

# Patrick Beveridge Kennedy—Early Range Manager

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RANGE management is but newly recognized as a distinct branch of the agricultural sciences. It is only natural, therefore, that much of the early work introductory to this current recognition was carried on by pioneers in neighboring fields. It is fitting that the work of these early men be recognized, and with no further thought than this, the contributions of Patrick Beveridge Kennedy (1874 to 1930) are here reviewed.

The *Berkeley Daily Gazette* of January 18, 1930, states:

“Dr. Kennedy was born in Mount Vernon, Scotland, 55 years ago and came of a long and distinguished line of botanists and landscape gardeners, each generation of Kennedys bringing forth a distinguished scientist in this line. His great-grandfather was the landscape gardener who planted the formal gardens of the Tuilleries for the Empress Josephine.

“In the next generation, his grandfather, Lewis Kennedy, was a member of the famous firm of Lee and Kennedy of London and Scotland, for whom a new genus of plants from Australia, *Kennedia*, was named. George Kennedy, father of the scientist, was the architect who laid out the beautiful gardens of Trossachs, the noted watering place of Scotland. He also modelled the Prince Albert memorial in Edinburgh.”

Kennedy's contributions to range management may be divided into three periods, each successively longer and more

productive than the preceding. The first period (1896–1900) found him in Washington, D. C., the second (1901–1912) found him in Reno, Nevada, and the last (1913–1930) is the California period (see photo), which ended with his death following surgery, January 18, 1930, in Berkeley, California.



DR. P. B. KENNEDY, 1926, ON THE BERKELEY CAMPUS OF THE UNIVERSITY OF CALIFORNIA

A graduate of Guelph Agricultural College in Ontario, Canada, he took his doctorate at Cornell University under L. H. Bailey, passed a civil service examination, and entered the Division of Agrostology in the United States Department of Agriculture, Washington, D. C. During this period in Washington, at the turn of the century, the first of his papers of interest to range managers was published:

1. A history of the introduction of *Bromus inermis* into the United States

and its trial at various agricultural experiment stations (3).

2. A technical review in the little studied field of the internal structure of the grass caryopsis (cf. Martin, A. C. 1946. The comparative internal morphology of seeds. *Amer. Midl. Nat.* 36: 513-660; grass seeds pgs. 536-542) (4).

3. A report of the proceedings of a meeting of the Ontario Agric. & Exper. Union, Guelph, Ontario, December 6-8, 1899 reporting on experiments with forage plants (5).

4. A report on cooperative experiments with grasses and forage plants carried on by the Division of Agrostology from 1896-1899 (6).

5. A history of the introduction of Turkestan alfalfa into the United States and its trial at various agricultural experiment stations (7).

With this eastern background of interest and training in forage crops, Kennedy moved to Reno, Nevada, in 1900 where he undertook the organization of a new department (Botany, Horticulture, and Forestry) for the University, doing both the teaching and research (until the new department was enlarged in 1908 to include A. A. Heller).

By 1907 his knowledge of western plant life had progressed so far that F. V. Coville (then Botanist, Bureau of Plant Industry) wrote him: "As you are aware, the grazing lands in some of the National Forests have been seriously overgrazed. This year the Forest Service is cooperating with the Bureau of Plant Industry in initiating some experiments looking toward an increase in the forage output of these lands. . . . It is proposed as the essential part of the inquiry to protect by fencing or otherwise, small sample areas of good, though badly overgrazed range, and on them study the whole cycle of reproduction of the principal grazing plants, ascertaining especially the date on

which each of these important species matures its seed, the time when the seed germinates and within what period it reaches a development sufficient to withstand trampling. . . . I am writing now to learn whether you would be willing to accept such an appointment. . . ." Since Kennedy was fully employed by the University of Nevada, he was unable to accept this appointment.

During this Nevada period, Kennedy started work on the genus *Trifolium*, an interest which later spread to the whole legume family and completed his well-rounded grasp of the range picture. In his study of the clovers, Kennedy was led "to believe that a satisfactory treatment of the genus could not be made by a study of herbarium specimens alone, but that the different species would have to be watched from the seed to maturity" (*Muhlenbergia* 9: 1. 1913).

Range publications of the Nevada period include:

1. "A preliminary report on the ranges of Western Nevada" (29).

2. An early bulletin on summer ranges which contains some interesting observations, a few of which may be briefly quoted here: "There is plenty of forage for sheep at the present time on the eastern Nevada ranges" and "the fact that water is frequently scarce in the late summer months has prevented the ranges from being overstocked by sheep". Also, "It would be to the interest of both cattlemen and sheepmen to work together harmoniously, and come to agreements by forming associations where the range might be discussed. . . ." (cf. present *Amer. Soc. of Range Management*). There is much more of range interest in this bulletin (9).

3. A bulletin entitled "Native forage plants and their chemical composition", written in cooperation with station chemists N. E. Wilson and S. C. Dinsmore. It

contains many notes of range interest (34).

