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REPORT

to the

Montana Livestock Sanitary Board

July 1, 1958 through June 30, 1959

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MONTANA LIVESTOCK SANITARY BOARD

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\* \* \* \* \*

JOHN W. SAFFORD

Executive Officer

State Veterinarian

Helena, Montana

July 1, 1959

Honorable J. Hugo Aronson,  
Governor of Montana  
Helena, Montana

Dear Governor Aronson:

In compliance with Section 46-242, RCM  
1947, we transmit herewith the report of the State Veterinarian  
to the Montana Livestock Sanitary Board for the year July 1,  
1958, through June 30, 1959.

Respectfully submitted,

MONTANA LIVESTOCK SANITARY BOARD



J. W. Safford,  
Executive Officer.

Helena, Montana  
July 1, 1959

Hon. Livestock Sanitary Board  
Helena, Montana

Gentlemen:

In compliance with Title 46, Section 242, RCM 1947, I submit the report of the State Veterinarian and Executive Officer to the Livestock Sanitary Board for the year ending June 30, 1959.

There were six meetings of the Livestock Sanitary Board during the year.

A meeting was held in Helena, August 22, 23, and 24, 1958.

A meeting was held in Great Falls, December 2, and 3, 1958.

A meeting was held in Helena, December 21, 1958.

A meeting was held in Helena, March 13, 14, and 15, 1959.

A meeting was held in Bozeman, April 26, 1959.

A meeting was held in Miles City, May 21, 1959.

At these meetings the varied activities and responsibilities of the Livestock Sanitary Board were discussed and acted upon. All actions taken and regulations and orders issued by the Executive Officer, in the interim between meetings of the Board, were approved.

The complete minutes of all meetings are on file in the office of the State Veterinarian at the Livestock Building at the Capitol in Helena.

#### FOREWORD

GROSS INCOME - 1957 (Taken from Mont. Agricultural Statistics Vol. VII, Dec. '58)

All cattle	\$144,417,000
Farm value of milk	18,900,000
Sheep and lambs	13,616,000
Wool	8,316,000
Swine	7,605,000
Chickens	1,664,000
Chicken eggs	6,921,000
Turkeys	235,000
TOTAL GROSS INCOME	<u>\$203,674,000</u>

These figures not only represent a most important factor in the economy of Montana, but also represent gross returns from supplying the most important item absolutely essential to any person, state or nation -- that item is healthful, wholesome, nutritious food. We believe that too much is taken for granted in this country--that food and fiber are just things you can call up and order, and always obtain. It is sincerely hoped that in these years of abundance that we do not become careless in guarding the source of our food supply--the primary source of our strength and vigor as a state and nation.

The ingenuity of the American rancher, the blessings of a fertile land, and an abundance of water, have made it possible for many to turn their full-time endeavors to creative works -- industrial development, invention, scientific research and development, construction, art, music, and on, indefinitely -- the results of which have been unparalleled in history. How much of this could have been done if man had had to devote a good many of his waking hours to obtaining food to merely keep the body alive? To me, the ability of the American ranchers and farmers to not only supply enough wholesome, nutritious food for their families, but for many others, is the primary source of American strength -- its secret weapon. Let us guard it well.

It is with these thoughts in mind that the entire staff of the Livestock Sanitary Board have conducted their day-to-day operations, planned their work, and established their organizational structure.

The responsibilities of the Board, as prescribed by legislative acts, are:

(1) To guard against the serious threat of disease laying waste to the livestock and poultry industry.

(2) To prevent the transmission of animal diseases to man by animal contact and to prevent the transmission of all diseases through meat and milk.

The diseases in Montana livestock and the threat of the introduction of diseases is a most serious threat to a most important source of food and fiber, as this report will show. The seriousness can be expressed in the estimated annual loss from disease and pestilence which has been variously estimated between \$15,000,000 and \$25,000,000. Yet, we have no rapidly spreading animal plagues and have eradicated a number of dangerous diseases in the past. The wasteful toll resulting from the introduction of just one rapidly spreading disease, on top of the already huge loss to disease, would indeed be frightful.

Perhaps the most important development, the past year, which will provide the livestock industry with a badly needed facility to fight the diseases of their herds and flocks, is the authorization of the Thirty-sixth Legislature for the livestockmen to spend their mill levy money to replace the 1918 Livestock Sanitary Board diagnostic laboratory with a new laboratory. An up-to-date, well staffed, diagnostic laboratory is absolutely essential in meeting the challenge of any disease problem.

It will be the intense purpose of the Board to construct and operate the new diagnostic laboratory in such a way that the people of Montana and the livestock industry will soon realize a return of many, many times their original investment.

As this report will show, the scope of disease problems in protection of animal health and food supplies is wide and technically complicated. New developments and knowledge in medical and veterinary medical science are adopted and applied as soon as possible in carrying out the responsibilities of the Board. These new developments must be applied to the Board's medical-legal approach to the control of animal diseases. This requires the coordination of the activities of many, in various fields of endeavor. It is a pleasure to report to the Board that we have enjoyed the excellent cooperation of many people and organizations in obtaining the accomplishments shown in this report.

## CATTLE DISEASES

Veterinarians in Montana reported 51 cattle diseases in 10,940 cattle on 3,929 ranches for the fiscal year of 1958-59. It would be most interesting if every disease could be reported. The figure would, perhaps, be more startling. Those losses, valued at \$100.00 a head, involve \$10,940,000 worth of cattle!

We wish to call the following diseases to your special attention:

### Actinobacillosis and Actinomycosis

Twice as many cases of cattle infected with either of these two infections were reported this year as last -- 1,824 cases this year. We again urge early detection, prompt treatment, isolation of the infected discharging animals, and cleaning and disinfection of contaminated premises and equipment.

### Anaplasmosis

Twenty-eight clinical cases of anaplasmosis were reported on seven ranches this past year. Four hundred twenty-nine cattle were negative, 17 suspicious, and seven positive to the complement-fixation test for anaplasmosis. Three antelope, 3 Bighorn Sheep, 58 deer, and 7 elk were negative, and 9 deer and 11 elk gave positive reactions to the complement-fixation test for anaplasmosis.

Anaplasmosis was diagnosed in Liberty, Fergus, McCone, Rosebud, Big Horn, Yellowstone, and Stillwater Counties. Over the year, it has been established that anaplasmosis is enzootic in southeastern central, and north-central Montana. Anaplasmosis has never occurred in native cattle in western Montana, yet all the deer and elk found to be positive to the complement-fixation test were in Ravalli and Missoula Counties. In the areas of Montana where the disease is enzootic in cattle, the few deer and antelope tested were negative.

Thirteen per cent of all the deer tested in the state; 36% of the deer tested in Missoula County; and 64% of the elk tested in Ravalli County gave positive reactions to the C-F test for anaplasmosis. Although the numbers in this preliminary observation are small they appear significant. This points up the very important need of further studies on this disease before we can hope to give the livestockmen satisfactory relief from it.

As reported last year, we are certain quite a number of cases of anaplasmosis occur in Montana that are not reported. It is indeed unfortunate that a few cattlemen choose to hide and cover up such a disease. It does three things: (1) It affords no opportunity for obtaining true knowledge of the mode of spread, (2) it hides the importance of the disease to the industry and (3) it permits the wider dissemination of disease through the carrier animal. We recommend that the cattle industry demand more research and more effective control over anaplasmosis.

## Anthrax

No cases of anthrax were reported during the year. The outbreak in Richland County during the 1957-58 fiscal year has been kept under close observation. It appears that the control measures taken, the use of Sterne's vaccine, and the excellent cooperation of the ranchers in Richland County, were effective. It is recommended that the ranchers in Richland County, in the West Charlie Creek area, continue to keep their livestock vaccinated.

## Bacillary Hemoglobinuria (Redwater)

Redwater disease continues to increase in Western Montana. The reported cases, since its introduction in 1939, each year, are as follows:

1940 to 1952	23 cases per year (avg.)
1953 to 1955	52 " " " "
1956	91 cases
1957	143 "
1958	246 "
1959	270 "

The above table means that Montana lost, this past year, 12 times as many cattle from redwater than were lost each year during the 12-year period from 1940 to 1952. There was approximately a 9% increase over last year, which was the all-time high. Eighty-one per cent of the cases were reported in Lake and Ravalli Counties.

It was reported last year that the disease was enzootic in Lake, Ravalli, Powell, Granite, and Missoula Counties. Because of reports this last year, we believe that two counties can be added -- Sanders and Lewis and Clark. Nine cases were reported in Sanders County in the vicinity of Lone Pine. The pattern of the Sanders County outbreak seems to indicate that this area will become an established infected area. The outbreak on one ranch in Lewis and Clark County is an extension of the Powell County enzootic area up the Blackfoot River.

In Lake County 12,148 cattle were vaccinated against redwater. This is a reduction of over 7,000 reported the year previous. A preliminary investigation into the effectiveness of the redwater bacterin demonstrates that it will protect the cattle for six months, provided the vaccine is properly prepared from an immunogenic strain of Clostridium hemolyticum. Livestockmen in the serious redwater areas, particularly Lake and Ravalli Counties, must keep their cattle vaccinated every six months to avoid losses.

The research program on this disease at the Montana Veterinary Research Laboratory is being re-evaluated and intensified.

## Blackleg

Blackleg has been known to exist in Montana probably since there have been cattle. The causative organism is a spore-former and can live in the soil for long

periods of time. The only thing that can be done is to vaccinate the calves. This department has recommended and urged for years that the calves be vaccinated in the spring before turn-out time and again in the fall. This will prevent the disease.

Last year 89 cases were reported on 55 ranches. We have no way of knowing how many were not reported. Simple arithmetic adds up to something like this: The cost to vaccinate 89 calves for blackleg twice is about \$22.00 - the value of the 89 calves at this fall's contracted price is about \$10,000. For failure to vaccinate 89 calves at a cost of \$22.00, 55 Montana cattle owners lost \$10,000. Why?

This gives an idea of the cost of disease -- even a disease considered of minor importance.

### Brucellosis

There was a marked reduction in the brucellosis-eradication program activities during the year, the reason being that 52 of Montana's counties are now modified-certified areas, and only five counties were recertified. One county, Rosebud, which has nearly completed the certification test, was held up because of litigation. Big Horn County is in the final phase of finishing up the certification test. Custer and Powder River Counties do not choose to have a brucellosis-eradication program.

During the fiscal year 45,789 head of cattle were tested for brucellosis with 287 reactors -- an infection rate of 0.62%. This is 0.07% higher than last year. This is to be expected, but is remarkably low, because more of the year's testing was devoted to testing and cleaning up infected herds than the previous year.

During the year 9,988 ABR (milk ring) tests were made. The 141 suspicious ABR tests made are being followed up with blood tests of the herds. There was an increase of 1,435 ABR tests over last year, yet the number of suspicious ring tests was reduced from 162 to 141. This inexpensive method of detecting brucellosis-infected dairy herds should be continued as a regular procedure.

On original area tests of 54 Montana counties 2,434 herds (7.96%) were found to be infected. The reduction of brucellosis-infected herds has been as follows:

July 1, 1957	-	666 infected herds	(2.36%)
January 1, 1958	-	439 " "	(1.57%)
July 1, 1958	-	357 " "	(1.24%)
January 1, 1959	-	278 " "	(0.99%)
July 1, 1959	-	238 " "	(0.92%)

Can there be any doubt as to the effectiveness of the brucellosis-eradication program when the cattle infection rate can be reduced from 5% to 0.62%, and the herd infection rate from 7.96% to 0.92% in approximately five years?

