outstanding entomologist with hobbies wide and varied. An accomplished accordionist, he had a flair for sail-boating, model boat building, including a replica of "The Bounty", and was an avid collector of old guns. The firing of one of his big blunderbusses on November 5, Guy Fawkes' gunpowder-plot day became an annual event in his quiet Kamloops neighbourhood. In keeping with his hobby of antiquities, he had a phenomenal memory for historical dates. Once when driving home from Salmon Arm, he cited all dates and names of ancient battles as they came up on the car's odometer. Holland was initially interested in herpetology. He had a pet tortoise named Margaret and a rubber boa snake which he wore around his wrist when dating girls. Upon employment at the lab, he soon became an avid collector of birds and mammals for their ectoparasites. Of these, the fleas became his career-long study and ticks became mine.

Our specimen collections and collecting permits created some unusual episodes. The local Canada Customs Officer when confronted with a collection of preserved fleas received from Europe, had no better category under which to enter them than that of 'canned meat'. Sometimes our collected specimens saved embarrassment. Upon my return from a biting fly stint in Alaska, in addition to my specimens I carried a collection of fleas for Holland in a number of vials together with specimen skins of their rodent hosts. I also had a dismantled, 4-10 collectors shotgun in my baggage. When asked by the Customs Officer what I had to declare, I confessed to a box of stuffed mice. Such an unusual admission took the rest of the astonished, disembarking passengers through the re-entry process in short order as each was asked whether he or she had stuffed mice in their baggage. We always had open hunting permits for collecting whatever hosts we wished at any time we needed them. In spite of the permit, George was once embarrassed after arriving back at his car holding a fine out-of-season game bird when he was confronted by a Conservation Officer. Like Disney's mouse who was caught red-handed stealing eggs from an eagle's nest, all George could mutter was "cock pheasant!". George's talent for sketching, whether old boats or caricatures of animals or fellow hikers, soon found a profession outlet in the masterful renditions of flea anatomy as depicted in his illustrious monograph on the Fleas of Canada, Yukon Territories and Alaska.

One of the pleasures of these early days was the convening of our small group at the annual meetings of the Entomological Society of B.C. The site varied. Occasionally it was held at Vancouver, in the Okanagan or at Kamloops but most often at centrally located Lytton. Ensclosed in comfortable lounge chairs in the old hotel, the participants gave vent to their year's observations. J.R.J. Llewellyn-Jones, looking much like Beatrix Potter's Jeromy Frog, would cite at great length one of his dozen or more lists of food plants of lepidopterous larvae. Buckell would add a note on grasshoppers or even dragonflies, followed by A.D. Heriot, who with the horny hands of an orchardman, would in antithesis demonstrate the workings of the feeding stylets of a tiny mealybug. Spencer's paper, "Upon the Mating Habits of Firebrats", still comes to mind. In stentorian tones and amorous gestures, he would describe in detail the love dance of the couple whose courtship involved much antennal touching, pursuit and coyness before the male deposited his spermatophore "just about three quarters of an inch in

front of the female. The male then turns, touches her head rapidly with his antennae and turns away to let the female, her body raised, move straight forward until her ovipositor is over the spermatophore”.

Back at the Mission Flats lab, Allen Mail was appointed Officer-in-Charge in 1938. Holland and I viewed a new boss with apprehension until the intruder put us at ease with an “Ach away, laddies, just carry on as yurr doin”. He soon had a well equipped three-story, \$12,000 office-laboratory building under construction. This was a far cry from our old log quarters which boasted only a hand-driven centrifuge, an old stereomicroscope, a home-made microtome and little other apparatus. Mail resigned in 1943, to work on the antibiotic, penicillin in the U.S.A. I was appointed Officer-in-Charge of the laboratory in 1944.

