

THE HERITAGE LECTURE

Thomas Nathaniel Willing, Pioneer Prairie Naturalist

by
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Few, if any, of the entomologists gathered here on this, the 33rd Annual Meeting of the Entomological Society of Canada, may have knowledge of the man whom we are honoring today. It has been my privilege to delve into the memorabilia of the past and bring to light some of the aspirations, ambitions, and accomplishments of this prairie pioneer naturalist. The task has been a pleasant one, not only because I love history, but because the knowledge of the past has permitted me to make some assessment of the state of the art of our present-day science of entomology. It has permitted me to reflect, perhaps with a certain amount of awe and wonder, on the great advances we have made in defining and understanding the natural phenomena that surround us. At the same time I have become keenly aware that some of our so-called "progress" has simply turned the set back to "square one." We have completed a cycle and find ourselves, in some instances, back where our pioneer forefathers, and fellow scientists, found themselves 100 years ago. That puts us right into the era of T. N. Willing—we can now pick up the story.



Thomas Nathaniel Willing was born in Toronto in 1858, the son of Thomas Willing and Jessie (nee) Gillespie. His father was a Canadian by birth whereas his mother was an emigré of Edinburgh, Scotland. Young Thomas took all of his schooling in Toronto, at the Model School, where he early showed an intense and appreciative interest in natural history. The two components, plants and insects, were the chief targets of his interest and remained so throughout his life.

By the time he reached his twenties the lure of the western plains and the anticipated excitement of the unknown territories that lay between Upper Canada and the Rocky Mountains gripped him with a force that he found irresistible. In 1880, being 20 years of age, unattached and free to travel, he worked his way west on a survey crew. It is not certain, but quite probable that he was part of the railway survey crew that was pushing the new trans-continental railway west to Winnipeg. On the other hand, it is just as probable, and more likely that he served as part of a land survey crew; western lands were receiving detailed scrutiny, assessment, and sub-division in preparation for settlement. Imagine, if you will, the delight of young Thomas in being able to explore and examine the many wonders of nature that he encountered during the survey; the seemingly endless array of flower, plant, bird, animal, and insect life that greeted him at every step and turn.

He spent a few months in Winnipeg savouring the prairies, exhilarated by the newness that surrounded him. Then in 1881 he was hired by the C.P.R. The railway, in its colonization interests, required the services of one who could investigate and evaluate their lands, and assess their crop-growing potential. They had heard of Willing's interest in, and knowledge of, plants and animals and thus offered him a chance to do the evaluation work for them. This was a heaven-sent opportunity to see, study, and assess the natural history resources of the west, and he jumped at the invitation. For the next two years he literally walked from Winnipeg to Calgary, tramping the virgin prairie of the C.P.R. lands and assessing their agricultural potential. He also, undoubtedly, got some impression of the insect life on the plains; the explosive onslaught of the Rocky Mountain Locust; the many ground beetles; the metallic blister beetles literally covering individual *Astragalus* plants; and the hundreds of moths and butterflies that sallied forth from shrub and weed patches as he passed.

He was so taken with the potential of the western Canadian land that he gave up his job with the railway and acquired a homestead. Land was available, just for the asking, and the

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foothills grassland country near Calgary suited him most adequately. Here for the next two years he undertook the gargantuan task of carving a small ranch out of the virgin territory. Life was merciless on the frontier. Only those who had determination, high resolves, strong physical constitutions, and flexible attitudes that could sway with the pendular forces of nature, could survive.

Survive he did! He amassed sufficient capital through his ranching endeavours, supplemented with freighting, that he was able to buy a farm near Olds—in present-day Alberta—in 1885. He also acquired a help-mate, for in that year he married Victoria E. M. Evans, the daughter of J. H. Evans of Montreal. They settled on this farm near Olds and made it their home for the next fifteen years.

Throughout these years his interest in plants and insects never waned. For one thing, he was appalled at the ever-increasing number of weeds that appeared in the fields and crops of the settlers. Many, if not most, of the immigrant farmers brought weed seeds into the area along with their settler's effects and in uncleaned forage and cereal seed. Many settlers did not, or could not, distinguish weed seeds from crop seeds, much less recognize the various species of weeds and weed seeds present on their farms. Willing, as a good ecologist, was well aware that an increased cafeteria of plants as insect food, also increased the density and diversity of insect species. He voiced his concern about the weed-insect problem to all and sundry and attempted to teach his erring neighbours how to mend their ways. Most were too busy to pay much attention to him, and there were too few settlers to cause too much concern among themselves. But help was on the way.

James Fletcher had been appointed Dominion Entomologist and Botanist in 1884 and within the year had more than 400 knowledgeable correspondents—mostly practising farmers—from across Canada, supplying him with information on the current status of insects and weeds in the Dominion. One of these correspondents was T. N. Willing.