4. "Botanical features around Reno" (1907)—an interesting early account of Nevada vegetation, e.g. (page 24) "It is interesting to note that Piper in his Flora of Washington regards *Artemisia tridentata* as more characteristic of the Upper Sonoran area, and includes also several other shrubs which we regard as in the Transition area. There is little doubt that owing to the ability of the sagebrush to adapt itself to exceedingly variable conditions both of altitude, moisture and soil that it overlaps both areas so as to be almost inseparable" (cf. Cottam, "Is Utah Sahara Bound"), and (page 25) "Unfortunately at the present time, many square miles of these once luxuriant stretches of timber present only denuded areas save for the countless stumps which still remain to testify to the past conditions of the mountains. These trees were largely used in the early days of the Comstock to timber the mines. Since that time a second growth has been produced, more especially in the canyons, which is just beginning to bear cones. It will be a very difficult matter to reforest the high ridges, as there is no opportunity for seed to get there, and the soil, for lack of a forest cover, has been severely washed" (10).

5 and 6. A pair of Nevada Experiment Station bulletins were written with S. C. Dinsmore on digestion experiments. In the first, native hay of the Truckee meadows (water-grass, sedges, and rushes) was shown "as far as can be determined by digestion experiments, to be an excellent forage for fattening stock. It could perhaps be more economically fed if a fodder containing more protein (e.g. alfalfa) were fed along with it" (2). In the second, the conclusions state: "It is quite feasible to conduct digestion experiments on the ranges and to determine approxi-

mately the feeding value of the various plants. . . . So far as we know, these are the first investigations of the kind that have ever been attempted. . . . When considering the matter of reseeding the ranges that have become depleted, it is of great importance to know not only that the plant will easily seed itself, but to know also its value from the standpoint of nutrition" (28).

7 and 8. Biennial reports of the Board of Control of the Lincoln County Experiment Farm. (1909-1910; 1911-1912)—P. B. Kennedy, chairman. Includes reports on some forage plants, including the famous spineless cactus which "although it made a remarkable growth during the summer, it was killed out right during the winter" (27, 32).

9. "Clovers"—(1913)—contains some information on the early introductions of clovers and also some early advice on range reseeding, e.g. (page 3)—"We desire to call attention of farmers in Nevada, and elsewhere, who have rough rocky fields and hillsides, underlaid with hardpan and hence not suitable for alfalfa that they desire to use for pasture purposes, to this clover (white dutch). Scatter the seed on the bare places and brush it in and keep moist. In the course of a few years it will creep over the boulders, leaving them green" (11).

In July 1913, John Gilmore (then Professor of Agronomy, University of California) wrote Kennedy asking him if he would "take charge of our courses in forage crops". He said "The work will consist of instruction here in the University and in the study and investigation of range conditions from all points of view throughout the state." By the end of the year Kennedy had accepted and moved to Berkeley, California, where he remained the rest of his life. During this long, productive period his range papers are readily divided into two groups—those dealing

with grasses and those dealing with legumes. Many of the latter are borderline range management dealing with forage crops which are supplemental to range feed.

Among the legume papers of greatest interest are:

1. A paper on leguminous plants as organic fertilizers. To quote: "Every encouragement should be given growers in the legume field as it means much to the continued prosperity of California agriculture" (19).

2. One which introduced *Vicia faba* var. *minor* to the farmers of California "as a valuable winter green manure crop, and to a less extent as a hay, silage and grain rotation crop for stock" (20).

3. One which recommended the Tangier pea as a green manure in California where under especially favorable circumstances estimated yields of as high as nine tons to the acre have been reported (21).

4. "The mat bean, *Phaseolus aconitifolius*" (with B. A. Madson)—a summer green manure (31).

5. "Berseem or Egyptian Clover (*Trifolium alexandrinum*)" (with W. W. Mackie)—as forage and green manure in short rotations (30).

6. "Alfalfa" (with W. T. Clarke) (1).

Among the grass papers of greatest interest are:

1. A recommendation for Smilo grass (*Oryzopsis miliacea*) (26).

2. "Annotated list of the wild flowers of California"—grasses prepared by Kennedy's class in agrostology, pages 136-155 (13).

3. A paper wherein harding grass is christened, and introduced to Californians (14).

4. "Winter forage crops"—includes both grasses and legumes (15).

5. The introduction of napier fodder (*Pennisetum purpureum*) into California (16).

6. A very strong plea for increased range research (17).

7. "Sudan grass" (with B. A. Madson) (33).

8. "Goat grass or wild wheat (*Aegilops triuncialis*)—a mechanically injurious weed in the fields of the ranges in certain parts of California" (24).

9. The first comprehensive report of bulbous bluegrass (*Poa bulbosa*) (25).

In addition to these grass and legume papers, and of particular range interest are:

1. His description of *Bassia hysopifolia*, an annual forage weed introduced from Western Asia which proved to be alkali tolerant (22).

2. His early investigations on the problem of control of undesired vegetation (23).

The review of 29 papers, although not his full contribution, certainly placed Kennedy in the forefront of the early range managers. As fitting a tribute as any has been offered by his one-time teacher, L. H. Bailey, who wrote in 1946, in regard to the author's article "Kennedy and Heller (1905-1913)" (Torreya 45: 93-96, 1945) that Kennedy "was a canny Scot who saw his work and accomplished it. It is too bad he could not have been with us longer."

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