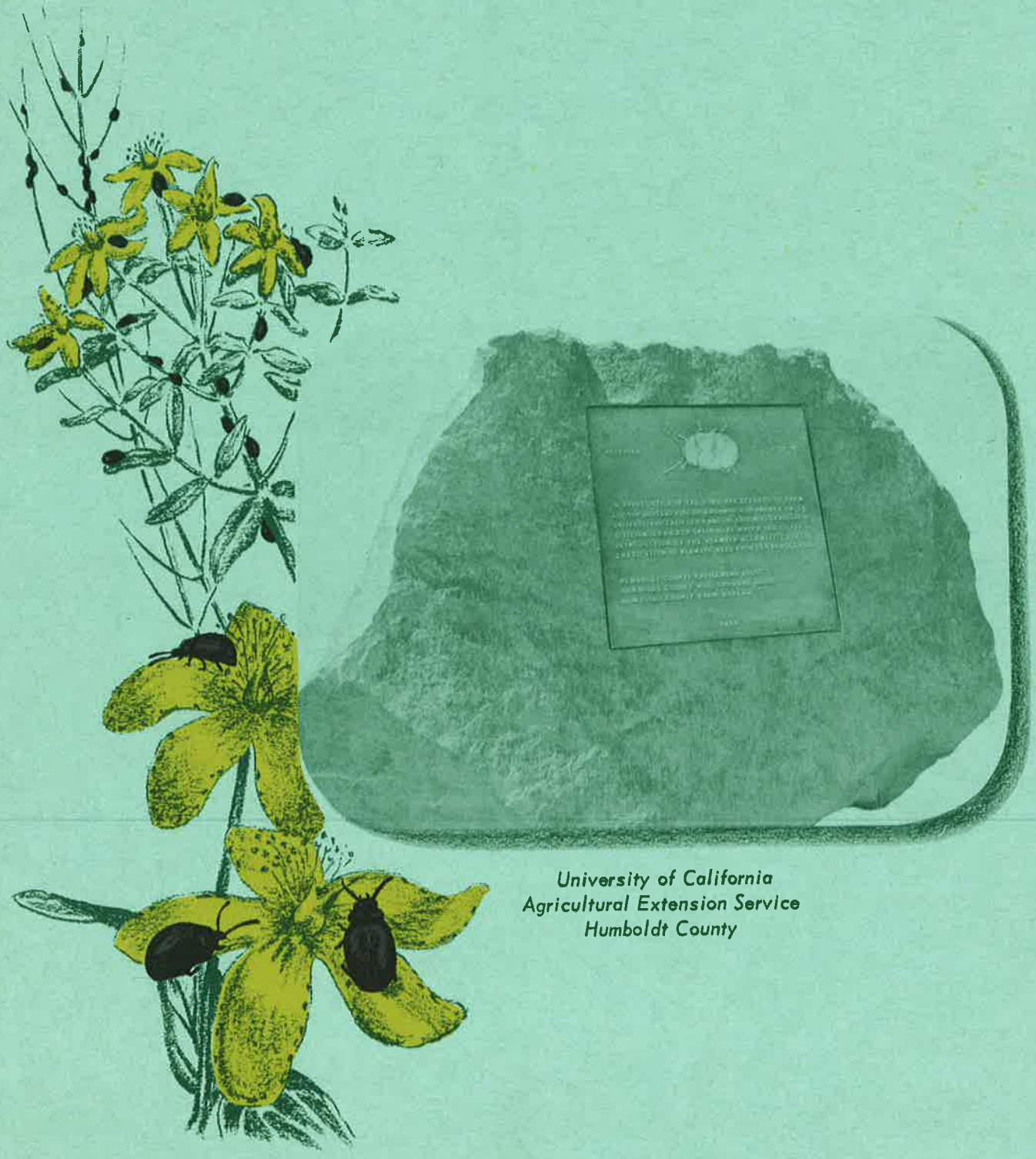
The Little Beetle

that KO'd Klamath Weed



University of California
Agricultural Extension Service
Humboldt County

Program Dedication

KLAMATH WEED BEETLE MONUMENT

SATURDAY - JULY 12, 1958 ROHNER PARK, FORTUNA, CALIFORNIA

Flag Raising..... Fortuna Boy Scouts

The Star Spangled Banner
(sung by all)

Father of Victory March..... Bandoliers
Humboldt County's summer band for young musicians

Invocation..... Rev. Theodore Nace

Presentation of Distinguished Guests

DEDICATORY ADDRESS..... Dr. Byron T. Shaw
Administrator, Agricultural Research Service,
U.S. Department of Agriculture,
Washington, D.C.