The following table shows the progress of the bovine brucellosis-eradication program in Montana:

County	Herds Infected		Herds Infected	
	Initial Test		June 30, 1959	
Beaverhead	75	- 13.7%	1	- 0.02%
Big Horn*	91	- 13.2%	31	- 4.3%
Blaine	30	- 4.6%	4	- 0.6%
Broadwater	54	- 23.6%	3	- 1.3%
Carbon	149	- 13.9%	4	- 0.3%
Carter	34	- 7.9%	1	- 0.2%
Cascade	140	- 13.9%	3	- 0.3%
Chouteau	35	- 5.2%	4	- 0.6%
Custer**	?		?	
Daniels	18	- 5.9%	1	- 0.3%
Dawson	34	- 5.3%	3	- 0.4%
<u>Deer Lodge</u>	<u>26</u>	<u>- 24.7%</u>	<u>0</u>	<u>- 0</u>
Fallon	18	- 5.3%	2	- 0.6%
Fergus	106	- 10.7%	20	- 2.0%
<u>Flathead</u>	<u>30</u>	<u>- 2.6%</u>	<u>0</u>	<u>- 0</u>
Gallatin	62	- 6.4%	4	- 0.4%
Garfield	27	- 7.5%	3	- 0.9%
Glacier	88	- 17.7%	11	- 2.2%
Golden Valley	24	- 12.1%	1	- 0.5%
Granite	28	- 16.3%	1	- 0.5%
Hill	31	- 6.1%	3	- 0.6%
<u>Jefferson</u>	<u>32</u>	<u>- 13.6%</u>	<u>0</u>	<u>- 0</u>
Judith Basin	59	- 12.6%	4	- 0.9%
Lake	105	- 7.8%	5	- 0.3%
<u>Lewis and Clark</u>	<u>67</u>	<u>- 17.1%</u>	<u>0</u>	<u>- 0</u>
<u>Liberty</u>	<u>7</u>	<u>- 4.2%</u>	<u>0</u>	<u>- 0</u>
Lincoln	15	- 5.3%	1	- 0.3%
Madison	67	- 14.2%	9	- 1.4%
McCone	17	- 3.6%	1	- 0.2%
Meagher	54	- 34.3%	3	- 1.9%
<u>Mineral</u>	<u>3</u>	<u>- 4.3%</u>	<u>0</u>	<u>- 0</u>
<u>Missoula</u>	<u>60</u>	<u>- 10.3%</u>	<u>0</u>	<u>- 0</u>
<u>Musselshell</u>	<u>27</u>	<u>- 9.0%</u>	<u>0</u>	<u>- 0</u>
Park	50	- 10.6%	4	- 0.9%
<u>Petroleum</u>	<u>27</u>	<u>- 19.1%</u>	<u>0</u>	<u>- 0</u>
Phillips	30	- 4.8%	3	- 0.4%
Pondera	36	- 6.4%	9	- 1.8%
Powder River**	?		?	
Powell	51	- 17.4%	3	- 1.0%
Prairie	30	- 11.9%	1	- 0.3%
Ravalli	35	- 3.2%	8	- 0.8%
Richland	46	- 3.9%	1	- 0.08%
Roosevelt	50	- 8.4%	3	- 0.5%

\*Area test not completed

\*\*No eradication program

Table (Continued)

County	Herds Infected			Herds Infected		
	Initial Test			June 30, 1959		
Rosebud*	39	-	9.3%	10	-	2.4%
Sanders	47	-	7.4%	3	-	0.4%
Sheridan	23	-	3.7%	1	-	0.3%
<u>Silver Bow</u>	<u>8</u>	-	<u>8.7%</u>	<u>0</u>	-	<u>0</u>
Stillwater	52	-	7.1%	5	-	0.6%
Sweet Grass	56	-	12.1%	2	-	0.4%
Teton	35	-	5.2%	8	-	1.2%
<u>Toole</u>	<u>13</u>	-	<u>4.6%</u>	<u>0</u>	-	<u>0</u>
Treasure	26	-	15.8%	5	-	3.0%
<u>Valley</u>	<u>33</u>	-	<u>4.4%</u>	<u>0</u>	-	<u>0</u>
Wheatland	17	-	12.3%	1	-	0.7%
Wibaux	23	-	8.4%	3	-	1.1%
Yellowstone	91	-	7.7%	9	-	0.9%

\*Area test not completed

\*\*No eradication program

Twelve counties (indicated by those underlined) have no known brucellosis-infected herds. These counties had 323 brucellosis-infected herds, an average of 10.3% infection rate. With the elimination of brucellosis in 12 counties, and the marked reduction in 42, there can be no doubt that the disease can be eradicated, if the cattle owners insist that only proven brucellosis-free cattle enter their counties and insist on the elimination of the infection from the few remaining infected herds in Montana.

Brucellosis vaccination is playing a major role in the reduction of bovine brucellosis; 290,550 calves were vaccinated this past year with Brucella abortus vaccine. Approximately six dollars were spent to have calves vaccinated, compared to one dollar spent for testing this past year.

To determine the effectiveness of Brucella abortus calfhood vaccination under overall conditions in Montana, a detailed study was made of all beef cattle tested in Montana under the area program. The data were assembled, statistically analyzed, and published in Pamphlet ARS-91-12 in April 1959, by the United States Department of Agriculture, Agricultural Research Service. A summary quoted from the pamphlet is as follows:

"To determine the efficiency of Brucella abortus Strain 19 vaccine in beef cattle, a comprehensive survey was conducted in the State of Montana at the time of the first area test for certification. Data on 951,014 cattle in 21,418 herds are presented. The vaccination status of each animal was determined at the time of test. The data are analyzed on the basis of percentage of animals vaccinated within each herd, and comparisons of vaccinated and nonvaccinated populations. The following facts are evident:

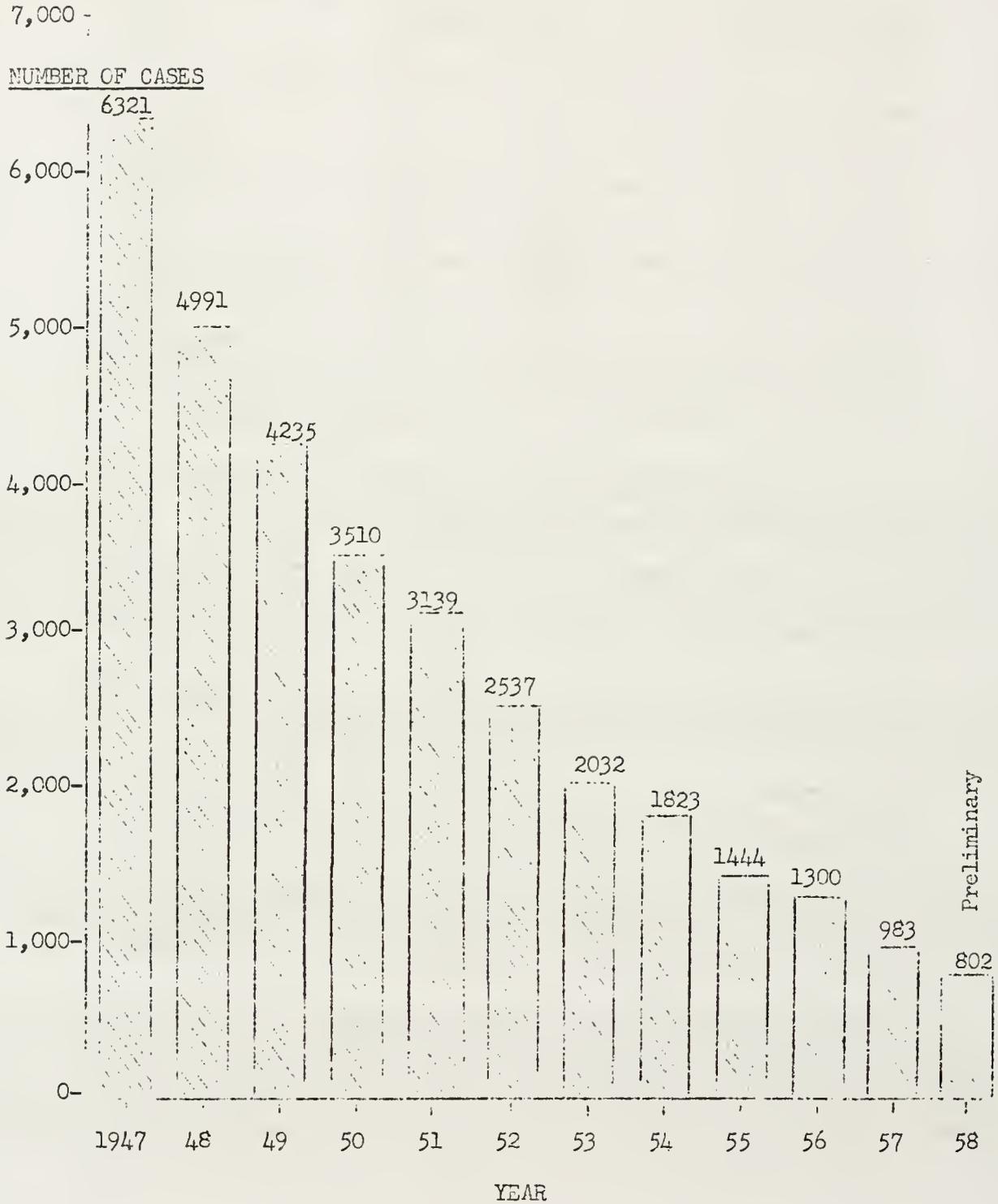
- "1. The herd infection rate was only 23 percent lower in those herds in which all animals were vaccinated than it was in those herds in which none of the cattle were vaccinated.
- "2. The infection rate within the entire vaccinated cattle population was approximately 80 percent lower than that within the entire non-vaccinated population.
- "3. Vaccinal titers were not a primary cause for the presence of suspect animals in herds containing suspects, but no reactors.
- "4. Suspects occurred 36 percent less frequently within the vaccinated population than within the nonvaccinated population.
- "5. In partially vaccinated infected herds, brucellosis occurred 65 percent less frequently within the vaccinated population than it did within the nonvaccinated population. This, then, is a protection rate of 65 percent in the face of known exposure.
- "6. In infected herds in which all animals were vaccinated, brucellosis occurred 60 percent less frequently than it did within non-vaccinated cattle in partially vaccinated infected herds.
- "7. The relative protection afforded by Strain 19 vaccine did not influence the rate of infection within nonvaccinated populations in infected herds, regardless of the percent of animals vaccinated.
- "8. Vaccination alone cannot be expected to eradicate brucellosis nor to free the majority of infected herds from the disease. Infected animals must be identified and eliminated.
- "9. Vaccination is very useful in building the resistance of susceptible animals against brucellosis, but its limitations must be recognized."

The effectiveness of the bovine brucellosis-eradication program in reducing the incidence of human brucellosis can be no better expressed than in the graph "Reported Human Brucellosis" prepared by the U. S. Public Health Service, and which is reproduced on the following page.

In cooperation with the Fish and Game Commission and Dr. Clyde Senger, of the University of Montana, 16 antelope, 5 Bighorn Sheep, 142 deer, and 87 elk from 30 counties were tested for brucellosis. Not one gave a positive reaction to the rapid plate agglutination brucellosis test. It is realized that the number is comparatively small, but the results are encouraging. It is hoped that more tests can be made.

REPORTED HUMAN BRUCELLOSIS

UNITED STATES  
1947-1958



Atlanta, Ga. April, 1958

In summary, if the cattlemen can make as good progress toward the eradication of bovine brucellosis the next five years, this once most costly cattle disease and public health menace will become a disease of the past. Montana cattlemen can be particularly proud of their accomplishments to date because the entire area eradication program has been, and is, carried on without the cattle owners receiving one cent of indemnity for animals found to be affected with the disease. This cannot be said in the vast majority of states.

