

Topic: Innovative Implements - The Legacy and Strengths of Saskatchewan's Manufacturing Industry

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For early Saskatchewan settlers, the only farm equipment available to them was manufactured by a few large, dominant full line companies who produced equipment that was expensive and often ill-suited to the province's semi-arid conditions (Wetherell and Corbet, 1). Large companies had little interest in developing equipment to meet the needs of small niche markets across the prairies. Saskatchewan inventors, many of them farmers, modified, adapted and developed agricultural equipment to meet their local needs, often in farm shops or with the assistance of the local blacksmith. "The early pioneers who came to farm in Saskatchewan had to be inventive to survive in a country plagued by a surfeit of weeds, grasshoppers, gophers, snow, wind, and cold." wrote Louise Jones (6). Some of these early inventors were granted patents for their inventions ranging from gopher poisoners and traps to stump pullers and stubble burners, while the plans and designs for a myriad of devices and "make-dos" were only ever recorded in the minds of their inventors. The Canadian Patent Records attest to Saskatchewan's innovative spirit. Between 1905 and 1976, more than 1000 patents were granted to Saskatchewan citizens for agricultural inventions (Jones, 4).

Few of these Saskatchewan inventions ever achieved any type of commercial success. In the case of some Saskatchewan innovators, their designs were picked up by the full line manufacturers and incorporated into their own factory made models. Although full line companies were content to produce their existing lines of equipment which were utilized over a wide area and sold well, they were also quick to pick up on good ideas once the kinks were worked out of them. Two Saskatchewan contributions to harvesting technology provide a good example of this. Helmer and Ellert Hanson's design of the swather in the mid-1920s was picked up by the International Harvester Company of Chicago who came out with the first factory swathers in 1928 (Wetherell and Corbet, 167). Likewise, the revolutionary technology of the Western Roto Thresh Company's rotary type combine was implemented by John Deere in the 1980s once the patents were let go and the company folded (Grosse, 63).

For a more detailed description of the Hanson and Western Roto Thresh contributions, refer to *Saskatchewan Contributions to Harvesting Technology* by Amy McInnis.

In *Breaking New Ground*, Wetherell and Corbet explain that "The contemporary farm equipment industry on the Prairies was born in the dust bowl of the thirties" (1). The existing tillage equipment being produced by the full line manufacturers at this time, like moldboard ploughs and disc harrows, combined with the common practice of black summerfallow, had disastrous consequences for the health of the prairie's soil. The extended period of dry, hot weather and high winds during the Dirty Thirties exacerbated these problems. The desperate situation of the 1930s forced farmers to change the way they practiced agriculture, and the need grew for

equipment which enabled farmers to work the land more shallowly, preserve trash cover and eradicate weeds in fewer operations, thereby protecting the soil from wind and water erosion and increasing moisture retention. In *Men Against the Desert*, James H. Gray describes the flurry of development which arose out of the Depression as a “machinery-inventing binge” and explains the involvement of farmers:

The most intriguing aspect of the whole saga of the struggle against the desert in the Palliser Triangle must surely be this: At a time when nature was going the worst, and a consensus grew that Palliser had indeed been right, the farmers themselves were engaged individually and collectively in a personal search for farm implements to unlock the secrets of successful dry-land farming (238;244).

Farmers had little money to go out and buy new equipment, and instead concentrated on utilizing existing resources and modifying what they already had. In an effort to develop tillage equipment that would till more shallowly and preserve a decent amount of trash cover, Saskatchewan inventors concentrated on developing a combination of the one-way disc and the disc harrow. After field day upon field day, time spent scouring junk piles and countless hours of toil in the shop, R.A. Johnson of Beadle, Saskatchewan emerged among the hundreds of farmer-inventors with the first conventional operating “discer” in May of 1945. Johnson’s discer was the first to use the “now conventional three wheel support and two point flexible mounting of the disc gang to the set angle main frame.” Johnson’s design sparked so much interest that at a field day held on June 11, 1945 in Kindersley, five machines were tested including R.A. Johnson’s original machine, in addition to machines built by D. Johnston and L. Wyman. The field day attracted a reported 500 people. M.G. Cressman was the first to mount a seed box onto his machine to incorporate tillage and seeding operations (Lewis, 3-4). The University of Saskatchewan’s Department of Agricultural Engineering was heavily involved in the development of the discer, offering technical assistance and assessing prototypes. Several Saskatchewan men acted as advisors to the full line companies in developing the company’s own discers. H.A. Lewis, farmer and lecturer in the Department of Agricultural Engineering, was sought out by Canadian Co-operative Implements Limited (CCIL) due to his knowledge of discers and involvement in the development process. With Lewis’ assistance, CCIL came out with the first factory produced discer in 1946 (Lewis, 5).

