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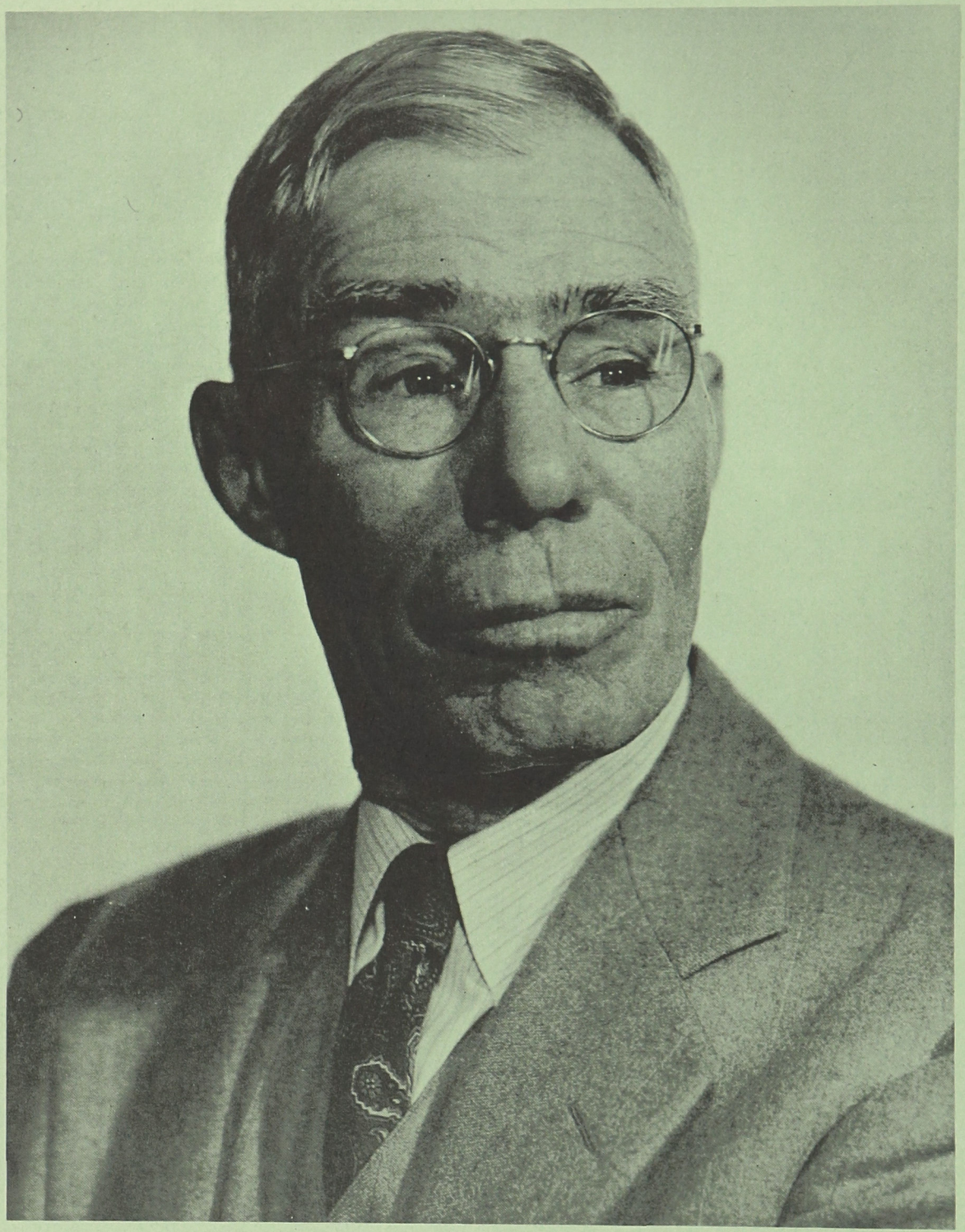
BURLE JACKSON JONES