If the brucellosis-eradication program is carried on to its successful conclusion, the money spent will be returned to the livestock industry many times. The effort made to date has been repaid by the marked reduction of the disease that has already been made in the state. For example, 2,440 herds were found to be infected. The average size herd tested in Montana was 44 head. The 2,440 herds would contain about 107,360 cattle. If the calf loss was only 5% from brucellosis (losses often run as high as 60%), with calves worth \$50 each as they were this summer, this would be a very minimum annual loss of \$268,400. If the calf loss was 15% (the average loss in infected herds) the monetary value of the calves lost in one year would be \$805,200. These figures do not include the loss from increased sterility, reduced milk production, and the danger to public health.

Is it not wise to eliminate a disease that continues to spread and increase and cause such losses?

#### Cancer Eye (Epithelioma)

This past year 1,504 cases of cancer eye were reported. This is about 200 more than last year. At \$150 each, 1,504 cows are worth \$225,600--a quarter of a million dollars, but many times these animals marred by cancer will bring \$5, \$10, or \$20 apiece. At \$20 a cow, 1,504 cows would be worth \$30,080--a possible loss to livestock owners of \$194,800 a year.

Cancer research will give us the answers whether it be human or animal research. In the meantime, we would recommend that the Livestock Sanitary Board urge the breed associations, and other cattle groups, to do all they can to reduce losses by applying the knowledge, already available, of hereditary susceptibility.

#### Coccidiosis

The number of cases reported this past year -- 1,944 -- was slightly less than the previous year and about one-third less than the year before that. It would seem that the mild fall and winter contributed to this reduction. The stress of weaning, change of feed, and sudden changes to severe weather, apparently play a big part in the occurrence of this disease. We again recommend the adoption of weaning and management practices that are known to reduce the incidence of coccidiosis.

Research on the disease may lead to effective immunizing procedures and more knowledge of its transmission, especially in the winter when Montana livestockmen sustain their heaviest losses.

## Foot Rot

The loss of weight, loss of breeding ability, the risk of permanent lameness, and, on rare occasions, even death, makes this disease of real concern. Foot rot was reported in 422 cases on 130 ranches.

Immediate treatment is most always effective. Preventive measures, especially when the disease occurs spontaneously in a number of cattle on a dry summer range, are not known. More will simply have to be known as to the cause and the exact nature of the transmission of the disease before the Board can offer concrete suggestions for its prevention.

## Grass Tetany

One hundred thirty-five cases of grass tetany were reported. All cases occurred in March, April, May, and June. The cases are usually lactating cows that have been placed on green grass for the first time in the spring. In some areas it is quite a serious problem every spring.

For a good while this has been associated with hypomagnesia. This concept of low plasma magnesium as the cause of tetany has been questioned by recent research work at the University of Pennsylvania. Other workers, in the field of mineral metabolism, indicate that there may be a substance in new spring grasses that prohibits full utilization of magnesium. One Montana veterinarian has reported that it seemed as if grass tetany was prevented on one ranch by filling the cows with hay that had been wet down with a saturated solution of magnesium sulfate before turning them out on the spring meadows.

## Leptospirosis

There was a fourfold increase in the number of clinical cases of leptospirosis reported in cattle this year over those reported last year; 542 cases were reported in 98 herds. Cases were reported every month of the year, but 297 were reported in November and December, the rest being distributed about equally in the other months.

During the year 33,014 leptospirosis tests were made on cattle -- 769 (2.3%) were positive in dilutions of 1:40 or higher; 510 (1.6%) were suspicious. This is about double the number of reactors found in approximately the same number of cattle tested last year. Stoenner's rapid plate test and L. pomona antigen were used in making all these tests.

The Fish and Game Commission and Montana University submitted blood samples for leptospirosis tests as follows:

Antelope	47 negative	4 positive (8+%)	1 suspicious
Bighorn Sheep	15 "	0 "	3 "
Deer	405 "	1 " (0.4%)	4 "
Elk	213 "	3 " (1.4%)	

All antelope, deer, and elk that gave positive reactions were obtained in Missoula and Lake Counties.

Investigations made in other states have shown many animals such as opossums, skunks, rabbits, dogs, and others, can carry Leptospira pomona. The list at this time is no doubt incomplete. This indicates the wide dissemination of the disease and the difficulties that are presented in the consideration of a control program.

The department has distributed, on several occasions, recommendations for control and prevention methods that should be adopted. Montana's livestock industry must be alerted to, and become familiar with, leptospirosis in order to reduce losses from this so-called "self-limiting" disease.

#### Infectious Keratitis (Pink Eye)

On 29 ranches 1,039 cases were reported. This has been a much studied disease, yet the cause remains obscure and no satisfactory preventive measures are available. This should be approached through an intensive coordinated research project.

#### Pulmonary Emphysema (Asthma)

Less cases of pulmonary emphysema (308) were reported this year than the previous two years. The vast majority of the cases were reported during August through November. Probably less is known about the cause and nature of this disease than any disease of livestock in Montana.

We have been recommending that pulmonary emphysema be made a full-time research project at the Veterinary Research Laboratory. Preliminary investigations have been made in attempts to establish avenues of approach.

We believe that if the cattlemen would take a good look at this situation they would demand that something be done about it. The average number of cases reported the past three years is 356. (How many are not reported, we don't know.) We know the disease has been present at least 25 years. If cows are worth \$200, that is a loss of \$71,200 a year. For 25 years it would amount to a loss to the cattlemen of \$1,780,000. It would seem to me that this kind of loss would warrant a relatively small expenditure for a well planned, coordinated research approach to reducing the loss.

#### Q Fever

Dr. Lauri Luoto, Senior Veterinarian on the staff of the Rocky Mountain Laboratory, U. S. Public Health Service, U. S. Department of Health, Education, and Welfare, as a result of rather extensive outbreaks of Q fever in man in Idaho, wished to carry out an extensive survey in Montana to determine the incidence of Q fever in Montana cattle. This was part of an overall survey being conducted in the United States.

The Livestock Sanitary Board and the U. S. Department of Agriculture, ARS, ADED, as part of the brucellosis-eradication program, were collecting milk and cream samples every six months from dairies in Montana. The Livestock Sanitary Board routinely collects grade A milk samples for bacterial and chemical analyses. It was directed that all samples collected for these routine examinations be forwarded to Doctor Luoto for his use in making capillary agglutination tube tests for Q fever. It was further directed that all district deputy state veterinarians, in the course of their district work, assist Doctor Luoto in his investigations.

Results of the survey show that about every dairy producing milk or cream for any purpose was tested. Approximately 8,000 milk samples from that many dairies and ranches have been checked. Herds found positive to the Q fever test are as follows:

<u>County</u>	<u>No. Positive Herds</u>
Broadwater	1
Carbon	1
Cascade	10
Custer	3
Dawson	1
Flathead	1
Gallatin	25
Jefferson	1
Lake	8
Missoula	1
Park	10
Phillips	1
Pondera	1
Ravalli	15
Sweet Grass	1
Teton	12
Yellowstone	<u>11</u>
T O T A L	103

The disease was determined to be on the increase in the infected areas. The number of infected herds doubled in a 9-months period in Lake, Ravalli, and Gallatin Counties. For example, the number of infected herds in Gallatin County, in nine months, increased from 2.2% to 4.3% of the herds in the county.

Investigations were carried on to determine the number of cattle infected in some of the positive herds. It was found that up to 30%, 40%, and 60% of the cows in these herds gave a positive milk capillary agglutination test for Q fever.

The results of the survey to date show; (1) Q fever is well established in the state; (2) the number of infected animals is increasing; (3) and the disease is spreading.

Q fever is caused by a *Rickettsia*, *Coxiella burneti*. In animals this organism has been found to localize in the placenta and udder. At the present time the disease is not considered of veterinary significance. Animals carrying the organism, under natural conditions, do not show any signs of illness. Cattle that have been experimentally infected have shown a temperature rise and a slight illness for a relatively short time.

The milk, and especially the placenta, of Q fever-infected cows carry large numbers of the organisms.

Q fever infects man by his occupational exposure to infected livestock, by his residence near infected premises and, according to recent findings in England, by the use of raw infected milk or milk improperly pasteurized. Q fever in man may be a mild to a severe illness. The symptoms of the disease are similar to those of influenza, brucellosis, virus pneumonia, and "atypical" pneumonia.

The significance of the results of the survey, therefore, are of first importance to public health. (For action taken by the Board and recommendations, see "Milk and Dairy Inspection" on page 39 of this report.) Just what the significance of the survey may mean in terms of continual spread, human health, necessity for control measures, etc. remains to be determined.

### Rhinotracheitis

One hundred three cases were reported which is a reduction over last year. The use of the newly developed vaccine can be considered as contributing to the reduction in the number of cases.

### Scabies

It was necessary for the Board to issue orders to safeguard Montana's livestock from the introduction of scabies from outbreaks in Kansas and Texas last year.

We are again happy to report no cattle scabies was diagnosed in Montana during the year.

### Shipping Fever

There was a marked reduction in the number of cases of shipping fever (961) this past year compared to the previous year. An almost ideal fall and a mild winter were no doubt important factors in this reduction.

U. S. Department of Agriculture and California workers have both isolated a virus they believe to be the primary cause of shipping fever. This has long been suspected and it has been thought that the Pasteurella organisms associated with the disease were secondary invaders. We believe this recent break-through will lead the way for the livestockmen to more effectively reduce their losses from this very serious problem.

### Tuberculosis

The tuberculin test was applied to 14,680 dairy cattle and 19,780 beef cattle. Three cattle in two dairy herds were classified as reactors to be able to obtain post-mortem examinations following atypical reactions to the test. On post-mortem examination no lesions of tuberculosis were observed. The herds were retested after 60 days and were negative.

No Montana cattle were reported to have tuberculosis lesions at slaughter.

All Montana counties have been reaccredited as modified tuberculosis-free.

Only 0.009% of the cattle tested gave a reaction to the tuberculin test. This percentage of reaction could not be considered to indicate a "typical" reaction or the presence of tuberculosis.

It is recommended that the Board be very concerned about the increase in bovine tuberculosis in the Great Lakes region. Should the increase in these areas not be reduced, the Board should impose regulations to safeguard Montana's livestock industry from an introduction of tuberculosis from these areas. It will be of utmost importance to the cattle industry to maintain their herds free of this disease.

It has been recommended, through representation on the Tuberculosis Committee of the U. S. Livestock Sanitary Association, that the major portion of moneys available to the U. S. Department of Agriculture, ARS, ADED, for tuberculosis eradication, be allocated to controlling and eradicating bovine tuberculosis in the Great Lakes region and in California. Historically, Montana imported all of the bovine tuberculosis from the Great Lakes region, primarily through the importation of dairy cows, the early part of the twentieth century. As a result, the incidence of bovine tuberculosis was high in certain areas of Montana. The loss to the dairy industry was enormous and children becoming affected with bovine tuberculosis was not uncommon. The Montana livestockmen effectively eradicated the disease at considerable cost and have taken all measures to see that it will not become re-established. We again urge the cattlemen of Montana to insist and assist those states, in which bovine tuberculosis is on the increase, to eradicate the disease once and for all. It can be done. As long as there is any bovine tuberculosis in the United States, it will be a threat to the health of the livestock and people of Montana.

#### Urolithiasis (Water Belly)

This condition was reported in 600 cattle on 432 ranches this past year. This is a reduction over the past two years. The research workers at the Veterinary Research Laboratory have shown that during extremely cold weather weaner steer calves do not drink enough water. Perhaps the mild winter contributed to the reduced incidence of urolithiasis.

We wish to call to the attention of the Board the exceptional work that is being done by the workers at the Veterinary Research Laboratory at Bozeman. We would recommend that all their findings, to date, be utilized to reduce losses. We feel confident that many more important facts will be forthcoming.