When the two met in 1885, on Fletcher's first tour of western Canada, an immediate friendship was struck between the two men. Weeds and insects struck the same sympathetic chord in each of them so that mutual interests welded the bonds that heightened their work. Fletcher did all in his power to aid Willing: supplied him with nets, papers, pins, boxes, plant presses, killing bottles; all the paraphernalia that could be used to collect and preserve insects and plants. He also provided the latest information on insect pest control so that Willing, in turn, was able to impart this to his neighbours and friends. Willing, on his part, collected as many of the plant species as he could find in the Olds area. These he sent to Ottawa for identification and for preservation in the Herbarium of the Central Experimental Farm.

Help with insects came not only from Fletcher but also from a group of very active amateur entomologists in the region. These included Percy and Arthur Gregson at Blackfalds, Norman Sanson at Banff, F. H. Wolley-Dod at Calgary, A. Hudson at Midnapore, and several more at nearby locations. They all collected insects, reared the larvae, studied their life histories, and traded specimens. It was a very congenial and intimate group, the members of which were very enthusiastic about their avocation and shared information with zeal.

But the one thing that really stuck in Willing's craw was weeds. It was almost an all-consuming passion for him to try ridding the country of the costly plant pests. The Territorial Government had passed the "Noxious Weed Act" of 1883 to control Canada thistle, wild mustard, cow cockle, and wild oats. Every landowner or occupier of land, and every railway, was required to destroy weeds or face prosecution and fines. Legislation was easy but enforcement was a real problem. No settler wanted to complain about his neighbour and, therefore, few if any, actions to enforce the law were forthcoming.

The weeds kept on increasing, complaints continued to pour in to the government—Willing's undoubtedly were the loudest—but nothing much happened until 1892. Then the politicians, in their collective wisdom, decided to enact legislation that would permit each municipality to appoint a weed inspector who, in turn, would see to it that negligent farmers would be prosecuted. Weeds would now be under control by decree!

Thomas Willing was quite in favour of this move because he too thought it would make the farmers take heed. However, the standards of "weediness" varied from one inspector to another and no one was particularly keen on taking action against a neighbour. Nothing came of it. There was no marked improvement in weed control in the Territories. Then in 1896 the Noxious Weed Act was again amended to permit the establishment of "Noxious Weed Districts." Now the Territorial Government could hire inspectors, set standards, and appoint qualified men to the position of "Inspector." The positions were to be Civil Service positions and under explicit government control.

Willing was immediately interested in such a position, partly because he could, as a "Territorial Weed Inspector" force people to control weeds; partly because he sincerely loved the work; and partly because it was only part-time employment and he could still remain on the farm. He also argued that if weeds were controlled then the number of insect pests would

be decreased very significantly, especially the Lepidoptera. Qualified men were very scarce in the sparsely settled districts of western Canada, and Willing was certain he could get the job for the Olds district if he applied for it.

However, he left nothing to chance. He consulted with his friend, James Fletcher, and asked him to endorse his application. Fletcher was delighted to put his stamp of approval on Willing's application for he considered the latter to be "the best qualified man for the position you can find." Willing was a shrewd individual. He knew that if he got the backing of the Dominion Botanist he might have a good chance of dictating his own salary. In Manitoba they were paying \$2.50 per day and expenses. Willing asked for \$5.00 per day and \$3.00 expenses per diem. As expected, he got the appointment as a Territorial Weed Inspector for the Olds-Lacombe district in 1897; one of eleven such positions in the North West Territories. He also got the salary he requested!

The new situation that Willing found himself in, was very much to his liking. He could now do what he had always wanted to do: control weeds, farm his land, and enjoy the companionship of his fellow entomologists in their studies of insects. He became so involved in his entomological interests that he not only endorsed the creation of the North-West (Canada) Entomological Society in 1891, but also became its Secretary. He held this position for the 5-year life of the Society and continued on in the same position in the reincarnated "Territorial Natural History Society" in 1902. During his tenure he was intimately involved in all the operations of the Society: promoting collections, attending and conducting field days, offering identification service, and teaching control to fellow farmers.

As the 19th century drew to a close the continued influx of settlers expanded the amount of arable land and increased the potential spread of weeds, plant diseases, and insect pests. Eleven weed inspectors could not cope with the expansion so the Territorial Government increased their number to 20 in 1898. Somehow this move compounded the misery. Twenty field men had a tendency to perform at 20 levels of proficiency, have 20 concepts of enforcement, and create 20 different performance problems, if each worked unguided. What was lacking was overall supervision and co-ordination.

Willing, because of his interest in, and honest, sincere dealings with weeds in his district, was suggested as a possible candidate to supervise Territorial weed control. The fact that he was friends with, and had been a founding member of the Lacombe Entomological Society along with the Deputy Commissioner of Agriculture, C. W. Peterson, may have been a factor in the naming of a supervisor. He got the job as Chief Weed Inspector, but only on a *pro tem* basis. No one ever got a long-term appointment with the government in those days until the individual had at least proven his worth for a year. Willing did such a tremendous job of supervision and co-ordination of weed inspection and control in 1899 that the Commissioner of Agriculture, George Bulyea, was sufficiently impressed to make his appointment permanent. Hence, on 15 May 1900, T. N. Willing was made the Chief Weed Inspector of the North-West Territories. He sold out his interests in Olds and moved to Regina.