Unveiling..... Stephanie Prior Launer

Presentation of Memorial to honor those individuals and organizations which were responsible for the introduction of this beneficial insect to Humboldt County.

America (one verse)
(sung by all)

Benediction..... Rev. Michael Manogue

Stars and Stripes Forever..... Bandoliers

Humboldt County Participating Organizations

4-H Clubs
Future Farmers of America
Camp Fire
Boy Scouts
Farm Bureau Women
California State Horsemen
Eureka Chamber of Commerce
Humboldt County Board of Trade
Humboldt County Fair

Auspices of the Humboldt County Wool Grower's Association

Alfred H. Murphy

Before release of the beetle, there had been hundreds of demonstration and experimental plots with chemicals, competitive plants, herbicides and grazing control.

Yearly tours were made to keep people informed of progress.

Humboldt County
Klamath Weed Problem

I first learned of Klamath weed (St. Johnswort) in 1912 when I was a young man employed on a North Western Pacific construction survey crew in the Fort Seward-Blocksburg area. In those days, little attention was paid to range land conditions; everything was centered on railroad construction.

The Fort Seward ranch had been purchased by a former mayor of Oakland. White stakes dotted the flat, showing lots for sale. Fort Seward was to become the summer home of many Bay Area residents. Mingled with these white stakes was an unknown plant with yellow flowers. No one knew what it was and cared less. Some called it wild alfalfa.

In 1921-32, while serving as farm advisor for Tillamook County, Oregon, my attention was again called to Klamath weed. A Tillamook farmer claimed it was a serious pest in California and the Willamette Valley. In Oregon, it was called Tipton or goatweed. Old timers in Humboldt County called it Klamath weed because they claimed it was supposed to have been first discovered on the Klamath River. Back in Humboldt County in 1932, I was surprised to learn that this weed had consumed over 100,000 acres of rich grazing land in the Blocksburg-Fort Seward area and was rapidly spreading to other sections of the county. I also learned my predecessor, Dr. J. W. Logan, and Dr. A. W. Sampson of the University of California, had begun control studies.

As the county's new farm advisor, it naturally fell to me to find out what the county problems were. I clearly remember discussing many times the Klamath weed problem, especially with the late William Russ and D. H. Prior.

The discussion with D. H. (Doug) Prior impressed me most. He said: "Pine, I know the farm advisor and the University have been working on this problem. They have come up with temporary solutions but not the real answer. You must keep people and the University interested. The good Lord has not placed this menace on our range lands to destroy them. Sometime, some way, somehow, this problem will be solved."

No man was more sincerely alarmed and aware of this situation than Doug Prior. After his death, I saw letters he had written to his partner, the late Norton Tooby. Here are a few quotes from them:

June 27, 1932..."Again I urge you to dispose of the ranch in any way, Norton. In a very few years it will not be worth paying taxes on. It does not pay the taxes and running expenses now. It will get worse."

July 13, 1934..."I am writing again, urging you to sell our Blocksburg holdings.

"The Klamath weed is getting so bad, and, in a short time, will render this country valueless. It has now spread from the Coleman field down to Hall Ridge. This is where I used to save grass for a snow storm, but is now nothing but weed.

"If you can get $4.00 per acre, I think you will do very well. If not, my judgement is to take less."

I regret that men like Doug Prior could not live to see the day when an economical and inexpensive method had been found to combat the menace - but many have lived to see that day. Henry Tosten of Miranda writes:

"Enclosed is my check toward the beetle memorial.

"I believe what the beetle did for Humboldt County was of the greatest magnitude of anything that ever happened in the county. Our ranch being in a weed-free area and over 300 acres infested, I well know the problem and expense of eradication. Although we cleared our ranch before introduction of the beetle, I watched its work of magic on adjoining lands.

"It is unfortunate this monument could not be placed at Dyerville Flat under the 'Tallest Tree in the World' where millions of people could and would see it. Especially the student class of tourists seeking composition material to take back to their schools all over the world.