#### White Muscle Disease

This disease was reported in 222 calves on 120 ranches in Montana. This is a considerable increase over the past two years. There is no satisfactory explanation for the increase. The disease was diagnosed in Broadwater County this past spring. We believe this is the first confirmed case in that area.

Remarkable headway has been made the last few years by research workers throughout the world in solving the mysteries of this disease. There is more to be done. The disease is a major project at the Veterinary Research Laboratory and they are making major contributions to the world's knowledge on this problem. Their findings to date should be applied to help reduce losses.

This past year research workers in Oregon have indicated that selenium must be present in addition to vitamin E to prevent the occurrence of white muscle. We feel this is an important finding and will assist materially in arriving at the final solution.

#### Miscellaneous Diseases of Cattle

Perhaps equally important cattle disease losses in Montana, not mentioned in this narrative report, are listed in the Montana Veterinarians' Disease Report for 1958-59, which is included in this annual report. We recommend you study this summary of all cattle diseases reported by veterinarians.

## SHEEP DISEASES

Montana veterinarians reported 24 sheep diseases in 15,074 sheep on 240 ranches. Estimating the value of sheep at \$25 per head, the reported diseases involve an estimated \$275,000 worth of sheep.

We believe the following sheep disease problems should be called to your attention.

### Bluetongue

The sheep disease - bluetongue - exists in 12 southwestern and western states in the United States. No cases have been reported in Montana. The Livestock Sanitary Board Order No. 133 issued June 28, 1958, remains in effect. We are hopeful enforcement of this order will assist in preventing a bluetongue outbreak in Montana.

### Coccidiosis

This disease, primarily of feeder lambs, was reported on seven premises in 666 sheep. Much work has been done on coccidiosis by this department and the Montana Veterinary Research Laboratory in the past. The findings and results of these studies have shown that management and feeding of lambs, in the change-over from pasture and weaning to feed lots, can do much to reduce the incidence of the disease. It is recommended that feed lot operators become familiar with these recommendations.

### Contagious Ecthyma (Soremouth)

Soremouth in sheep was reported in 1,835 sheep on 31 ranches. A very inexpensive vaccine prevents the disease. It would appear that vaccination of lambs should be more widely used.

### Foot Rot

Montana has long prided itself on the action taken in ridding range bands of sheep of infectious foot rot. Prompt and vigorous regulatory action proved most successful.

The picture of the sheep industry in the state is changing from one of large open-range bands to more of the farm-flock operations. Foot rot in the large bands proved most costly because of loss of condition, sometimes loss of sheep, loss of wool, low conception, and starvation of lambs. These same losses occur in a foot rot-infected farm flock, but since the total loss does not affect the overall ranch economy, as it did in the large sheep operation, foot rot does not demand and receive the attention it should.

The disease as reported this year is in the farm flocks. The number of cases reported is 1,126 compared with 616 last year. The flocks are quarantined and treatment instituted to rid the flock of the disease.

We would like to recommend to the Board that a systematic procedure of inspection be put into effect on all of the farm flocks in and around Lake, Sanders, and Missoula Counties, to once and for all locate the source of infection in that area and eradicate the disease. For a good many years this one area has continued to have foot rot in sheep. This source of infection endangers all flocks of sheep in Montana. We believe the employment of one man, who can recognize true infectious foot rot of sheep, for about six months, could locate the infected flocks in this area.

### Internal Parasites

As reported to the Board one year ago, we believe that internal parasites, such as nasal bots, stomach worms, intestinal worms, lungworms, etc., in many hidden or obvious ways, cause the greatest loss to the sheep industry. We know that sheepmen could reduce most of the losses from internal parasites if they would take the time to have parasites identified, learn the life cycle of the parasites infecting their sheep, and then use all known management practices to break the life cycle to prevent reinfection. Many modern helminthics, properly used, will do much to bring greater returns from parasitized animals. Practically all practicing veterinarians have laboratory equipment available to identify parasite ova. The Livestock Sanitary Board laboratory stands ready to assist in every way possible to identify, and outline procedures for prevention and control of, internal parasites.

We recommend that the Board continue to call to the attention of the sheep industry the importance of the internal parasite problem.

### Johne's Disease (Paratuberculosis)

The experimental vaccination of lambs in a flock infected with paratuberculosis was continued this year. On October 10, 1958, all lambs (1,490) retained in the flock were vaccinated with a Johne's vaccine produced at the Veterinary Research Laboratory. This is the second year of vaccination of the lambs in attempts to control the incidence of the disease. It is planned to continue the vaccination each fall. In three or four years, it is hoped that the results of the vaccination program in reducing the incidence of Johne's disease in the flock can be evaluated.

The ranch is also maintaining 175 head of control and young lamb vaccinates (between three and four weeks of age) in a small known infected flock to determine the effects of vaccinating lambs at an early age in preventing Johne's disease. Routine allergic and blood tests are made about every six months on these sheep. We are confident the work done by this ranch will yield information that will be of value to the entire sheep industry.

### Pediculosis (Louse Infestation)

For many years louse infestation of Montana sheep was unknown. In about 1945, Dr. Lee Seghetti observed some badly infested sheep in Park County in a small flock. The lice were identified as Bovicola ovis. Since that time, lice have been observed in sheep from time to time at sporadic intervals.

The past year considerable numbers of sheep from several sources were found to be infested with lice. Buyer resistance to Montana lambs was expressed on several occasions because of louse infestation.

On direct order from the State Veterinarian's office it was ordered that all louse-infested sheep were to be quarantined until officially dipped. It was further ordered that all flocks of origin of louse-infested sheep be closely inspected and if found infested, quarantined until dipped. This action was taken to attempt to eradicate the pest before it became too widely spread with consequent loss to the industry.

The entire problem was reviewed with representatives of sheep producers and lamb feeders. As a result, the Board directed that sheep lice be eradicated wherever found. To implement this action, the regulations in Chapter 11 were adopted.

A total of 6,412 sheep on 29 ranches were found infested with lice.

### Scabies

Montana sheep flocks continue to remain free of this once frightful infestation, since the eradication of scabies in 1919.

Outbreaks of scabies in Cass County, North Dakota, and in Carbon County, Wyoming, which originated from the Central States, necessitated the issuance of orders requiring the dipping of sheep originating in those areas and shipped into Montana. New Mexico, a state that has remained free of sheep scabies, experienced an outbreak this past year.

A good many years ago all western states proved conclusively that sheep scab could be eradicated and those states could remain free from this disease. The result has been that western sheepmen were returned many times their investment in eradication costs. Sheep scab continues to remain in the central and eastern states. This poses a continual threat to Montana sheepmen. The Board has made every effort this past year to prevent the introduction of the disease. It is recommended that the Board continue to urge the complete eradication of sheep scab from the United States and eliminate this threat to Montana's sheep industry.

### Scrapie

With the continued appearance of scrapie in sheep in the United States, Montana is again most fortunate in that scrapie was not diagnosed in sheep this past year.

Scrapie was diagnosed in two flocks in Wyoming. At the close of the fiscal year, all sheep shipped into Montana from the infected flocks in Wyoming were being located. Preliminary investigations indicated approximately 24 rams and 28 yearling ewe lambs were sold from the Wyoming infected flocks into 12 Montana flocks. Plans and directives are being drawn up to take every safeguard to prevent outbreaks in Montana.

The Animal Disease Eradication Division of the U.S. D. A. has done an excellent job of determining the source of all scrapie outbreaks in the United States. The material has been made available to all the states. This study clearly shows that approximately 75 outbreaks of scrapie in 20 states were in sheep or the progeny of sheep that originated in Canada. The recent outbreaks in Wyoming originated from sheep that had been associated with an infected flock in Canada.

Starting in 1954, with the ADED, USDA, cooperating, sheep originating from flocks associated with infected Canadian flocks have been kept under surveillance (that is, inspected periodically every six months or oftener) for a period of four years. In 1956 over 60,000 such sheep on 61 ranches were under surveillance. The flocks being closely watched contained sheep from the same source that was responsible for the Wyoming outbreak. This past year 28,000 sheep on 10 ranches still remain under surveillance.

There is no known method of treating or preventing scrapie. If the disease becomes established, up to 20% losses in infected flocks can be expected annually. The disease is almost always fatal. The incubation period can extend up to  $3\frac{1}{2}$  years and it is possible to transmit the disease from adult sheep through to their progeny. The nature of the disease warrants every measure possible to prevent it from becoming established in Montana.

#### Vibriosis

The reports for the year indicate outbreaks of vibriosis on 21 ranches.

#### Virus Abortion (Enzootic Abortion)

Virus abortion was reported in 83 sheep in four flocks in Montana this past year. This new disease, first reported last year, posed many problems as to regulatory action that should be taken in regard to the outbreaks.

There was considerable pressure that the Board should take strict regulatory action against the flocks in which the disease was discovered. From information available on work done with testing sheep sera, in connection with other disease investigations, with psittacosis, and psittacosis-lymphogranuloma venereum group antigens, it appeared that virus abortion in sheep was not recently introduced and was widespread, particularly in the northwest United States. It was also apparent that the disease was not a reportable disease in Scotland, France or Germany, and that it was being successfully controlled by vaccination. As a result, the Board refused to consider strict regulatory action or eradication procedures against the three known infected flocks until it could be determined how extensive the disease actually was in the United States. If the disease was as widespread as seemed apparent, then any action against the three infected flocks would be unnecessary and any control would not be well founded.

Dr. Hadleigh Marsh, of the Montana Veterinary Research Laboratory, Dr. Paul DeLay of the USDA, Animal Disease and Parasite Research Division, and Dr. E. E. Saulmon of the USDA, Animal Disease Eradication Division, were sent to Scotland and

France, by the U. S. Department of Agriculture, ARS, to study control measures and to confirm the Montana diagnosis with Doctor Stamp of Scotland, who first isolated the enzootic abortion virus in 1950.

At the request of the USDA, ADED, the Executive Officer of the Montana Livestock Sanitary Board attended a meeting in Washington, D. C., to determine control procedures of enzootic abortion in the United States with representatives of the ARS and the study group on their return from Great Britain.

The meeting was held August 8, 1958. The results of the meeting can be summarized in the following announcement from Dr. R. J. Anderson, in an ADED notice dated August 14, 1958:

"Subject: Report of Study Group on Enzootic Abortion in Ewes"

"In reference to our letter of August 7, 1958, the study group, mentioned in the third paragraph, returned Friday, August 8. Their findings were:

"1. The Montana material that was taken by the group was compared with the enzootic abortion virus isolated by Dr. Stamp in Scotland and was considered to be the same. Further comparison tests are being conducted.

"2. The disease is not a reportable disease in countries such as England, Scotland, and France. The regulatory officials of those countries state that the economic effects of the disease on the sheep within their country does not warrant an eradication program.

"3. A voluntary vaccination program is followed in the countries mentioned. The vaccine is reported to be effective. Even in infected flocks, the rate of abortion appears to decrease rapidly if the herd owner will vaccinate all ewes promptly and any other ewes as they are added.

"4. A psittacosis lymphogranuloma group antigen is produced from enzootic abortion virus. The current test is not specific and not too effective on individual animals. It is fairly accurate when used to diagnose the condition in flocks, provided 30 percent of the flock is tested.

"Based on these findings the following conclusions were reached:

"A. Tentative confirmation of enzootic abortion in the United States is established.

"B. It is believed that many of the undiagnosed cases of abortion in sheep in this country may be due to this virus and, therefore, it is suspected that the disease is widespread.

"C. Additional research information is needed to develop a more specific test.

"D. The disease is not the type that compels drastic action, such as foot-and-mouth disease, rinderpest, or African Swine Fever.

"E. Considering the economic effect of the disease in other countries and the above-mentioned points, the Animal Disease Eradication Division will not participate in the control of the disease unless additional information and conditions warrant it.