Range Improvement Pioneer

University of California Agricultural Extension Service



BURLE JACKSON JONES*

A Leader in the Range Management Renaissance in California

The name of Burle J. Jones, Associate Agriculturist and Assistant Professor Emeritus, is certainly very close to the top in the University of California Division of Agricultural Sciences honor list. Burle is famed for his pioneering and outstanding achievements, along with many others who helped to weave the Agricultural Extension Service into the fabric of California agriculture. His vision, dedication, leadership, well-directed, productive hard work, and above all, his ability to train others flowered into Extension's modern, highly successful pasture and range improvement program.

Burle would be the first to want everyone to know he fully recognizes that many people have contributed over the past 35 years to the development of modern California range and pasture technology. Even though his professional associates, friends, and California stockmen acknowledge Burle's feelings on the subject, they also generally agree that one man almost single handedly catalyzed the successful Extension effort exactly where, in the mid-thirties, interest and resources were at a low ebb — on the run-down brush ranges of the state. That man was Extension Agronomist Burle J. Jones.

Based on the Extension research range and pasture programs that he built in every one of the agricultural counties of the state during the period from 1936 to 1947, California today enjoys an aggressive, highly productive range and pasture improvement program. Since his retirement in 1947, University of California research and extension workers have continued a comprehensive team effort with California ranchers, the California Division of Forestry, and the U. S. Forest Service to clear brush and subsequently improve range on more than 1.5 million acres of foothill chaparral and woodland. This has created a new wealth of grazing lands with untold community benefits to watersheds, wildlife, and in the reduction of fire hazards. During this same period, an additional 2½ million acres of marginal range and grain land have been improved. It is conservatively estimated that these developments annually return $15 million in new wealth of feed for California livestock production.

Burle was born in Montana and obtained his B.S. degree in entomology from Montana State University in 1904. A little later he moved to Berkeley, California to continue his studies in entomology and plant pathology. He did field work on asparagus rust and peach diseases for Professor Ralph E. Smith of the Division of Plant Pathology as well as directed the statewide pear blight control campaign. Professor Smith then sent him to

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* Prepared by Milton D. Miller, Extension Agronomist, Davis.

the San Dimas Lemon Association in southern California to do field studies on lemon rot and cultural practices. In 1910, a Phoenix company induced him to go to Arizona to develop that state's first successful citrus nursery. Meanwhile he received a second B.S. *in absentia* in 1910 from the University of California at Berkeley. From 1913 to 1915 he helped establish a 1000-acre lemon orchard near Maxwell (Colusa County) for the James Mills interests, but an unidentified thyroid difficulty forced him to resign in 1915. In 1915, Burle settled his family near Nevada City, cutting wood for fuel and mining timbers to earn a living, but the need for accelerated food production during World War I resulted in Burle being asked to join the University of California Agricultural Extension Service. On December 10, 1917, Director B.H. Crocheron appointed him farm advisor of El Dorado County because of his horticultural background. Meanwhile, a local physician there treated and cured his debilitating thyroid problem. Twelve years later he was transferred to Shasta County where he served as farm advisor until 1935.

Recalling his county experience, he recently wrote: "Few current staff members have ever worked in a back woods county where one man represented the AES and was presumed to be an expert in everything from fruit trees to baby chicks. I attended and addressed as many as 18 farm center night meetings a month and worked from 12 to 16 hours a day for six and often seven days a week. It was a relief when Professor Chester W. Rubel (Assistant State Leader, Northern California), in late 1934, asked me to transfer to Berkeley. I accepted not because it was Berkeley, but because it got me out from under so much direct, demanding work with local farm groups."

The range program really began in May 1937 when Director B.H. Crocheron, Louis H. Rochford, Woodbridge (Woody) M. Metcalf, Fleda Smith, and Burle went to Spokane, Washington to attend a USDA Agricultural Adjustment conference. In Pullman, Washington, they saw a Soil Conservation Service range nursery and studied the layout and the species. It was Burle's thought then that if so many different forage species could survive in the Palouse country on 20 inches of rainfall we should have a wide area of possible adaptation in California.