"They say a dog is a man's best friend, but we would have no need for a dog by now had not this little beetle come to our rescue."

Over the years we of the Agricultural Extension Service have tried to help meet the problem. Our aim has been to keep people informed and interested, and to sponsor and promote any possible solution to the problem. We were just one cog in the great wheel which kept turning until patient research, cooperation and work solved the problem.

The following information has been compiled principally from farm advisor monthly and yearly reports.

W. D. Fine.

Farm Advisor

How The Klamath Weed Problem was Solved

1923 — The livestock department of the Humboldt County Farm Bureau and Dr. J. W. Logan, farm advisor, discussed a program for control of Klamath weed. However, foot and mouth disease broke out in California and no work on the Klamath weed problem was done in 1923 or 1924.

1925 — Dr. A. W. Sampson, Associate Professor of Forestry and Plant Ecologist in the Experiment Station, University of California, with Farm Advisors Logan and Harry Tucker, started plots with chemicals and checked effects of grazing. Klamath weed was shipped to Dr. C. D. Marsh, USDA Experiment Station, Salina, Utah, for analysis.

1926 — The Humboldt County Weed Committee was formed by Farm Advisor J. W. Logan to work with the Farm Advisor's Office and A. W. Sampson. Original members of the committee were J. W. McClellan, D. H. Prior, H. W. McWhorter, William Russ, and W. O. Perry. This same committee still functions today with an enlarged membership.

1927 — An additional 800 pounds of Klamath weed in different stages of growth was collected and shipped to Dr. C. D. Marsh, Salina, Utah, for experimental feeding of livestock. Sodium chlorate found by Sampson showed some promise. Sodium arsenate was found to kill the plant and sterilize the soil. Use was discarded because of the poisonous aspects of the arsenic.

William Russ started an experiment on the Blocksburg ranch by forcing sheep to pasture closely and keep the weed in check. Three hundred sheep were to be used on 100 acres, and fresh sheep were to be substituted at intervals to avoid death. Goats were also used.

1928 — Experimental plots on the ranches of Russ Company, Tooby & Prior, and Jack McClellan showed additional success with sodium chlorate. Agricultural Commissioner Earle Mills cooperated in these trials.

1929 — Two ranchers purchased 1,060 pounds of sodium chlorate for experimental trials on small acreages and to determine cost of applications. Demonstration meetings showing results were held at the plots to instruct ranchers on proper methods of mixing the chlorate.

Assemblyman Robert F. Fischer was successful in obtaining a $3,000 state appropriation for the University of California to work on Klamath weed under the supervision of Dr. Sampson. K. W. Parker was employed to do the field work in Humboldt County. The purpose of the experiment was to determine if other chemicals were superior to sodium chlorate which was uneconomical on large infestations and was a fire hazard.

1930 Landowners again said that chemicals were not the answer to the problem but, nevertheless, ordered 10 tons to treat the weed on isolated patches. It was the best known method of control, but several workers received severe burns.

Dr. Sampson's Bulletin #503, "St. Johnswort on Range Lands of California," was published and 400 copies distributed to range land owners. It became necessary to issue a local supplemental bulletin on how to protect individuals from fire in the handling of sodium chlorate.

A letter to the Dean of Agriculture, University of California, told him he was unfit to be Dean because he had ruled that the farm advisor would distribute the Sampson bulletin.

A deputy agricultural inspector, James C. Tario, was employed by the Agricultural Commissioner to work with ranchers. The possibility of having "weed-free areas" as a method of control was first discussed.

1931 Dr. Sampson called attention to the Klamath weed beetles which had recently been brought to Australia from Europe to control the weed. As a result, the Humboldt County Wool Growers' Association asked the University to send Dr. Sampson to Australia to study the situation. A fund was raised by range land owners for this purpose. Subscribers were:

Russ Company
T. F. Hunter
John Roughbaugh
Mrs. Mae McClellan
John Hansen
Dr. C. G. Wiggins
Tomlinson Brothers
Willis White
Tooby & Prior
Northern Redwood Lumber Company
Hunt Brothers
Robert Porter
Dinsmore Brothers
Fred S. Bair
Arthur Stover
Frank Clark of Mendocino County

William Russ, Norton Tooby, and W. P. Wing, Secretary, California Wool Growers Association, called on Dean Merrill, College of Agriculture, University of California, requesting that Dr. Sampson be sent to Australia. This project never materialized. The USDA would not permit the importation of insects of unknown feeding habits. That regulation was changed a few years later.