"F. A meeting of research and regulatory authorities will be called to establish procedures for conducting a survey to determine national incidence and economic effects.

"G. A means of providing vaccine must be considered for use in infected flocks if the surveys indicate this necessity.

"H. It is urged that all State and Federal regulatory officials review flock histories of undiagnosed cases of abortion in sheep within their State and report the incidents to the Division. This would be extremely beneficial in developing the surveys contemplated.

"I. A report made by the study group should be sent to all State and Federal officials. A copy will be forwarded promptly."

The Board approved granting the Montana Veterinary Research Laboratory \$3,000 from the 151 Fund for making a specific diagnostic virus abortion antigen, to assist in running diagnostic complement-fixation tests, and to survey the incidence of the disease in Montana.

The USDA, ARS, assigned Doctor Younger, as an associate virologist to the Veterinary Research Laboratory to conduct studies and surveys of the disease in the United States.

A complete report of the virus abortion studies the past year can be found in the Montana Veterinary Research Laboratory M. S. 1098 Project Report. Preliminary serological survey reports indicate the disease to be present in widely distributed areas of the United States.

## SWINE DISEASES

A total of 17 diseases in 1,253 swine on 186 premises were reported during the year. It is apparent, although the swine industry is not large comparatively speaking, that swine are remarkably free of disease in the state. There are indications that this industry is increasing. We sincerely hope that swine producers will use the utmost care in selecting disease-free animals from disease-free herds, when replacing or increasing their breeding stock.

### Atrophic Rhinitis

There was an increase of reported cases this past year. Ninety hogs were reported affected on seven premises. Elimination of infected breeding stock and cleaning and disinfecting before restocking are procedures of control being recommended.

### Erysipelas

A total of 663 cases were observed on 151 ranches. This disease is the foremost problem of swine growers in the state.

### Hog Cholera

The garbage-cooking law, and prohibiting the use of live virus vaccine, continue to be effective in preventing the once disastrous hog cholera outbreaks. No natural outbreaks were reported this past year. One case was reported following the use of an attenuated vaccine.

It is recommended that hog cholera outbreaks be looked upon and handled very much the same as foot-and-mouth disease outbreaks. For all good purposes, the state is free of hog cholera and if any introduction can be promptly and permanently dealt with, it will prevent the disease from again taking its terrific toll.

### Sarcoptic Mange

A total of 394 cases of mange on 12 premises was reported this past year. This definitely indicates a considerable increase over the past years. We believe that the regulations of the Board concerning mange in swine have not been seriously enforced. Attempts will be made to require more strict enforcement in order to stop the increase of sarcoptic mange and if possible eradicate it.

## HORSE DISEASES

A total of six diseases were reported in 434 horses on 227 premises during the fiscal year. There is a continued increase in the number of good horses in Montana. The overall monetary value of the good horses reaches quite a high figure. The control of infectious diseases, therefore, is important to protect the investment made in the horse population.

### Distemper

Montana veterinarians reported 403 cases of distemper on 196 premises. This is a reduction in the number reported last year. Cases were reported each month of the year, although at least 75% of the cases were reported during the months of May through September.

### Dourine

Dourine was eradicated from horses in Montana, using a blood test, during the first World War. It has been reported that the disease is still prevalent in Mexico. A number of Mexican ponies were imported into Montana this past year. In June, a practicing veterinarian observed lesions quite suggestive of dourine in some of these ponies. Blood samples were taken and forwarded to the ARS laboratory at Beltsville, Maryland, and were negative to tests for both dourine and glanders. This is reported to the Board to illustrate just one of the many activities of Montana veterinarians by which they assist the Montana livestock industry in keeping their flocks and herds free from dangerous diseases.

### Encephalomyelitis

Twenty-three cases (9 less than last year) were reported on 23 ranches in Montana. All cases were reported in June, July, and August.

This department will continue to urge owners to vaccinate their horses annually for this disease. This should be done not only for the protection of the horses but for the public health protection it might afford.

At the request of the State Veterinarian's office, five convalescent serum samples were collected from horses. Dr. H. A. Fieldsteel, of the State Board of Health, ran complement-fixation tests which indicated all five horses were infected with the western equine encephalomyelitis virus.

### Leptospirosis

Although no cases of leptospirosis in horses were reported during the fiscal year, we recommend that veterinarians and horse owners be alerted to this disease because of its widespread prevalence in cattle, swine, and wild animals.

## DOG DISEASES

### Leptospirosis

The number of cases of leptospirosis in dogs was again less than the previous year--196 cases were reported. The disease incidence is evenly distributed throughout the year.

Canine leptospirosis, primarily reported in urban dogs, should be of real concern to all health officers because of the transmissibility to humans.

### Rabies

For several years the Rocky Mountain Laboratory at Hamilton has diagnosed rabies in bats. Last year one bat was found to be positive. This is the only case of rabies reported in Montana. The epidemiology of bat rabies is quite mystifying. The virus isolated is similar in all respects as to virulence as the virus isolated from other mammals. Just why rabies is confined to bats in Montana, and over the years not found in dogs, cattle, or other animals, should be understood. Does it mean that we can expect an outbreak of rabies in dogs, cattle, humans, and other animals from this bat source? Much remains to be learned about rabies in bats and other animals, such as skunks, foxes, etc., if we are to be in a position to be certain of preventing outbreaks in domestic animals.

With 4,814 cases of rabies in most of the states of the United States last year, there is a continual threat of its introduction through dog imports. Every effort is being made to prevent the introduction. This requires considerable time and effort, but if one outbreak can be prevented it will be worthwhile.

Biting dogs, cats, gophers, and other animals, along with suspicious symptoms of sick animals, necessitate a continual call on the diagnostic laboratory for rabies examinations and mouse-inoculation tests. Fifty-two rabies examinations and mouse-inoculation tests were made, and all were negative.

## POULTRY DISEASES

### Pullorum Disease

The Montana Livestock Sanitary Board requirement that all hatching eggs originate from pullorum-typhoid-free flocks was met this year. With cooperation of the Poultry Improvement Board, 84,165 chickens were tested. Thirty-two reactors were found. This is a 0.038% infection rate. Montana hatcheries distributed chicks from only pullorum-typhoid-clean flocks.

Twenty-five chicks were found to be infected with pullorum when examined by the laboratory. These were shipped in from an out-of-state hatchery.

### Leukosis

This disease no doubt causes the greatest loss to the poultry industry.

### Fowl Pox, Laryngotracheitis, Infectious Bronchitis

No reports of the occurrence of these diseases were received during the year.

### General

The Thirty-sixth Legislature appropriated sufficient funds to the department to employ a veterinarian to specialize in poultry disease investigation and control work. Every effort will be made to obtain a qualified man for this needed position.

## LIVESTOCK IMPORTS

The Montana Livestock Sanitary Board is charged by law to prevent the introduction of dangerous diseases of livestock into Montana. This responsibility takes considerable time and effort of the staff. The methods of transportation; the ever-increasing number of animals being imported; sheep scabies in the Central States and outbreaks in North Dakota, Wyoming, and New Mexico; outbreaks of cattle scabies in Nebraska and Texas; bluetongue in sheep in the Southwest; scrapie in 20 states and Canada; hog cholera in the Central States; rabies in all states but 12 and the District of Columbia; an increase of bovine tuberculosis in the Great Lakes regions; the movement of brucellosis-infected herds and cattle; dourine in Mexico; foot-and-mouth disease in Europe and Asia; rinderpest, fowl pest, and Newcastle disease in the Orient; pullorum in out-of-state hatcheries, are all situations that had to be dealt with this past year in a continual effort to prevent loss from these diseases.

We again recommend that the Board call upon the various livestock industries to assist in every way possible to prevent the introduction of diseases that could be very costly. We are certain that if all livestockmen would use great care in their purchases, much needless loss would be avoided and the enforcement of the important import regulations would be much easier and less costly.

A summary of livestock imports the past three years is:

	<u>1956-57</u>	<u>1957-58</u>	<u>1958-59</u>
Cattle	34,289	68,481	78,424
Horses	1,030	1,397	1,888
Sheep	73,701	83,077	117,905
Swine	<u>23,687</u>	<u>26,288</u>	<u>20,524</u>
T O T A L	132,706	179,243	218,741

A recapitulation of all livestock imports, showing state of origin, for the fiscal year is as shown on the following page.

COMPILATION MONTANA LIVESTOCK SANITARY BOARD  
 REPORT OF IMPORTATIONS  
 July 1, 1958-June 30, 1959

STATE	HEALTH	TEST	HORSES	CATTLE		SHEEP	SWINE	BUFFALO	DOGS
	CERTIFICATES	CHARTS		HC	TC				
Canada	843		1109	22655		20294	748		3
Alaska	17		1						21
Arizona	22	1	40	1623	1	10			11
Arkansas	4		1	5					2
California	79	9	40	1727	68				53
Colorado	107	25	41	636	50		1		17
Connecticut		3			7				
Florida	2								2
Idaho	386	6	56	19718	50	8172	5		25
Illinois	46	1	2	22	1	1	13	8	23
Indiana	3						1		3
Iowa	40	49	3	2	97				36
Kansas	8	18	32	112	87				5
Kentucky	3								3
Louisiana	3		4						
Maryland	1		2						
Mexico	2			43					
Michigan	6	4			4		3		3
Minnesota	58	37	20	66	411		18		42
Mississippi	1								1
Missouri	23	11		2	25		3		21
Nebraska	130	9	9	124	529	225	15055		18
Nevada	25	1		4929	13	64			3
New Mexico	18	2	33	16	2	2216			3
New York	2	1		20	1				2
North Carolina	1								2
North Dakota	294	162	32	2682	564	4464	4980		11
Ohio	17	8			74		1		17
Oklahoma	35	2	5	65	16				20
Oregon	163	2	38	3258	4	14409	1		36
Pennsylvania	1								1
South Carolina	1								1
South Dakota	147	20	10	525	167	16113	458		11
Tennessee	2								2
Texas	59	6	66	5774	47				24
Utah	55		53	547		816			13
Virginia	1	4		1	19				
Washington	239	24	72	2384	134	*35844	12		106
Wisconsin	24	65	4	270	518				19
Wyoming	407	115	215	7850	479	15277	225		13
TOTALS:	3275	585	1888	75056	3368	117905	21524	8	573

\*Includes 10 goats.

OFFICIAL ANIMAL INSPECTIONS

7/1/58 - 6/30/59

The following animal inspections were made by employees of the Livestock Sanitary Board in the course of their routine work and investigations during the year. (The number tested for brucellosis is recorded in the Bacteriologist's report).