Before the Washington trip, three important factors had already stimulated Burle Jones' interest in organizing a statewide range research-extension program. First, based on reported successes in the northwest, there were test plots of crested wheatgrass scattered from Modoc to San Diego. Second, there were still many survivals of hardinggrass from seeds sent to the counties in the 1920's by Professor P.B. Kennedy of the U.C. Division of Agronomy. The third was that Louis Rochford, Extension Livestock Specialist, had brought the AES into its first intimate contacts with range livestock producers. It was only natural to think of better range forage with the prospect of better beef. Rochford and Jones soon

initiated the first Extension livestock conferences on the dual problems of better beef and better forage.

It was Thomas (Tom) C. Mayhew (Assistant State Leader, Coast Counties) who put the show on the road. Tom grabbed the ball and started for the goal line. On September 15, 16, and 17, 1937, Tom and Burle held conferences with county farm advisors at Santa Rosa, San Jose, and Santa Barbara. Tom not only told Burle to provide the bait; he also told the farm advisors he expected them to swallow it!

Burle decided on the rod-row system of testing and got the seeds together, packaged and labeled for each county. In the fall of 1937 he set up 200 test plots of some 43-odd species in 29 counties beginning in Humboldt and winding up in San Diego. On most of the plots he also had quadrats in various combinations of nitrogen, phosphorous, and potassium fertilizers on adjacent rangeland. It was to be a program of sustained plots with annual additions and adequate recorded readings of successes and failures. Burle's earlier reseeding successes on wild brush burns greatly augmented the later use of controlled burns and their seeding as range improvement tools.

The irrigated pasture program was going in a desultory way in a number of counties when Burle arrived in Berkeley in 1935 after extensive irrigated pasture work in Shasta. He soon organized a statewide study of practices and species as well as an effort to systematize and coordinate county work. This resulted in the first U.C. irrigated pasture publication, Extension Circular 125, Irrigated Pastures in California,* by Burle J. Jones and J.B. Brown.

Incidentally, it was about two years after he started the range test plots that he went to Director Crocheron with a written project and was asked why he hadn't done that before. Burle explained that it was a cut and try job and that he first had to work out procedures in the field before committing them to print. Director Crocheron finally said, "I guess we should have done it this way years ago." It was one Extension project on which initally there was not enough state or local research to even write the preface to a primer! In 1945, Burle and Dr. R. Merton Love (Division of Agronomy) authored the first real range "primer," Extension Circular 129, Improving California Ranges;* and in 1947, these same two men wrote U.C. Circular 371, Improving California Brush Ranges.* Both of these publications were the result of their statewide tests, observations, and interviews with stockmen. The information given in both circulars is still sound and has been widely used.

On May 23, 1947, Professor Burle J. Jones presented the major address at the University of California Agronomy Field Day held at the Davis

* Out of print.

campus. About 500 ranchers, seedsmen, and associates gathered to honor him as he was about to retire at the age of 66. His address, quoted in part below, displays his wide experience and his impact on California range improvement problems. The closing paragraphs carry predictions of which practically all have proven correct.

"California Ranges From the Padres to the Present"

by Burle J. Jones

"Those of you who have seen this title on today's program may have assumed that this is to be a pleasant interlude of history, romance, and high adventure. I think I should at this point quote a proverb that is not taken from the Scriptures: 'Blessed is he that expects nothing, for he shall not be disappointed.'

"We might assume that the primary business of the Padres was to convert the Indians. Like all good teachers, they realized that the best way to save the soul of the savage was to teach him some of the rudiments of civilization. So they taught the Indians how to produce crops and how to raise livestock. There were literally thousands of head of sheep, cattle, and horses at many of the Missions during the period that they flourished. We read further, that when a dry winter came along many of these animals literally starved to death because of a dearth of natural forage on the ranges where they were compelled to shift for themselves. Overgrazing then began at this early period in California's history and continued through the century of Spanish occupation. We haven't done very much about it since.