George Morris’ production of rod weeders with his patented trip mechanism for use on stony land, the development of Emerson Summach’s coil land packer and Saskatchewan contributions to the design of heavy duty cultivators are additional examples of machinery developed to meet Farmer’s demands for equipment that would enable them to farm in a more sustainable and soil-friendly manner under the dryland conditions in Saskatchewan stimulated the development of additional types of implements including rod weeders with George Morris’ patented trip mechanism, Emerson Summach’s coil land packer and the heavy-duty cultivator.

For a more detailed account of the development of the discer, George Morris’ rod-weeder, Summach’s packer and heavy-duty cultivators in Saskatchewan, refer to *The Evolution of*

Farming Practices in Saskatchewan by Amy McInnis.

“Prairie farm equipment manufacturing before 1945 developed within a craft tradition of organization and fabrication. Isolated from each other, numerous individuals invented equipment and often manufactured it on a small scale to meet local needs” wrote Wetherell and Corbet (55). Short line manufacturers in Saskatchewan found commercial success in developing and manufacturing equipment that filled the niches of the small, specialized dry-land market that the large full line companies were disinterested in (Wetherell and Corbet, 48). Several reasons were responsible for the increase in prairie manufacturing after the Second World War according to Wetherell and Corbet: “The rapid growth...especially after 1961, resulted from an increasingly widespread infrastructure for manufacturing along with a growing maturity of the prairie economy. A significant shift in the nature of farm equipment used in Canada, and on the Prairies in particular, was also an important force” (56). In Saskatchewan, the opening of the Interprovincial Steel and Pipe Corporation (IPSCO) in Regina in 1962, post-war funding through the Government of Saskatchewan’s Industrial Development Fund and the Saskatchewan Economic and Development Corporation, the formation of the Prairie Implement Manufacturers Association in 1970 and the first Western Canada Farm Progress Show in 1978 were all important developments in the province’s industry (Wetherell and Corbet, 62-72). The number of implement plants in Saskatchewan rose from only five in 1961 to 30 in 1981 (Statistics Canada in Wetherell and Corbet, 57).

The development of rock removal equipment in the province is a good example of invention and manufacturing to serve local needs. Peter Anderson of Southey, Saskatchewan developed a rock picker for use on the stony land in his district around 1950. Anderson’s rock picker was the first effective mechanical rock picker which “operated by the tractor power-take-off and used steel-toothed reels or beaters that dragged in the ground and picked up small and large rocks alike” (Wetherell and Corbet, 111). Alfred Grunert of Southey who purchased Anderson’s prototype, and used it for 28 years, expounded on the virtues of the machine: “Without this machine farming would have been almost impossible as our land had a lot of small rocks and human labour was and is difficult to attain” (WDM Artifact Record WDM-86-Y-15). Anderson manufactured them at his shop in Southey, and later contracted production to a company in Montana. His technology was purchased by Leon’s manufacturing in the 1970s (Wetherell and Corbet, 111-112).