1932 Through the National Research Council and Dr. Sampson, Dr. C. M. Harrison was assigned to Humboldt County to study our range grasses and determine which could compete with the weed under proper grazing methods. Russ Company and Tooby & Prior furnished lodging and transportation for Dr. Harrison from their Blocksburg ranches. The first weed-free area was created. Willis White proposed a resolution asking the University to make further study of the Klamath weed problem. The resolution was accepted by the Humboldt County Cattlemen's Association and forwarded to the Univer-

sity.

Another letter to the Dean chastised Dr. Sampson and the farm advisor for importing grass seed mixture and adding thereto Klamath weed seed. The mixture was sown on a few thick stands of Klamath weed to determine if any of the grass species could survive. The seed had been purchased from a reliable seed dealer and passed purity tests.

1933 Dr. R. N. Raynor of the Botany Department, University of California, was assigned to Humboldt County, at no expense to the county, to work on the problem. D. H. Prior furnished the land and piped water in for the experimental work.

Eight hundred different plots, with every known chemical and their combination, were tried and at different seasons of the year. The second weed-free area was formed.

1934 Two meetings were held on the Raynor plots. The rainfall was low this year. It was proved that chemicals were less effective when applied after spring rains. Application in the summer months had been the general practice.

1935 Over 100 ranch people attended the Raynor plots to learn of his results after one and one-half years of experimental work. They heard that sodium chlorate and borax were the best chemicals to use and that they must be applied in the spring months before rains stop for less cost per acre and better results.

1936 No additional experimental work was carried out. Ranchers began to feel the Klamath weed-free areas were the partial answer to prevent spread although there was some difference of opinion.

1937 Fifteen tons of sodium chlorate were spread.

At a burn on the Fort Seward ranch, it was observed that a bent grass had competed all these years with the weed. This was only noticeable after the burn and in patches. It had furnished good pasturage.

Dr. Raynor issued Bulletin No. 615, "The Chemical Control of St. Johnswort."

1938 This was the year when the Extension Service Planning Conference and the livestock owners requested the Board of Supervisors and the Agricultural Commissioner to enforce strict control of Klamath weed in the weed-free areas. This year and those which followed created strained relationships among neighbors and caused some land owners to lose their property.

Dr. Harry S. Smith, Professor of Entomology, University of California, re-

ported that the beetle was not showing good results in Australia.

1939 A dense growth of Klamath weed on the Tooby & Prior range was burned with the aid of the State Division of Forestry for seeding purposes. Eleven species of grass seeds were sown, including Burnet and Highland Bent, to determine their competitive properties with Klamath weed. This work was done in cooperation with Professor B. A. Madson of the Division of Botany, University of California, and Burle Jones, Extension Specialist in Agronomy.

Range grass nurseries were established in different sections of the county by Burle Jones and the local farm advisor.

1940 The Klamath weed-free areas continued to be the best method of control.

1941 Payments for using borax in controlling Klamath weed were started by the Agricultural Conservation Payment Service, United Stated Department of Agriculture.

During the years 1941-50, 3,045 tons of borax were used in control. An estimated cost of $50 per ton would bring the total to $157,250 spent by the U. S. Government. In addition, the Humboldt County Weed Committee, over the years, handled 258,848 pounds (125 tons) of sodium chlorate at $7 per cwt. and 459 tons of borax at $37 per ton. This adds up to an estimated expenditure of $191,530 by the government and ranchers for sodium chlorate and borax, not including labor. It would be impossible to estimate the loss in reduced pasturage, death, and market unfitness of livestock over the years.

1942 Additional plots were established and different grasses sown. A number of small areas in dense infestation were fenced and sheep run on remainder to check grazing results.

1943 Reports from Australia indicated the beetle was showing exceptional results in control. Statements were made that the beetle had not worked in Australia, that it would not work here and would turn out to be another pest.

1944 Professor Harry S. Smith and Dr. C. P. Clausen, U. S. Bureau of Entomology and Plant Quarantine, visited the infested county and spent two days investigating the Klamath weed situation. The University of California asked for and obtained permission to import beetles from Australia with the proviso that additional feeding trials be held to determine the effects on various California crops.