The Canada Department of Agriculture was reorganized into Experimental Farms and Science Service in 1937. Our Veterinary and Medical Insects Lab became a part of the latter. This appellation was now appropriate. Colin Curtis was taken on staff in 1948, to deal with man-biting flies and a unit of the Laboratory of Hygiene, Department of Pensions and National Health was established in our building. This group was commanded by Veterinarian Frank Humphreys and a staff of sixteen which included two survey crews with mobile field laboratories. Their main interest was to determine the existence and extent of plague, tularemia and Rocky Mounted spotted fever in B.C. and Alberta. Beside the office in the Entomology building they had separate, quarantined buildings for disease testing and the housing of several thousand guinea pigs. They conducted tests for diseases in animal hosts and their vectors and our officers of the Veterinary and Medical Insects Lab made the vector identifications. Their work was completed in 1954, when the unit moved to Ottawa. The quarantine buildings were turned over to the Veterinary and Medical Lab.

The partnership between our two units had been cemented by the concomitant formation in 1946, of an organization known as the International Conference on Diseases of Nature Communicable to Man. This group was an off-shoot of the Great Plains Conference of Entomologists. The cumbersome title was abbreviated to INCDCNM and its members, known as the “Inkidinks”, met every year at various locations in western Canada and the north-western United States, to discuss the role of vectors in disease transmission to both man and their other animal hosts. Many colorful characters emerged in this organization. I recall a notable evening at the Banff Hotel when Montana entomologist, Cornelius B. Phillip, conducted a mirror trick that gave the illusion of him being levitated by a puff of the participant's breath. In this case the participant was a certain Fergus O'Rourke who had been studying tick paralysis at our lab. Fergus, a firm believer in what he saw, had an inward infectious laugh that sounded like a balloon being rubbed. Teetotaller Colin Curtis, who had retired early to his hotel room but was within earshot, needed considerable convincing next morning that the party had been in total control of itself.

Field work at the Mission Flats lab was extensive and varied. With the advent of World War II, Veterinary and Medical entomologists sought and tested new chemical controls. The traditional diesel oil mosquito larvicide gave way to DDT which we measured out literally by the handful and the City of Merritt's motto at that time, “Oils well that ends well”, became obsolete. Oil of Citronella was replaced by a variety of synthetic repellents which Holland and I tested for periods of up to twelve hours each in the worst mosquito breeding areas we could find. One such site required a day-long drive to the top of the Big Bend section of the Columbia River which is now flooded by water stored behind the Mica Dam. Derris powder for warblefly control became scarce during the post-war years and was replaced by systemic materials. The latter miraculously killed the immature larvae within cattle in the autumn. Tests of boluses, then pour-ons took place at the Empire Valley Ranch, located on the west side of the Fraser River with help from a mud- and dung-spattered crew of eight. Popping the pussy mature warble cysts in the backs of the untreated control cattle both in the field and at the lab still had to be done the following spring. On such occasions Holland, who was staying at a boarding house, complained of the coincidence that he was invariably served custard and raisins at dinner. George had a strong stomach and delighted in showing off to his fellow boarders by eating dried Chinese dytiscid beetles until it was pointed out to him that the little, white, moving specks were not grains of salt but mites.

The study to ascertain the flight habits and flight range of warble flies in the field necessitated the collecting of large numbers of grubs as they emerged from infested cattle. For the first time, a method was devised to rear adults from the puparia in the laboratory. These were marked with colored paint and released at dawn from central rangeland locations. Tethered cattle were located at varying distances and directions away from the release sites. The lab became a place where cattle wore girdles and flies had painted toenails!

The flight patterns of mosquitoes were studied also. However, in this instance it was the

hosts that were centrally located. Mosquitoes were reared in cages located at various distances and directions from the periphery of Kamloops. When in the adult stage these caged pests were marked with colored dyes and released. The public was invited to participate in our experiment by swatting all mosquito offenders that attacked them and returning these flattened pests to us. Tests on wet blotting paper revealed their flight range to be only about three miles. However, in Alaska, distances of over 100 miles were recorded.

Benzene hexachloride replaced pine tar for tick control, but not before hundreds of cattle and sheep had died from tick paralysis. Hundreds of ticks were collected each spring for studies on this disease by sweeping their habitats with metre-square cotton flags. On one occasion during World War II, a policeman hiked all the way up a mountainside to see if I was signalling to an enemy with my tick flag! Some people even suggested that flannel night-gowns would be the appropriate apparel for such field work.