"In bringing in crop seeds the Padres, not blessed with a State Department of Agriculture, also brought in, without restriction, a terrible mixture of other seeds. We find, at the present time, that there are over one hundred species of grass in the State that are not native but have been brought in as contaminants of other seeds, or in the wool or hair of imported animals. Most of our weedy species are introductions that came in during that period. Alien species still are coming in. Even now, perhaps, there is not too much that we can boast about in the purity of the seeds we use. I am not going to try to name all of these alien plants. They are covered very thoroughly in California Bulletin No. 637 entitled Alien Plants Growing Without Cultivation in California. This was written by our very good friend Dr. W.W. Robbins, Head of the Division of Botany at Davis.

"Going on to a later period, we find that in 1865 General Bidwell, speaking at Chico, deplored the condition of California ranges — their depletion and weediness and the poor quality of the stock grazing upon them. He hoped that some day a messiah would appear who would teach the agriculturists and livestock men of California how to restore the original

luxuriant plants that grew on our plains and foothills. Please note that he referred to the original luxuriance of those plants.

"We will now jump from that point to a very recent one—1937. We thought then that we should have an organized range improvement program in California put on by the Extension Service of the State. I was not able to get very much encouragement for that kind of a project. It had been tried before in a somewhat desultory manner without proper organization and without a very careful follow-up, and no one had had very much success. Professor Ben A. Madson of the Agronomy Division thought it had some promise. He went over it with me and helped to perfect it in detail.

"I was not entirely a missionary in starting this program. A number of things were happening on the ranges of California. The successful planting of crested wheatgrass on the wornout farming lands of the Pacific Northwest was attracting attention. I had found that seedings of it, from small test plots to large acreages, were being made from Siskiyou to San Diego.

"Another interesting thing that was gaining impetus under the auspices of the Division of Animal Husbandry and the Extension Specialist in Animal Husbandry was a livestock breeding program which was taking definite shape and spreading to many of the ranges. Now that seems to be a rather backward way of getting at a range improvement program. But immediately when producers became interested in better animals, they also became interested in better feed for better animals. So again I was following pressure from the outside. I had been in Washington, Oregon, and Idaho to see what was going on where so much was being accomplished by reseeding. I adopted such parts of their experimental program as seemed adapted to California conditions. I gathered seed of local species and imported seed of all the varieties that I thought had promise here. There were 43 species and something like 200 plots the first year. These plots now number into the thousands carried on by interested cooperators in California and with the assistance of our farm advisors in various counties. The species were extended to about 150, many of which have now been abandoned. We immediately discovered that crested wheatgrass is not suitable for most of the State of California so that was a useful negative answer to part of the problem. We did find that there were a number of imported and native species, particularly perennials, that would survive our dry summers.

"In our first endeavors the county farm advisors had fences placed around their plots. We had heard so much about overgrazing that we assumed the first thing that was essential was protection from abuse by grazing livestock. The next spring, when we began to examine the results on these plots, we found that many of them were literally smothering from the overgrowth of resident species. It became evident then that reseeding must be accompanied by adjusted grazing management. There are some of these

fenced cemetaries about the State yet. I am not proud of them, but there are a good many where the results were good and are still good, especially where some clipping or grazing was applied to reduce the competition.

"In 1940, Professor Madson again came to the rescue and imported, from Canada, the messiah that Bidwell had hoped for, who would teach California livestock men how to rehabilitate their ranges. Some of you heard this budding messiah this morning. I thought he presented only a small part of his research program and that he did it very modestly. I think those who heard him will agree that he is rapidly becoming very adept in this line of work.