The University of California and the United States Department of Agriculture started a cooperative project at the University to import, test, and breed the imported insects.

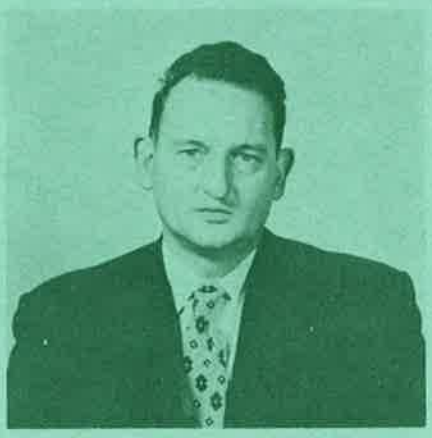
1945 The University agreed to a request of cattlemen and wool growers to conduct

additional work on the possibility of grazing Klamath weed as a means of control.

The following committee was appointed to meet with University officials for the purpose of suggesting a program: B. F. McCombs, W. O. Perry, Ira Tooby, C. C. Stewart, Herbert Russ, Dr. C. G. Wiggins, George Fulton, Eldon Cochran, and Fred Fearrien.

The experiments with grazing and the work of the beetle were to be coordinated. Drs. Harry Smith and J. K. Holloway, U. S. Bureau of Entomology and Plant Quarantine, visited the county and completed arrangements for release of beetles on the Fort Seward and Tooby & Prior ranches in the coming year.

JAMES K. HOLLOWAY
Insect Identification and Parasite Introduction Laboratories and in charge Parasite Introduction, Agricultural Research Service, U. S. D. A.



DR. CARL B. HUFFAKER
Entomologist, Department of Biological Control, Agricultural Experiment Station, University of California.

1946 An Intensive Klamath Weed Control Project was started as some livestock people owning sheep were convinced from moderate to good control could be secured through adjusted grazing practices.

From investigations and observations, it was thought that effective and economical control could be brought about through a detailed study of all control means available, if they were co-ordinated and further worked out with respect to soils, topography, rainfall, and natural cover found in the areas.

The written project was signed by Professor B. A. Madson, Division of Agronomy; W. W. Robbins, Division of Botany; George H. Hart, Division of Animal Husbandry; B. H. Crocheron, Director of Agricultural Extension; W. D. Pine, Farm Advisor; and B. F. McCombs, County Range Improvement Committee.

February 12th, two colonies of beetles were released on the Fort Seward and Tooby & Prior ranches by J. K. Holloway and Dr. C. B. Huffaker, Entomologists, Division of Biological Control, University of California. Forty range land owners attended the event. This was the first attempt in North America to control a plant with plant feeding insects. (James K. Holloway - Scientific American, July 1957)

On October 1, Alfred H. Murphy was assigned to Humboldt County for work on the Klamath Weed Control Project under the guidance of Professor B. A. Madson and Dr. R. M. Love, Agronomy Division, University of California. Tooby & Prior fenced areas for grazing experiments. An irate woman growing bulbs wrote that if the beetles got into her bulb patch, she'd pass a petition to eliminate the Farm Advisor's Office.

1947 Ninety people attended the first Klamath weed tour to review the work of Alfred Murphy and observe the results of the beetle.

1948 Another field day with 75 present. As indicated by the attendance, interest and results of both projects were growing. Beetles were spreading and eliminating the weed as they went. Dr. C. B. Hutchison, Dean of Agriculture, University of California, visited the country and inspected the project.

1949 One hundred and twenty-five people attended this year's field day. In cooperation with Alfred Murphy, 40 different colonies of beetles were planted in strategic locations throughout the country.

A frantic telephone call came from a woman claiming the beetles were eating her ornamentals and shrubs. Upon investigation, the plant involved was an ornamental plant of the St. Johnswort family.

1950 Following this year's tour with 140 people in attendance, collection days to gather beetles were arranged for those interested in cooperation with Holloway, Huffaker, and Murphy. Ranchers arrived from all sections of the county during the week assigned. Persons from other counties and states also collected colonies.

In the 4-1/2 years since the first beetles were liberated, results were above everyone's expectations. Should it continue as indicated in the next few years, the Klamath weed problem would be solved. The beetles had migrated to the controlled grazing plots conducted by Murphy to make his results worthless. The main question - "What is going to happen to the beetle after the Klamath weed is gone?"