		<u>TOTAL</u>
<u>HORSES:</u>		
Inspected for interstate shipment	1,460	
Inspected at markets	3,256	
Miscellaneous inspections	<u>387</u>	5,103
<u>CATTLE:</u>		
Dairy cattle tested for tuberculosis	14,366	
Reactors	3	
Range cattle tested for tuberculosis	18,364	
Reactors	0	
Accredited tuberculosis-free herds tested	2	
Cattle in accredited TB-free herds tested	314	
Reactors	0	
Tuberculin tested for interstate shipment	1,416	
Inspected at destination	123	
Tuberculin tested at destination	148	
Inspected for interstate shipment	554,019	
Inspected at markets	574,016	
Vaccinated against redwater	12,148	
Miscellaneous inspections	<u>19,154</u>	1,194,068
<u>SHEEP:</u>		
Inspected for interstate shipment	469,304	
Inspected at markets	215,279	
Miscellaneous inspections	<u>66,740</u>	751,323
<u>SWINE:</u>		
Inspected for interstate shipment	346	
Inspected at markets	50,248	
Miscellaneous inspections	<u>2,356</u>	59,950
<u>POULTRY:</u>		
Tested for pullorum-typhoid	84,165	
Miscellaneous inspections	<u>842</u>	85,007
<u>DOGS:</u>		
Inspected for interstate shipment	1,174	
Miscellaneous inspections	<u>5</u>	1,179
Grand total:		<u>2,142,530</u>

MONTANA VETERINARIANS' DISEASE REPORT

July 1, 1958 - June 30, 1959

<u>CATTLE:</u>	<u>Total</u> <u>Cases</u>	<u>Total</u> <u>Herds</u>	<u>SHEEP:</u>	<u>Total</u> <u>Cases</u>	<u>Total</u> <u>Herds</u>
Actino-mycosis & -bacillosis	1,824	1,027	Black's disease	14	3
Anaplasmosis	28	7	Blackleg	2	2
Aphosphorosis	5	2	Coccidiosis	666	7
Avitaminosis A	303	7	Contagious ecthyma	1,835	31
Bac. hemoglobinuria	270	238	Enterotoxemia	423	32
Blackleg	89	55	Foot rot	1,126	20
Brisket disease	2	2	Helminthiasis	1,645	15
Cancer eye	1,504	862	Johne's disease	61	1
Coccidiosis	1,944	318	Lip & leg ulceration	1,200	3
Diphtheria	71	41	Listeriosis	97	5
Encephalitis	3	3	Lungworms	1,035	23
Enterotoxemia	58	28	Pediculosis	6,412	29
Enteritis	75	1	Pneumonia	16	6
Foot rot	422	130	Poisoning, loco	80	1
Grass tetany	135	17	Posthitis	15	4
Helminthiasis	52	4	Pregnancy disease	15	2
Hyperkeratosis	4	2	Tetanus	4	3
Infectious keratitis	1,034	29	Urolithiasis	2	2
Johne's disease	3	3	Vibriosis	279	21
Leptospirosis	542	98	Virus abortion	83	4
Listeriosis	11	4	White muscle	48	22
Lungworms	20	4	<b>TOTAL:</b>	<b>15,058</b>	<b>236</b>
Mal. catarrhal fever	4	4	<u>SWINE:</u>		
Malignant edema	30	14	Atrophic rhinitis	90	7
Mandibular phlegmon	11	10	Brucellosis	2	1
Mucosal disease	15	11	Erysipelas	663	151
Mycotic stomatitis	39	13	Hog cholera	1	1
Photosensitization	8	8	Influenza	4	1
Pneumonia	100	48	Leptospirosis	3	3
Poisoning, arsenic	4	2	Mange	394	12
" cocklebur	5	1	Necrotic enteritis	10	4
" fuel oil	1	1	Parakeratosis	20	1
" lead	13	4	Pediculosis	8	1
" nitrate	15	3	Photosensitization	10	1
" Pentachlor	12	3	Pneumonia	5	1
" prussic acid	4	1	Poisoning, ergot	6	1
" sweet clover	4	1	" salt	4	1
Pulmonary emphysema	308	118	Salmonellosis	9	1
Pyelonephritis	3	3	Tetanus	4	1
Rhinotracheitis	103	29	Lungworms	33	1
Shipping fever	961	142	<b>TOTAL:</b>	<b>1,266</b>	<b>189</b>
Tetanus	6	6			
Urolithiasis	600	432			
Vibriosis	15	4			
Virus diarrhea	4	1			
White muscle	222	120			
<b>TOTAL:</b>	<b>10,886</b>	<b>3,861</b>			

HORSES:

	Total <u>Cases</u>	Total <u>Herds</u>
Distemper	403	196
Encephalomyelitis	23	23
Infectious anemia	4	4
Periodic ophthalmia	1	1
Tetanus	2	2
Urolithiasis	<u>1</u>	<u>1</u>
TOTAL:	434	227

DOGS:

Coccidiosis	13	1
Distemper	507	507
Infectious hepatitis	272	259
Leptospirosis	196	196
Poisoning, strychnine	<u>1</u>	<u>1</u>
TOTAL:	989	964

POULTRY:

Coccidiosis	202	7
Ch. respiratory disease	25	1
Enterohepatitis	100	1
Fowl cholera	40	1
Infectious sinusitis	1	1
Leukosis	208	31
Newcastle disease	60	1
Poisoning, strychnine	1	1
Pullet disease	50	2
Tuberculosis	<u>53</u>	<u>8</u>
TOTAL:	740	54

GRAND TOTALS:                    29,373 5,471

## REPORT OF THE BACTERIOLOGIST &amp; PATHOLOGIST

A. M. Jasmin, D.V.M.

July 1, 1958 - June 30, 1959

<u>DIAGNOSES</u>	<u>SPECIES</u>	<u>NUMBER</u>
Abortion, fungus	Cattle	1
Abortion, Salmonella	Horse	1
Abortion, virus	Sheep	2
Abscesses, various	Various	14
Actinobacillosis	Cattle	6
Ammonia burns	Chickens	6
Anaplasmosis, blood smears	Cattle	2
Arthritis, staphylococcic	Turkey	1
Aspergillosis	Chicken	1
Aspergillosis	Monkey	1
Blackhead	Chicken	1
Blackhead	Turkey	3
Blackleg	Cattle	10
Bloat	Cattle	1
Brucellosis	Cattle	1
Cholera	Chickens	1
Coccidiosis	Chickens	35
Coccidiosis	Rabbits	3
Crop bound	Chicken	1
Diphtheria	Cattle	1
Distemper	Mink	1
Encephalitis	Dog	1
Enteritis, various	Various	24
Enterotoxemia, type unknown	Cattle	8
Enterotoxemia, type unknown	Sheep	3
Enterotoxemia, type unknown	Swine	1
Enterotoxemia, Type A	Cattle	3
Enterotoxemia, Type C	Cattle	3
Enterotoxemia, Type D	Sheep	8
Epidemic tremors	Chickens	2
Erysipelas	Swine	26
Fitness for food	Various	7
Flu	Swine	5
Goiter	Sheep	2
Heart failure	Various	4
Hepatic coccidiosis	Rabbits	5
Hepatitis	Cattle	1
Hepatitis	Dogs	2
Hepatitis	Horse	1
Infections, various	Various	26
Johne's disease	Cattle	3
Leptospirosis	Cattle	33
Leptospirosis	Dogs	4
Leptospirosis	Swine	4
Leukosis	Chickens	24
Listeriosis	Cattle	2
Malignant edema	Cattle	12
Metritis	Cattle	2
Metritis	Chinchilla	1
Metritis	Sheep	1
Muscular dystrophy	Cattle	5
Mycosis	Various	15
Navel ill	Cattle	1
Navel ill	Horse	1

<u>DIAGNOSES</u>	<u>SPECIES</u>	<u>NUMBER</u>
Navel ill	Swine	1
Necrobacillosis	Cattle	1
Neoplasms	Various	17
Nephritis	Cat	1
Nephritis	Dogs	2
Nephritis	Horse	1
Nutritional deficiencies	Chickens	9
Nutritional deficiencies	Turkeys	2
Omphalitis	Chickens	27
Panleucopenia	Cat	1
Parasites, external	Various	16
Parasites, fecal examinations	Various	33
Parasites, intestinal	Various	11
Paratyphoid	Chickens	2
Patent foramen ovale	Cattle	1
Peritonitis	Various	6
Pneumonia	Cattle	2
Pneumonia	Sheep	2
Pneumonia, Pasteurella	Cattle	25
Pneumonia, Pasteurella	Sheep	6
Pneumonia, Pasteurella	Swine	6
Pneumonia, Pasteurella	Rabbit	1
Pseudotuberculosis	Deer	4
Pullet disease	Chickens	7
Pullet disease	Pheasants	7
Pulmonary emphysema	Cattle	7
Pullorum	Chickens	25
Pyelonephritis	Cattle	1
Redwater	Cattle	19
Salmonellosis	Swine	7
Sarcosporidiosis	Cattle	2
Scours	Cattle	3
Scours	Sheep	2
Scours	Swine	1
Spirochaetosis, buccal	Chickens	12
Sulfa over medication	Turkey	1
Tetanus	Sheep	1
Toxemia, not typed	Elk	1
Trauma	Various	14
Trichomoniasis	Cattle	2
Tuberculosis	Chickens	8
Tuberculosis	Swine	12
Unsatisfactory specimens	Various	66
Viability of vaccines		5
Vibriosis	Cattle	3
Vibriosis	Sheep	25
Miscellaneous negative specimens	Various	408
Identification of specimens	Plants	2
Rabies examinations (negative)	Various	52

MILK, CREAM AND WATER ANALYSES

	<u>Positive</u>	<u>Negative</u>	<u>Suspicious</u>
Milk samples, bacterial count	1,261		
Milk samples, coliform determination	336	429	
Milk samples, mastitis determination	398	205	
Milk samples, antibiotic sensitivity tests	46		
Cream samples, bacterial count	178		
Cream samples, coliform determination	92	91	
Water samples, bacterial count	6		
Water samples, coliform determination	3	4	

SEROLOGICAL EXAMINATIONS

	<u>Species</u>			
Brucellosis, serum agglutination	Antelope		16	
Brucellosis, serum agglutination	Big Horn sheep		7	
Brucellosis, serum agglutination	Buffalo		17	
Brucellosis, serum agglutination	Cattle	908	87,325	1,753
Brucellosis, serum agglutination	Deer		150	
Brucellosis, serum agglutination	Dogs		15	1
Brucellosis, serum agglutination	Elk		87	
Brucellosis, serum agglutination	Goats		2	
Brucellosis, serum agglutination	Horses	2	11	
Brucellosis, serum agglutination	Mink		1	
Brucellosis, serum agglutination	Sheep		116	
Brucellosis, serum agglutination	Swine	3	258	6
Brucellosis,(milk whey)		6	26	
Brucellosis,(milk ring test)			825	22
Brucellosis,(cream ring test)			517	4
Chronic respiratory disease	Antelope		10	
Chronic respiratory disease	Big Horn sheep		5	
Chronic respiratory disease	Chickens	33	35	1
Chronic respiratory disease	Deer	4	114	
Chronic respiratory disease	Elk	6	72	
**Encephalomyelitis,(complement-fixation)	Horses	5		
Erysipelas	Antelope		5	
Erysipelas	Big Horn sheep	1	1	
Erysipelas	Cattle		1	
Erysipelas	Deer	1	7	
Erysipelas	Sheep		1	
Erysipelas	Swine	173	49	4
Leptospirosis	Antelope	4	47	1
Leptospirosis	Big Horn sheep		15	3
Leptospirosis	Cattle	769	33,014	510
Leptospirosis	Deer	1	405	4
Leptospirosis	Dogs	5	22	
Leptospirosis	Elk	3	213	
Leptospirosis	Goat		1	
Leptospirosis	Horses	19	12	5
Leptospirosis	Milk		3	
Leptospirosis	Mink		1	
Leptospirosis	Sheep		33	2
Leptospirosis	Swine	25	215	3
Leptospirosis	Urine(bovine)	1	4	
*Listeriosis	Antelope		1	
*Listeriosis	Horse	1		
Newcastle disease	Chickens	2	8	

<u>DIAGNOSES</u>	<u>Species</u>	<u>Positive</u>	<u>Negative</u>	<u>Suspicious</u>
Paratyphoid	Chickens	17	17	3
Paratyphoid	Deer		1	
Paratyphoid	Swine	1	5	
Pullorum	Antelope		16	
Pullorum	Big Horn sheep		3	
Pullorum	Chickens	35	34	1
Pullorum	Deer		121	1
Pullorum	Dog		1	
Pullorum	Elk	4	80	3
Pullorum	Swine		1	
Redwater	Antelope		13	
Redwater	Big Horn sheep		5	
Redwater	Cattle	1	10	
Redwater	Deer		91	
Redwater	Elk		60	
Typhimurium	Antelope		15	
Typhimurium	Big Horn sheep		2	
Typhimurium	Cattle	4	9	
Typhimurium	Chickens	2	2	
Typhimurium	Deer	5	127	3
Typhimurium	Elk	5	80	1
Typhimurium	Swine		3	
Typhoid	Chickens	3		
Typhoid	Swine		1	
Tularemia	Antelope		12	
Tularemia	Big Horn sheep		3	
Tularemia	Deer		113	1
Tularemia	Dogs		3	
Tularemia	Elk		85	
Tularemia	Rabbit		1	
Totals:		<u>5,572</u>	<u>125,309</u>	<u>2,332</u>