"In 1942, this same messiah, Dr. R. Merton Love, spent three months with me traveling over the state. We examined all of the range test plots that had been previously planted and made special effort to study the grazing management practices of as many livestock operators as we could contact. Out of this we made up a composite of the livability of plants and also of the best range management practices we had been able to observe. As a result of that, I think, Dr. Love has since confined his research work strictly to the practical phases of this problem. He is still importing every promising plant he can lay his hands on. He is making selections of plants and is even developing new plants. Those of you who go with him tomorrow to Sacramento County will see what he is accomplishing on a very severe site. Since Mr. Arthur Brown, the owner, is here, it is perhaps not diplomatic for me to designate this site as severe; but I think he will agree with me that it is a thin and wornout grain land!

"We found in a survey last year that there were over 40,000 acres successfully seeded in California. When I say successfully, I mean that there had been a resulting improvement in the forage. There are over 200 men who are now cooperating with local farm advisors in adjusted grazing practices. There are anywhere from 50 to 100 thousand acres of brush being cleared annually to enlarge and improve the pasture acreage of the State. Dr. Love is continuing the range variety trials in cooperation with farm advisors in many counties of the State. He is initiating and expanding his own seeding and range management studies. There is a project on Klamath weed control that some real results are coming out of. Research work is going on with brush control methods, with reseeding, and with the grazing management of those areas after they are cleared. There is a tremendous amount of range fertilization work going on in many counties. Several thousand acres of range land have been fertilized this year as a result of demonstrations that have proved it to be profitable. This is still decidedly in the test plot stage. We need to know in each area what will improve the growth and whether or not the fertilization of range land will improve the nutrition of animals. All of these things must be on an economic basis.

"Now I am going to tell you a secret: the title of this paper was incomplete. It should have read, 'From the Padres to the Present With a Forecast of the Fabulous Future.' If I am going to be an historian, I may as well also become a prophet. First, I want to mention range research. You know that research is a slow process.

"It required several centuries for the clothiers to develop a shirt that a man could button up the front instead of pulling it over his head. It was nearly half a century before the automobile manufacturers found a place to put baggage, the spare tire, the tools, and the battery so that one could get at them without having to take his car apart. Sound research is slow. Your job is to wait patiently and meantime, to see that this research is maintained along practical lines. As fast as it is developed, field meetings going on at test plots and acreage seedings throughout the State are helping to spread the gospel. Poor seedbed preparation, untimely seeding, a lack of proper mowing or grazing management, and the use of too much seed per acre have all demonstrated that a little prior fundamental research on range improvement methods would have saved a lot of wasted money. Every range site is different, requiring widescale testing before deciding upon the final improvement program.

"Research follows demands; and as the demand increases, research will be accelerated and the answers will arrive that much sooner. You can look forward to the time when range areas will be more intensively managed according to their needs in much the same way as farmers now manage the various areas that they know so well on their farm lands. Reseeding will never be successful over wide range areas, but will develop chiefly on marginal farming lands or other arable lands and on areas that are cleared of dense stands of brush.

"In all of the species used, the operator is dealing with small seeds which require careful seedbed preparation. I am glad to say that there are some counties in which the procedure has been well defined and in which the program is making progress particularly on marginal grain or hay lands and other arable areas. In general, success will be very slow on these marginal grain lands because their fertility has been seriously depleted. Reseeding will be greatly accelerated on areas where brush has been removed.

"Livestock men of California now have enough sound, successful range improvement projects going on in various parts of the State so that we know that both reseeding and improved grazing management can be done within the facilities and resources of most ranches. I see in the future a time when the Forest Service will be asking for stock to graze off the

grass within their domain. I think sheep and beef cattle are going to move more into the valleys and that irrigated pastures will keep pace with range improvement. I anticipate that irrigated pasture acreage will be as large or larger than that of alfalfa which means that it will be considerably over a million acres. Those of you who go along with these young messiahs of the world of agricultural science will develop an interesting and, I think, a profitable and stable program during the years ahead."

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