1951 It was estimated that 50,000 of the 150,000 acres in the Blocksburg-Fort Seward area were under control. Areas where the weed had been destroyed were returning to their natural grass coverage and especially California oatgrass (Danthonia californica), one of the best perennials growing in this state. Ranchers had collected enough colonies for their ranches in all sec-

tions of the county to assure a county-wide coverage. The Agricultural Commissioner continued to collect and distribute colonies where needed.

Both weed-free areas were dissolved.

Gone was the need for borax, herbicides, control grazing, weed-free and abatement districts, and educational tours. But, considering the expense and labor of everyone concerned, the cost, as a conservative estimate, would run well over 1/2 million dollars.

At the end came an apology from a range land owner, presumably with a guilty conscience for having made the remarks that the farm advisor and the University were crazy in telling the people the large acreage of Klamath weed could be controlled by a little bug.

At a special meeting of Directors of the Humboldt County Wool Growers; and Humboldt County Cattlemen's Associations, it was decided to erect the monument to the beetle and those having a part in bringing Klamath weed under control. The committee appointed was as follows:

Harold Prior	A. L. Fearrien	Harris R. Connick
Joseph Russ, Jr.	Dr. Wm. J. Kerr	T. K. Clark

Following are those who have supported the committee and made financial contributions to erect the monument and the printing of this report:

Ackley, N. E.
Albee, Jack N. D.
Ambrosini Ranch, The Ferd.
Anderson, F. G.
Angel Ranch (Vickers & Bugenig)
Barkdull, Claude W.
Barkdull, Raymond E.
Barnum, Robert
Bartlett, Thomas F.
Barnwell Bros.
Barnwell, W. H., Jr.
Bauder, Mrs. W. H.
Beck, Everett G.
Benbow, Robert
Benbow, Walter J.
Brambani & Roberts
Brightman & Brightman
Brightman, Vernon
Christensen, Orlen
Clark, T. K.
Clark, W. H.
Clarke, Cecile
Conry, Leonard M.
Cook, James R.
Cottrell, Everett M.
Crerar, Robert
Drewry, Dan R.
Dunn, Frank
Fearrien, A. L.
Fearrien, Fred
Fitzell, Chas., Jr.
Ford, L. A. & Son
Fort Seward Ranch (Satterlee & Stewart)
Fowler, Mrs. Dulce
French, Jack
Gould, D. N.
Hansen, John J.
Henderson, Leonard
Hill, E. E.
Hinckley, Bertha R.
Hindley, Cecil Jo
Hindley, Dr. Jos. N. D.
Humboldt Livestock Co.
Hunt, A. N. & Sons
Hunt, Albert
Hunt, J. R.
Hunter, Daniel G.
Hunter, Ray E.
Johnson, Carl
Johnson, Chas. E.
Johnson, Walter
Kerr Bros.
Kerr, Guy B.
Kinsey, Mrs. Alice Hulse
Kretner, Walter
Lindley, Elwyn L.
Lowry, W. E.
Lyons, A. E.
Lytel, Mrs. Bertha Russ
Mackey-Young Ranch
Marshall, W. W.
May, Dwight
McBride Livestock Ranches
McBride, Mrs. Ruth Gift
Miner, Mrs. Belle
Mitchell, Mrs. John W.
Monschke, Roy
Moore, Mrs. Anna
Moore, L. F.
Mullen, Mrs. Jennie
Northwestern Pacific Railroad Co.
Perrott, Henry W.
Preston, Harold B.
Rasmussen, C. H.
Rasmussen, C. S.
Rice, Lee
Roscoe, Wesley C.
Rousseau, Henri R.
Russ-Connick Co.
Russ, Herbert
Russ, Joseph, Jr.
Shaw, Thos. J.
Shinn, Vernon E.
Smith, A. A.
Stewart, Gerry O.
Stewart, H. H.
Stover Bros.
Sturm Ranch
Timmons, G. F. & Son
Tooby & Prior
Tosten, A. H.
Vicenus, Henry J.
Wagner, Ed. H.
Waldner Fruit & Land Co.
Western Livestock Co.
White, Floyd J.
Wiggins, Dr. C. G.
Williams, Mrs. Blanche G.
Wing, W. P.
Wood, E. D. & K. C.
Wright, Rae
Zane, Sim L.