

## SIDNEY E. CLARKE AND THE EARLY HISTORY OF CANADIAN RANGE SCIENCE

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The death of Sidney Clarke at the age of 83 in Vancouver, British Columbia, marked the passing of the man who, more than any other, was responsible for the development of range management and research in Canada. It seems fitting to establish his place in the record and to document some of this early history while the events are still close at hand.

The nature of this record is closely connected with the location and characteristics of the resource. The range lands of Canada are concentrated in the western part of the country. Usable range for domestic livestock is largely confined to the southern portions of the four western Provinces, although much forage for big game is produced in the northern portions and in the Yukon and Northwest Territories. The livestock range area is estimated at 47 million acres in the plains and foothills of the "Prairie Provinces", and about 15 million acres in the grassland valleys and forest ranges of interior British Columbia.

Although livestock ranching played an important part in the early settlement of these areas, the national interest remained strongly centered on wheat as the prime product of the West, and most of the range was long considered as potential wheat land. In accordance with this philosophy, the Canadian Department of Agriculture paid virtually no attention to the study and utilization of range lands for many years, although an extensive system of experiment stations was established for investigations of cultivated crops and farm livestock.

Repeated requests of stockmen for scientific study of the range resource were finally met in 1926 when Dr. S. E. Clarke and Mr. L. B. Thomson were appointed to establish a range experiment station in the so-called "shortgrass" region. These two men, who differed greatly in training and background, were to work together for most of their professional careers, and to contribute much toward bet-

ter land use in the semi-arid portions of western Canada. Clarke, then 46, had come late to scientific agriculture, although he had practical experience from a boyhood on the family farm near Baldur in southern Manitoba. His higher education began in Normal School at Brandon, Manitoba, following which he taught school for several years. In 1917 he entered Manitoba Agricultural College and received the B.S.A. degree in 1920. Post graduate work at the University of Minnesota brought the Master's degree in 1925 and the Ph.D. in 1927, with a major in Agronomy, and a thesis on "Self-fertilization in Timothy". In 1926, Clarke, with his training in forage crops and Thomson, with a B. S. in Animal Husbandry from the University of Alberta, were about as new to range problems as was the field of range science in Canada.

Following a summer of reconnaissance in 1926, a site was selected in 1927 near Manyberries, in southeastern Alberta and here the first Range Experiment Station in Canada was established on an 18,000 acre tract. Research activities begun in 1928 included botanical investigations of the native vegetation, grazing studies, range improvement, forage crop tests, and investigations of range livestock activities, weight gains and winter feed requirements.

This Station served as the center for range research in Canada for many years. In 1935 similar studies were begun at Kamloops, B. C., where the range resources and problems differ greatly from those on the plains of Alberta and Saskatchewan. The Kamloops unit was begun as a sub-station of the Manyberries Station. It was closed from 1941 through 1946 as a war-time economy move, and reestablished as a full-fledged Station in 1947. Range investigations were developed subsequently at other experiment stations in western Canada, particularly at Swift Current in Saskatchewan and Lethbridge in southwestern Alberta.

Sid Clarke was a key figure in all of these developments. At Manyberries he initiated a series of investigations which gave for the first time an adequate account of the nature, extent and importance of the range resources of the "shortgrass" section of the Canadian Plains. After his transfer to the

Swift Current Station in 1935 as head of range and forage studies, he was able, under the Prairie Farm Rehabilitation Act, to extend certain phases of this work over the whole range area of the Prairie Provinces.

These pioneer investigations by Clarke and his associates included the ecology of major range types of the Canadian Plains ranges, and studies of the phenology, productivity, chemical composition and livestock preference of the principal species. Grazing investigations, accompanied by clipping experiments, probed the effects of climate versus grazing at different intensities under both deferred-rotation and continuous systems. The results of this work appeared in numerous publications from 1930 through the 1940's.

A major result of the chemical composition investigations was the discovery that most forage species of the drier range areas in Canada are deficient in phosphorus when cured. The widespread adoption of supplemental mineral feeding of range livestock which resulted from this discovery did much to improve animal health and production in the region.