SEROLOGICAL TESTS IN FIELD AND OTHER LABORATORIES

*Anaplasmosis (complement-fixation)	Antelope		3	
*Anaplasmosis (complement-fixation)	Big Horn sheep		3	
*Anaplasmosis (complement-fixation)	Cattle	7	429	17
*Anaplasmosis (complement-fixation)	Deer	9	58	
*Anaplasmosis (complement-fixation)	Elk	11	7	
(Anticomplementary results classified as suspects).				
Brucellosis (test in all field laboratories)	Cattle	287	44,996	506
Brucellosis (milk ring test in field)			3,503	78
Brucellosis (cream ring test in field)			6,485	63
Pullorum (field)	Chickens	32	83,133	
Total serological tests in field and other laboratories		<u>346</u>	<u>138,617</u>	<u>664</u>
GRAND TOTALS:		<u>5,918</u>	<u>263,926</u>	<u>2,996</u>
Total all diagnostic specimens				<u>272,835</u>

\*Veterinary Research Laboratory - Bozeman, Montana

\*\* State Board of Health Laboratory - Helena, Montana

REPORT OF THE CHEMIST  
 Frank J. Peacock  
SAMPLES FOR POISON ANALYSES  
 Stomach contents, tissues, etc.

TYPE	<u>Arsenic</u>		<u>Mercury</u>		<u>Lead</u>		<u>Strychnine</u>		<u>Misc.</u>		<u>Total</u>	<u>Total</u>
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Samples	Analyses
Bovine	2	77	72	10	69		1	1	7		80	239
Porcine		13	12		13						13	38
Ovine		4	3		3						4	10
Equine		2	2		2		1				3	7
Avian		1	1		1						1	3
Canine		14	11		14	12	41		1		57	93
Feline		1	1		1		1				2	4
<b>TOTAL:</b>	2	112	102	10	103	12	44	1	8		160	394

MISCELLANEOUS SAMPLES FOR POISON ANALYSES

TYPE	<u>Arsenic</u>		<u>Mercury</u>		<u>Lead</u>		<u>Strychnine</u>		<u>Misc.</u>		<u>Total</u>	<u>Total</u>
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Samples	Analyses
Tablets	1				1		1				1	3
Dirt	1		1	1							1	3
Grain	4		4		3		2	1	1		5	15
Meat	1						7				7	8
Dog food							5				5	5
Powder	1			1			2				3	4
Candy							1				1	1
Paint				1			1				1	2
Salt	1		1		1						1	3
Silage									1		1	1
<b>TOTAL:</b>	9		6	3	5		19	1	2		26	45

REPORT OF THE CHEMIST  
 Frank J. Peacock  
SAMPLES FOR POISON ANALYSES  
 Stomach contents, tissues, etc.

TYPE	<u>Arsenic</u>		<u>Mercury</u>		<u>Lead</u>		<u>Strychnine</u>		<u>Misc.</u>		<u>Total</u> Samples	<u>Total</u> Analyses
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.		
Bovine	2	77		72	10	69		1	1	7	80	239
Porcine		13		12		13					13	38
Ovine		4		3		3					4	10
Equine		2		2		2		1			3	7
Avian		1		1		1					1	3
Canine		14		11		14	12	41		1	57	93
Feline		1		1		1		1			2	4
<b>TOTAL:</b>	2	112		102	10	103	12	44	1	8	160	394

MISCELLANEOUS SAMPLES FOR POISON ANALYSES

TYPE	<u>Arsenic</u>		<u>Mercury</u>		<u>Lead</u>		<u>Strychnine</u>		<u>Misc.</u>		<u>Total</u> Samples	<u>Total</u> Analyses
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.		
Tablets		1				1		1			1	3
Dirt		1		1	1						1	3
Grain		4		4		3		2	1	1	5	15
Meat		1						7			7	8
Dog food								5			5	5
Powder		1			1			2			3	4
Candy								1			1	1
Paint					1			1			1	2
Salt		1		1		1					1	3
Silage										1	1	1
<b>TOTAL:</b>		9		6	3	5		19	1	2	26	45

MISCELLANEOUS EXAMINATIONS OTHER THAN POISONS

	<u>Suitable for livestock</u>	<u>Unsuitable for livestock</u>	<u>Total</u>
Water samples for mineral analyses	28	17	45
Hay samples for quantitative determination of nitrates			11
Sample of salt identified as KNO <sub>2</sub>			1
Sample of powder identified as lime			<u>1</u>
TOTAL:			<u>58</u>

BLOOD SAMPLES FOR CHEMICAL ANALYSES

<u>Type of Blood</u>	<u>Phosphorus</u>	<u>Calcium</u>	<u>Carotene</u>	<u>Vitamin A</u>	<u>Total samples</u>	<u>Total Analyses</u>
Bovine	101	24	99	99	103	323
Porcine	2		2	2	2	6
Equine	1	1	1	1	1	4
TOTAL:	104	25	102	102	106	333

MILK AND CREAM SAMPLES

MILK:

Butterfat analyses	383
Solids not fat	340
Total solids	340
Lactometer reading	340
Sediment test	338
Phosphatase test, indicating proper pasteurization	307
" " " improper "	9

CREAM:

Butterfat analyses	105
Phosphatase test, indicating proper pasteurization	89
" " " improper "	2

HALF & HALF:

Butterfat analyses	62
Phosphatase test, indicating proper pasteurization	64

LOW-FAT MILK:

Butterfat analyses	41
Lactometer reading	26
Sediment test	24
Phosphatase test, indicating proper pasteurization	42

CHOCOLATE MILK:

Butterfat analyses	15
Phosphatase test, indicating proper pasteurization	15
" " " improper "	3

TOTAL: 2,544

## LIVESTOCK MARKETS

Any concentration of livestock from many different sources poses problems of disease dissemination. We believe the Montana livestock operators can be proud of the way they have faced this situation and, as far as the livestock industry is concerned, have turned what could have been a definite liability into an asset. They have, and are, providing pens, alleyways, loading chutes, etc. that can be kept clean and can be thoroughly disinfected. Their cooperation with those charged with detecting diseased livestock, so they can be prevented from further spreading livestock disease, has been outstanding. This is done by a spirit of cooperation, by furnishing space for testing laboratories, by furnishing help, and by advising and encouraging disease control and eradication.

We hope that we can continue in this spirit of cooperation to assist the Montana markets in their claim that they intend to have and maintain the most disease-free and cleanest markets in the world.

Deputy state veterinarians assigned to livestock auction market inspection work inspected the following animals at 13 livestock markets during the year. Tests were performed as required and all diseased animals were promptly handled in accordance with Livestock Sanitary Board regulations.

Cattle	574,016
Sheep	215,279
Horses	3,256
Swine	<u>50,248</u>
T O T A L	842,799

## MILK AND DAIRY INSPECTIONS

The Montana Livestock Sanitary Board has a most important responsibility to the consumers of fluid milk and cream in Montana. That responsibility is to assure all consumers that the milk originates from cows free of diseases transmissible to man, to assure that the milk is handled and processed in a clean manner, free of contamination, properly refrigerated, and where pasteurization is performed, to assure that pasteurization is adequately and properly carried out.

We are pleased to be able to assure the Board that the staff in the field and in the laboratory take the work most seriously and devote long hours -- far beyond a forty-hour week -- to this work, and the cooperation, overall, by the dairy industry is excellent.

The scope and volume of work can be best reflected in the table on the following page.

Summary of Dairy and Milk Inspection Work, 1958-59

No. licensed producer dairies	793
No. licensed raw milk dairies	32
No. licensed milk plants	63
No. dairy inspections	1,849
No. dairies degraded	10
No. dairy complaints filed with county attorneys	3
No. dairy court cases	3
Est. volume of milk produced by licensed (grade A) milk plants	64,000 gal. daily
No. dairy tuberculosis tests	14,680
No. dairy brucellosis ring tests	5,281
No. bacterial examinations of milk	3,036
No. chemical examinations of milk	2,544

As a result of the above work, and the work of several local health departments, statewide we can report to the Board that the grade A milk sold to Montana consumers is second to none.

The Livestock Sanitary Board staff members cooperate very closely with the U. S. Public Health Service in seeing that Montana dairies can become eligible to sell milk and cream interstate, to interstate carriers, national parks, and military posts. Three staff members are qualified, and their ratings are accepted by U. S. Public Health Service, to conduct interstate shippers surveys. This has been of much value to dairies and milk plants in Montana.

A survey of all areas indicates the per cent of compliance of dairies and milk plants with Livestock Sanitary Board and U. S. Public Health Service requirements are as follows:

<u>Milk Supply Area</u>	<u>Per Cent Compliance</u>
Billings	91.38
Bozeman	90.26
Butte	85.20
Glendive	88.30
Great Falls (including Conrad & Choteau)	88.08
Havre	86.10
Helena	83.60
Kalispell	90.50
Lewistown, Denton, Roundup	88.10
Malta, Culbertson, Plentywood & Wolf Point	86.10
Miles City	83.40
Missoula	93.40
Sidney	82.90

It is most desirable that all dairies and milk plants have a rating of 90% or better. We will continue to work toward this goal for the entire state.

One member of the staff has been approved by the U. S. Public Health Service and the Livestock Sanitary Board to conduct laboratory inspections of local laboratories to determine if their bacterial count methods and facilities are in accordance with "Standard Methods for Procedures of Examination of Dairy Products", thus making that laboratory eligible to perform official bacterial counts recognized by the Board and recognized by the U. S. Public Health Service for interstate ratings. The following laboratories have been approved and their counts are recognized as official by the Livestock Sanitary Board:

City-County Health Department	Billings
City-County Health Department	Great Falls
City-County Health Department	Missoula
City Laboratory	Havre
Custer County High School	Miles City
Livestock Sanitary Board	Helena
Montana State College	Bozeman
Physicians Medical Laboratory	Kalispell
St. Ann's Hospital	Anaconda
St. James Hospital	Butte

The presence of Q fever in dairy cattle (see "Q Fever" under "Cattle Diseases" in this report) poses a public health problem associated with milk. This has heretofore not been a problem in Montana. The following is a copy of a letter from Dr. Otis L. Anderson, Assistant Surgeon General, Chief, Bureau of State Services, Department of Health, Education, and Welfare, Washington, D. C.:

"Epidemiological investigations have revealed that cows, sheep and goats, when infected with Coxiella burnetii, are important sources of Q fever infection in man and that organism is shed in the milk as well as other secretions and excretions of such animals. Although most studies of the occurrence of Q fever point to the inhalation of dust contaminated by excretions of infected animals as the most common source of human infection, studies in endemic areas, where dairy cattle represent the primary source, show that the incidence of Q fever infection is much higher in persons using raw milk than in those using pasteurized milk.

"A research project was undertaken to determine pasteurization time and temperature necessary to assure destruction of this organism in milk. This project, a cooperative undertaking of the University of California, the Milk Industry Foundation, the Dairy Industries Supply Association, and the Public Health Service, has shown when large numbers of the organisms are present, some may survive pasteurization of milk at 143° F. for 30 minutes. However, the findings indicate that pasteurization of milk at 145° F. for 30 minutes by the vat method, or at 161° F. for 15 seconds by high temperature short-time method, is adequate to protect the public health."