All these arthropod-parasite projects demanded a full staff of research officers and helpers which, at its peak in 1952, numbered over a dozen. George Rich and Jerry Weintraub were in charge of warbles and Ken Bourne, myiasis. Rich also had a great memory, not only for his war years but for poems too. He once recited all of Robert Service's poems while we drove back from Williams Lake. He was expert at handling cattle and, with his assistant Dick Ireland, contributed greatly to warble field tests. Jerry conducted oviposition and flight studies before moving to Lethbridge. He discovered that a nuptial flight was necessary before oviposition occurred and clocked his females as they spun, tethered to a miniature merry-go-round.

Not only was there a large staff at the lab, but also a large and varied assortment of animal inhabitants for the study of parasites. Tick species, particularly, required that a wide variety of hosts be kept for their rearing because many are host specific. Animal house occupants included tree and ground squirrels, chipmunks, groundhogs, packrats, fitches, gerbils, tortoises, lizards, rats, white mice, a goose and of course, rabbits, guinea pigs and hamsters. Each was carefully fed and cheerfully talked to by technician Perry Darling. So appealing was the menagerie that classes of school children were regular visitors to the lab. In the earlier days, many of our animals were annual visitors at the Kamloops Fall Fair. In its time, the farm also catered to cattle, horses, sheep, dogs, pigs and a deer.

The investigators themselves became voluntary, and often involuntary, hosts at times. In one case, Holland and I deliberately allowed a number of Pacific Coast ticks to attach to our arms so that we could test the validity of the many popular remedies reported for getting them to 'back out'. As we had expected, none of the remedies had any effect other than to kill the ticks while still attached. This species has long mouth parts and when seemingly encysted, removal is difficult and painful. A West Vancouver lady believed this to be especially true. She had asked us why the ticks attached themselves in two rows on the underside of her little female canine! One of our technicians even fed capsules of human lice on herself. She and her husband later divorced! Others became unwilling hosts in the cause of science. I remember Dave Arnott of the Field Crops Section being so allergic to blackflies that on his return from the field on one occasion, we could hardly recognize him because of the puffed-up facial features. He had been working in the Peace River area studying mite damage in grass seed crops. Thereafter, his revelations changed my habit of chewing on the succulent nodes of grasses!

Tick paralysis caused by the Rocky Mountain wood tick can be fatal if the tick is not removed. Thirty human fatalities have been recorded in B.C. and about 300 cases of human paralysis where the individuals have recovered following removal of the tick. When a child was reported paralysed at Vavenby, B.C., we took a chance and pleaded with the mother to leave the tick on her child while we made a hundred mile dash to observe first-hand and film the symptoms of a typical and progressive case. Fortunately, the child recovered and we got valuable documentation.

In 1955, shortly after the Lab of Hygiene left, the Field Crops Insect Laboratory staff of six transferred from their offices in the Kamloops Post Office and the two units were integrated as the Canada Department of Agriculture, Entomology Laboratory, with Richard Handford Office-in-Charge. With him came Research Officers Doug Finlayson, Fred Banham and Dave Arnott. Earlier the same year, Mac MacCarthy transferred to Vancouver to establish and head a Field Crop Insect Section in a remodeled barn on the University of B.C. campus.

The Field Crop group arrived in the post-DDT era to continue their studies on vegetable, forage and rangeland insect and mite pests. They investigated the life histories and control of vegetable pests such as tuber flea beetle, red-backed cutworm, onion maggot, onion bulb fly, cabbage maggot, cabbage butterfly, carrot rust fly, as well as leafhopper species, that vectored witches broom on potato and *Lygus* spp. that reduced the germination of carrot seed crops.

On the range, they studied the life history, ecology, and control of several grasshopper species that destroyed the vegetation and endemic beneficial insects that biologically controlled rangeland weeds including giant sagebrush. Work also was done on forage crops to control pests including an eriophyid mite that reduced the germination of grass seed crops.