He now could devote all of his energies, and give his complete attention, to the job at hand. He had 40 field men to supervise, which left him very little time at home during the growing season. He criss-crossed the plains of Saskatchewan and Alberta by train, wagon, buggy, and on foot. He examined, inspected, and condemned many fields because of weeds. He scolded, taught, cajoled, lectured, demonstrated, and pleaded with farmers to exercise better weed and insect control. Oh yes, he also prosecuted the non-doers so that in a few short years there was a marked improvement in the containment of weeds in the Territories.

His many trips were tailor-made for entomological pursuits. They afforded him excellent opportunities to keep a watch on all noxious insect pests, and do some diligent collecting. Many miles were travelled in the company of James Fletcher; the two fast friends savouring their entomological collegiality to the full. Although it was not in his purview to be responsible for the control of noxious insect pests, the Commissioner fully expected him to be the "Pest Control Specialist" of the day. He investigated outbreaks of wheat stem sawfly at Indian Head, turnip beetles at Saskatoon, and was alarmed at the continued spread of, and damage done by cutworms in western Saskatchewan. His observations of the population density, damage, and effects of cultural control measures were a great help to Fletcher in establishing procedures of control for the cutworm.

Other insects in which Thomas Willing evinced considerable interest were the Hessian fly, wireworms, grain aphids, Colorado potato beetles, and black blister beetles. Concerning the latter, Willing took a unique approach to their control. In 1906, when the beetles were damaging potatoes in the North Battleford area, he suggested that several people walk across the field waving branches to drive the beetles out. Arsenicals, in the form of Paris green, were to be used only as a last resort. He did not want to kill the beetles because their larvae are predators of grasshopper eggs, and by simply chasing them out of the potato field they might lay their eggs in places where grasshoppers needed to be controlled. Willing's farsighted-

ness, in this instance, indicated his concern for the environment. He advocated biological control as an alternative to chemical control; a concept that we here today—some 80 years later—are promoting in our theme "Integrated Pest Management."

In 1905, when part of the North West Territories became the autonomous provinces of Saskatchewan and Alberta, Willing was still co-ordinating weed and insect control on more than two million acres of cropland in Saskatchewan. Forty weed inspectors were on the job, some in areas where English was unknown, and as many as 14 other languages were heard and spoken. Willing had always stressed education and was instrumental in producing a variety of information pamphlets and bulletins—some in foreign languages—that would acquaint the new settler with the weeds and insects that might plague him.

Because natural history was Willing's whole life, the Commissioner of Agriculture decided that he would supplement the insect and weed duties with others. He appointed Willing as Chief Game Guardian. The new duties included the issuance of hunting permits, imposing game harvesting schedules and quotas, licensing of trapping of fur-bearing animals, and waterfowl management. Today these duties fall within the jurisdiction of several governmental departments and constitute the daily work of half a dozen officials. Eighty years ago Willing handled all of these chores with the aid of an office clerk!

When the University of Saskatchewan was established by legislation in 1907, classes did not commence until the fall of 1909, and then only in Arts and Science. A College of Agriculture was established in 1912 but preliminary classes were begun in 1910. For that purpose professors were needed to do the teaching, supervise short courses, and become active extension workers. T. N. Willing, having the expertise in natural history, was lured away from the Saskatchewan Department of Agriculture in 1910 and appointed as an Assistant Professor of Natural History. He was attached to the College of Agriculture and became its Secretary. He was promoted to the rank of Professor in 1915, a position he held until his death on 30 November 1920.

As a professor at the University he brought with him an invaluable store of knowledge of the flora and fauna of, not only Saskatchewan, but of western Canada. He lectured to students in Agriculture and to the teachers-in-training in the Normal School. He was not a science teacher, *per se*; not attached to a Science or Biology Department and therefore, his lectures contained much more 'homey' natural history than mere cold, scientific fact. Students received practical training in weed and insect identification, as well as control of pests, plant diseases, and mammalian predators. They were given lectures on dairying, soil management, cropping practices, and conservation; all designed to provide a broad framework of information related to successful crop and animal production.

Perhaps T. N. Willing's life and work can best be summed up in the words of Dr. Walter C. Murray, the first President of the University of Saskatchewan. He said:

"... he has been a keen observer, a devoted servant and a lover of the West. Endowed with an unusual gift of close and exact observation, a retentive memory, and with the scientist's untiring zeal and questioning spirit, he made great use of his opportunities to attain an almost unrivalled knowledge of the fauna and flora of Western Canada. Though his modesty prevented him from publishing and making known the riches of his information, he was recognized as one of the pioneer naturalists whose knowledge of the West was wide, exact, and reliable. The very valuable collection of plants and insects which he made and presented to the University will be preserved as a memorial of his work and as a visible evidence of his living and loving service.

His colleagues will long cherish the memories of his kindly ways, his delightful companionship, his modesty, his generosity in placing the stores of his knowledge and expertise unreservedly at the service of every inquirer, whether student, farmer, teacher, boy scout or savant from abroad."

We here today recognize and honour Thomas Nathaniel Willing, as one of Western Canada's leading, though little known, pioneer naturalists.

References:

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