Anderson’s rock pickers were quite expensive, and the production of less expensive versions by Saskatchewan manufacturers after the 1960s accelerated the adoption of the machines. Wilfred Degelman of Raymore built a rock picker based on a modified rotary principle on his farm in 1963. The demand for Degelman’s machines resulted in the establishment of the Degelman Industries plant in Regina in 1965. Degelman later added a rock windrower to its line. John Schulte of Schulte Welding and Machine Ltd. of Englefeld began producing a rock picker around 1958 which used “an elevator-type conveyor to carry rocks into a bin.” The company became Schulte Industries Ltd. in the 1970s, and a reel-type rock picker and a rock windrower also went into production. Rosaire Bussiere, a farmer from the Vonda area, set up the Rock-O-Matic

company to produce his rock picker in 1961. Bussiere's rock pickers "employed a rotary principle, and like other rock pickers, they had special features that made them unique. For example, the bin had a grated bottom so that the soil could fall out." Rock-O-Matic produced the first combination rock picker and rock windrower in North America in the mid-1970s. Rock-O-Matic was purchased by Smith-Roles in the late 1970s, but was purchased by Rosaire Bussiere's son Ray in the 1980s who re-named the company High-Line Mfg. Inc (Wetherell and Corbet, 111-114). Les Hulicsko, who established Rite Way Mfg. Co. Ltd. in the 1970s at Imperial, began experimenting with rock picker design in his machine shop. Hulicsko's design incorporated a "hydraulically-powered reel" to allow the machine to pick up both large and small stones - a feature which is "now the standard for the rock picker industry" (Rite Way Mfg. Co. Ltd, "Company"). Degelman Industries, Schulte Industries Ltd., High-Line Mfg. Inc. and Rite-Way Mfg. Co. Ltd. are still producing rock removal equipment today, but like many short line companies, they have diversified their operations by offering several different types of equipment, thereby increasing their economic feasibility in a competitive market (Wetherell and Corbet, 114).

The local blacksmith or on-farm blacksmith shop played an important role for many early prairie inventors. Schulte Industries and Leon's Manufacturing both trace their roots back to their father's blacksmith shops (Wetherell and Corbet, 58). A strong tie to family farms, small communities and family characterize many of the long-standing manufacturers in the province. The following list of current Saskatchewan manufacturers provides reference to how far back the roots of some of these companies extend:

Roots in the 1920s - Morris Industries Ltd.

Roots in the 1930s - Schulte Industries, Brandt Industries Ltd.

Roots in the 1940s - Doepker Industries Ltd, Sakundiak

Roots in the 1950s - Leon's Manufacturing, Flexi-Coil

Roots in the 1960s - Degelman Industries Ltd., Rem Manufacturing, Ltd., High-Line Mfg. Inc. (Original company called Rock-O-Matic (1961), sold to Smith-Roles and later sold to founder Rosaire Bussiere's son Ray, who called the company High-Line Mfg. Inc.(1980s))

Roots in the 1970s - Rite Way Mfg. Co. Ltd.,

Saskatchewan has become a world leader in manufacturing equipment to meet the needs of dryland farmers. In tandem with the increased adoption of conservation tillage practices, Saskatchewan farm implement manufacturers have become leaders in the development, manufacture and export of equipment like air seeders, straw choppers and spreaders which "protect the soil" (Government of Saskatchewan, "News Release April 11, 2000").

Saskatchewan manufacturers, many located in smaller rural centres, provide valuable employment at their production facilities. “In just a few years, what could have been a serious environmental problem has been turned into a major opportunity - as we conserve our soil and ship our equipment and expertise around the globe” (Government of Saskatchewan, *Saskatchewan - Our Future Is Wide Open*, “Celebrate Success - Saskatchewan Firsts”). The Government of Saskatchewan reports that Saskatchewan has “nearly 40% of western Canada’s 11,000 farm and ranch implement manufacturing jobs” (“Rural Opportunities Showcase - Rural Manufacturing”).

For a more detailed description of the development of air seeders and residue management equipment, refer to Appendix B of *The Evolution of Farming Practices in Saskatchewan* by Amy McInnis.

Quotable Quote:

“Saskatchewan farmers have always been an inventive and adaptive people, more often than not out of necessity. They often don’t have the time, money or inclination to rush off to a supplier for what they need. Instead, they adjust, adapt, build and invent” (*Saskatchewan Business Forum*, Number 12, Winter 1978 as qtd. in Jones, 5).

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