Another contribution from the early work at Manyberries was a method for determination of grazing capacity. This was based on the average annual herbage production of the major range species in relation to their basal area. These data were combined to produce an index for each species from which its average yield and that of the range as a whole could be estimated from point sampling data.

Clarke's agronomic training led to a strong interest in range improvement by direct means. The work at Manyberries included testing the effects of fertilizers, surface cultivation, burning and reseeding on native vegetation. Clarke early recognized the merits of crested wheatgrass and saw the possibilities for reseeding the abandoned grain fields which were so numerous in the Canadian plains region. Reseeding trials begun in 1928 on an abandoned field near the Range Experiment Station proved to be historic. Crested wheatgrass was well adapted to grow under these conditions, and could be established with a minimum of cultural preparation on abandoned fields still in the weed

stages. Furthermore, crested wheat-grass was relished by livestock and withstood heavy grazing. The results of this research were especially timely for the drought conditions of the 1930's. Beginning in 1935, substantial funds were made available for range improvement under the Prairie Farm Rehabilitation Act. Reseeding of abandoned crop lands and other depleted ranges proved to be one of the most effective measures in this program.

Another interest of Clarke's was his quest for an alfalfa which would compete with grass and remain productive under range conditions. As early as 1938 he and Dr. J. L. Bolton started experiments with crosses between Ladak alfalfa (*Medicago media*) and creeping yellow Siberian (*M. falcata*). This work has been continued by Dr. David Heinrichs, now in charge of the forage crop program at the Swift Current Station and has produced the variety "Rambler" which is proving well suited to range and dry land farm conditions.

One of Clarke's many activities lay in direct contacts with ranchers. There was no range extension service in Canada at that time, and his informal type of extension helped greatly to spread good range practices. He was well known and heartily welcomed by literally hundreds of stockmen across the plains region.

He also played a major role in the professional development of many men who are now active workers in range science. These include, in approximate chronological order, E. W. Tisdale, N. A. Skoglund, J. A. Campbell, J. B. Campbell, W. R. Hanson, Alastair McLean, W. A. Hubbard and T. G. Willis. The author was Clarke's first assistant at the Manyberries Station and worked closely with him until 1935 and again at Swift Current during the period 1941-1946.

Clarke was a tremendous worker who expected nothing of his staff that he was not prepared to do himself. This drive was combined with a zest for life and a keen realization of the need for relaxation. He

stressed clear expression of ideas, and helped many a beginner in the art of technical writing. Above all, he set an example of dedication to the job of developing range science in Canada.

He was a member of many professional and scientific groups including the Ecological Society of America, Agricultural Institute of Canada, Western Canadian Society of Agronomy, and Canadian Society of Animal Production. In 1948 he was made a Fellow of the Agricultural Institute in recognition of his leadership in rangeland studies.

In 1946, at the age of 66, Sid Clarke reached retirement age, a situation which seemed particularly desirable after a serious heart attack in 1945. The need arose at this time, however, for the post-war re-establishment of the Range Experimental Station at Kamloops. Clarke agreed to undertake this assignment and did not actually retire until the task had been completed in 1948.

The last years of his life were spent quietly and happily with his wife, Mabelle, at their home in East Burnaby, a suburb of Vancouver. "Doc" loved his garden and took great pleasure in raising a variety of flowers, fruits and vegetables. His health and mental vigor remained good until a few months before his death on September 8, 1963.

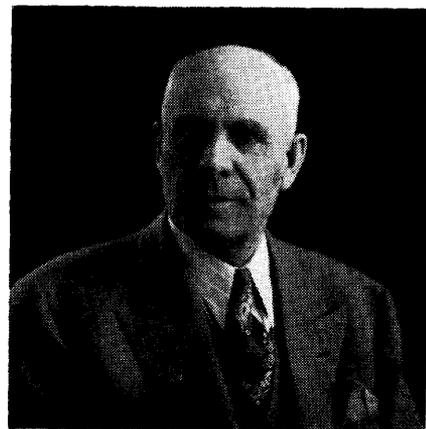
Sid Clarke's professional career was not a long one, but it was outstanding in accomplishment. His combination of broad research and extension interests was particularly suited for his role as the principal pioneer of range science in Canada.

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