In 1957, a \$110,000 cement block headerhouse, with seven office-laboratories on the second floor, was added to the original frame structure. The following year a \$40,000 Lord and Burnham greenhouse was constructed at ground level on the south side of the new structure. Later, a dyke was built around the property to stop occasional flooding from the Thompson River. The old Cunliffe log house which had been converted to be our original animal rearing facility and laboratory in 1934, was demolished and replaced with a modern caretaker's residence. There were now eight buildings on the site including the above, a barn, a combination garage and blacksmith shop, an implement shed and a dual furnace heating plant.

In 1960, Finlayson transferred to the Field Crop Insect Section at Vancouver. Studies of ticks continued with the appointment of Paul Wilkinson from Australia, to conduct field testing and population studies.

Administration of the previously amalgamated Entomology Sections at Mission Flats was further integrated in 1962, with the Agriculture Canada Range Research Station located on the north side of the Thompson river with Handford as Director. Operations continued at both locations. Banham transferred to the Entomology section of the Summerland Research Station in 1965, Arnott retired in 1968 and Handford retired in 1970. Once again, the "newcomers" were gone as the Field Crop Insect Section in Kamloops was closed.

Tick paralysis, with its intrigue and world-wide distribution continued to evoke interest from Ottawa, local medical circles and international tick research in general. The fact that a tick spat into a tube had won me a trip to Cairo, Egypt and Nairobi, Kenya and led to fascinating studies which involved extruded hamster cheek pouches, perfused rabbits' ears, electronics and the final detection but not the nature of the causative toxin and its variance among specimens of ticks on the west and east sides of the Rocky Mountains. There, my part in this story and the history of the laboratory ends. In 1971, I retired, Wilkinson was moved to Lethbridge and Rich to offices of the Kamloops Range Research Station across the Thompson River. Upon the latter's death in 1973, tick studies in B.C. ceased. The large collection of preserved specimens, together with innumerable collecting records, now reside in Ottawa.

The 43 years of the laboratory's existence had been happy and memorable ones for a total of over eighty persons. Many of these early students, part-time and professional personnel moved on in life to eminent careers. Ian McTaggart-Cowan, a world authority on mammals, became Chancellor of the University of Victoria, Ken Bourne and the late Morley Neal, Professors of Zoology in eastern Canada, and Frank Beebe became a well known artist in the Provincial museum at Victoria. Three of our students became medical doctors and one a veterinarian.

Visitations by our Ottawa chiefs had been intimate and kindly ones. Arthur Gibson was the first. With appropriate encouragement he could light a match by letting it fall untouched to the ground. "See, it lit", he would say. While attending the University of Alberta, I recall seeing a young but very tall Ken Neatby drop a basketball into the hoop at eyelevel. Years later during a visit when Holland was showing off his archery prowess, Neatby, who then was head of Science Service, remarked that our staff was the most congenial of all he had known. H.G. Crawford, Cecil Twinn (who somehow managed to shut himself on the wrong side of a slip-wire farm gate), Bev Smallman (who got me an oscilloscope) and jovial Robert Glen were some of our other chiefs. To each and all we were indebted for their encouragement, their sanctions and our funding. Discoveries and progress, mostly at little monetary expense, came easily, for our vocational ground was relatively untrodden upon. One needs only to nostalgically refer to the titles of literally hundreds of publications which emanated from the combined laboratories to appreciate the grass-roots spade work of pest ecology, biology and control that came about from this enthusiasm.

Just as all this accomplishment is now history, so is the old Mission Flats laboratory also a place of the past. The narrow one-way lane that led to it from a constriction between the CP railway and the swift-moving Thompson river is now a paved highway. In winter, when snow drifts enroute to the lab were deep, we used to walk on their tops to get to work. Holland and I would sometimes ski down the snow-covered Thompson river until one day George looked back and saw water in our tracks! George's greatest delight was during the '48 flood when he was able to sail right around the lab. As so often happens, the carefully designed flood doors to the building failed to work and we had four feet of water in the basement.

Following the lab closure in 1971, the City of Kamloops purchased the property but later re-sold it to Weyerhaeuser Canada. They demolished the buildings and now use the property for pulp chip storage. Not a vestige remains. Indeed, today few residents of Kamloops even know that such an establishment ever existed. Like the dodo bird, the Kamloops Bug Lab is extinct but to some of us its memories will linger on.