The Board, on March 14, 1959, revised Livestock Sanitary Board Regulation 101 by increasing the required pasteurization temperature from 143° F. to 145° F. for vat pasteurization. This requirement is statewide and affects all milk plants and pasteurization plants in Montana.

The problem of raw milk, in face of the increasing incidence of Q fever in dairy cattle, must be met. It is recommended that because of Q fever, along with several other diseases in dairy cattle, all milk consumed in Montana be properly pasteurized.

Thirty-two raw milk dairies are licensed and approved in the state. It is imperative, from a public health standpoint, that the Board require that adequate and routine testing procedures be developed to assure the relatively few consumers of raw milk that the dairy herds are free from Q fever organisms.

#### MEAT INSPECTION AND SLAUGHTERHOUSE

Fifty-nine slaughterhouses were found to comply with the sanitary regulations promulgated by the Board and were issued licenses during the year. A very few slaughterhouse operators still have the mistaken idea that animals prepared for human consumption can be slaughtered, handled and processed under most unclean circumstances, without refrigeration and with complete disregard to the causes of food poisoning or diseases of animals transmissible to man. The staff of the Livestock Sanitary Board makes every effort to immediately correct such conditions. Overall it is indeed a pleasure to report to the Board that Montana has a vast majority of slaughtering establishments that are outstanding in sanitary construction and operation. We believe the consumers of meat and meat products, and the livestock industry, can take pride in these plants and should encourage them in their efforts to obtain and maintain the very best in sanitation.

#### Meat Inspection

Of the 59 slaughtering establishments licensed by the Board, four operate under meat inspection of the Meat Inspection Division of the U. S. Department of Agriculture, and 14 operate under meat inspection of the Livestock Sanitary Board.

Meat inspection is a most important public health service. The "Disposition of Carcasses and Parts", in this report, clearly shows the number of animals and parts of animals that were found unfit for human consumption in the plants operating under state meat inspection. As revealing as these reports are, they fail to show the additional precautions taken to avoid food poisoning due to contamination by unclean equipment, improper and unsanitary slaughter methods, and food handling.

The following table shows the number of animals inspected on ante-mortem and post-mortem inspection in the 14 state-inspected plants during the year. The estimated dressed weight expresses the volume in pounds involved.



<u>Number of Animals</u>		<u>Estimated Dressed Weight</u>
29,734	Cattle	14,867,000 pounds
59,892	Swine	7,196,840 "
2,243	Calves	448,600 "
<u>4,159</u>	<u>Sheep</u>	<u>207,950 "</u>
96,108	TOTAL	22,720,390 "

The following animals were condemned as totally unfit for human consumption and removed from human food channels:

<u>Number of Animals</u>		<u>Estimated Dressed Weight</u>
71½	Cattle	35,750 pounds
51	Swine	6,120 "
5	Calves	750 "
<u>14</u>	<u>Sheep</u>	<u>700 "</u>
141½	TOTAL	43,320 "

A total of 29,259 parts of animals were found unfit for human consumption and removed from food channels through condemnation. One large item of parts condemnation was a total of 7,403 beef livers - at an estimated 74,030 pounds. A total estimated weight of unfit food condemned is 139,206 pounds.

The estimated value of animals and parts condemned, based on healthy animal values, amounts to \$32,189.00.

A detailed report of meat inspection findings and dispositions follows on the next page.

SUMMARY OF POST-MORTEM INSPECTION

Species	Cattle	Swine	Calves	Sheep
Food	29,661½	59,920	2,233	4,145
Cooking	2	1		
Condemned	71½	51	5	14
Totals:	29,735	59,972	2,243	4,159

DISPOSITION OF CARCASSES AND PARTS

Diagnosis:	Cattle		Swine		Calves		Sheep		Parts			
	Food	Cook. Cond.	Cook. Cond.	Parts	Cond.	Parts	Food	Cond.				
Abscesses		4	417		7	1634	1	4	3	15		
Actinomycosis		1	233			1			2			
Adhesions		1	6			21						
Anasarca		1										
Anemia		1					2					
Arthritis		1	2		5	2						
Ascites		2			2		1					
Avitaminosis		1										
Bruises	1	3½	338		2	860		3		2		
Cachexia		9	10		3	69			2			
Caseolymphadenitis									2			
Cirrhosis						2						
Contamination			1			467						
Cysticercosis, bovis		2										
Cysticercosis, ovis								1		2		
Cystitis									1			
Cysts			1		2	44						
Degen. heart muscle			1									
Edema			2		2	4						
Emphysema			1									
Enteritis			1									
Erysipelas					1	11						
Epithelioma			6	80	1	12		1				
Fatty degeneration			1									
Gastroenteritis				1								
Gastritis				4		8						
Hydronephrosis				32		507						
Icterus					1	9						
Johne's disease			1									
Leptospirosis						1						
Livers, misc. lesions				91		13714		28		954		
Lymphocytosis			1									
Lymphosarcoma				1								
Mastitis				1		1						
Melanoma				1		2						
Metritis			6			1						
Neolymphosarcoma			1									
Nephritis	1			24		1	158					
Osteoporosis				2								
Tr. pericarditis	1		4	29			157	1		1		
Peritonitis			5	1		1	2					
Pleuritis				6			48					
Pneumonia			2	5		4	20	1				
Pyelonephritis										1		
Pyemia			1			1				1		
Redwater			1									
Sarcosporidiosis			1									
Septicemia			6							1		
Sex odor						4						
Sinusitis				1								
Submax. phlegmon			1									
Tuberculosis	1			4		2	1757					
Uremia				2								
Urolithiasis				2						1		
TOTALS:	4	2	71½	1341	1	51	19504	5	37	1	14	974

Summary of Post-Mortem Inspection (Continued)

Beef livers condemned:

Abscess	4,405
Cirrhosis	48
Telangiectasis	94
Sawdust	196
Corotensis	70
Distomiasis	2,514
Echinococcosis	2
Melanosis	3
Miscellaneous	71
TOTAL	<u>7,403</u>

Disposition of Carcasses and Parts

State meat inspection is maintained by fees paid to the Livestock Sanitary Board by the plants maintaining inspection. The 14 establishments paid \$45,464.30 during the year for the service.

The Thirty-sixth Legislature granted \$70,000 for the year 1960-61 to pay for meat inspection. It is anticipated that several plants not maintaining meat inspection will request the service when public moneys become available. Plans and preparations are being made to enable the Board to meet the demand on July 1, 1960. The meat packing industry and the consuming public are demanding that the Livestock Sanitary Board increase the meat inspection service to include enforcement of the meat processing and labeling requirements of Regulations 2315 and 2316. A study is being made at the present time to determine if this additional service can be made available following July 1, 1960, when public funds become available.

It must be reported to the Board, because of the demand for veterinarians in other fields, and because of comparatively low salaries paid for meat inspectors, it remains extremely difficult to employ and hold qualified meat inspectors. This difficulty poses a real problem to be met when the anticipated additional meat inspection will be requested July 1, 1960.

We do wish to express our sincere thanks to those veterinarians who take time from their busy private practice to perform this important public health service at several plants. Without this, it would be impossible in many instances to provide the consumers in those communities with meat inspected and passed by the Board.

### RENDERING PLANTS

During the year, nine rendering plants were found to comply with Livestock Sanitary Board regulations and were licensed as required by law.

A properly operated rendering plant can be a real asset to a rural community. It can aid materially to cut down the spread of livestock diseases and utilize a product that would otherwise be a complete waste. It is essential to the welfare of the livestock industry that rendering plants and their vehicles be operated strictly in accordance with the concepts of modern sanitation and disease control.

### SWINE GARBAGE FEEDING

The Livestock Sanitary Board, as required by law, approved and licensed 24 swine garbage-feeding establishments during the year. The law was enforced by prohibiting the feeding of raw garbage in several instances.

An employee of the U. S. Department of Agriculture routinely inspects all garbage-feeding establishments to assure the garbage is thoroughly cooked as required by Livestock Sanitary Board regulations.

Since the advent of garbage cooking, vesicular exanthema and hog cholera have become nonexistent in Montana. Proper cooking of garbage fed to swine materially reduces the incidence of trichinosis in man.

### ARTIFICIAL INSEMINATION

A total of 18 men possess valid licenses from the Board to practice artificial insemination in Montana. This is six less than one year ago.

Montana State College continues to give a short course and also has a quarter course on artificial insemination. We wish to express our thanks to the men at Montana State College who assist very materially in determining the qualifications of applicants to be licensed by the Board.

### QUARANTINED FEED LOTS

During the year eleven quarantined feed lots were inspected, approved, and are being maintained in accordance with the regulations contained in Chapter 20.

### LITIGATION

Unfortunately, it was necessary to file complaints against three dairymen for selling milk without a license and/or not complying with the sanitary requirements of the Livestock Sanitary Board regulations.

Two cases were tried in Justice of the Peace Court in Flathead County. Each defendant was found guilty and fined \$50.

One case was tried in the Missoula County District Court. The defendants were found guilty, and fined \$5.

The decision of the district court in granting A. G. Lee a writ of prohibition against the Montana Livestock Sanitary Board, preventing the Board from brucellosis testing the Lee cattle, was appealed to the supreme court. The unanimous decision of the supreme court reversed the action of the district court. The conclusions of the supreme court decision were: "We therefore conclude that since the actions of the Board herein are ministerial in nature, the district court was without authority to issue a writ as it did. This is a case notwithstanding the provisions of Section 93-9201, R.C.M. 1947, and so far as that section purports to authorize the writ in such cases it is inconsistent with the Constitution and therefore invalid. The motion to quash should have been granted.

"The judgment is reversed, the motion to quash must be granted. It is so ordered."

#### LABORATORY AND OFFICE FACILITIES

The very serious need for adequate office space and a new Livestock Sanitary Board diagnostic laboratory was met by the Thirty-sixth Legislature. Chapter 262, Laws of 1959, authorizes the Board to construct a Livestock Sanitary Board laboratory in Gallatin County from moneys in Fund 151, derived from a mill levy on livestock.

An architect has been employed by the Board of Examiners and plans are being drawn up.

To obtain the maximum return from scientists available in Montana, from laboratory equipment and facilities available in Montana, and to have space to handle animals, the laboratory is being planned to be built adjacent to and in combination with the Montana Veterinary Research Laboratory, at Montana State College. It is hoped the laboratory will be in operation by the fall of 1960.

The need for an up-to-date laboratory capable of utilizing all modern diagnostic procedures is great. We are confident that the new laboratory will bring a return to the livestockmen and poultrymen of the state equal to that received from the livestockmen's investment in the present laboratory, which was made in 1918.

Office space in the Livestock Building remains critical. There is no office space for the Chief Deputy, or the head of the Milk and Dairy Inspection Department. The brucellosis office is in the basement with the laboratory animals and storage. When the new laboratory becomes available, it is planned to convert the two laboratory rooms into offices. This will provide adequate office space.

### PERSONNEL

All full-time positions on the Livestock Sanitary Board staff were filled during the year. On behalf of the Board, I wish to express our sincere thanks for the work of the field force, the office force, the laboratory staff, and the resident deputy state veterinarians. Their sincere endeavors, long hours, and constant study for the control of animal diseases, and the safeguarding of Montana's meat and milk supply, is appreciated by many.

### REVISION OF REGULATIONS

The following regulations were revised and adopted during the year:

Effective February 1, 1959 - Chapter 9 - Scabies, replacing Regulations 23, 24, and 69.

Effective June 1, 1959 - Chapter 11 - Lice in Sheep, a new regulation.

Effective February 1, 1959 - Chapter 14 - Reporting Tests and Vaccination, replacing Regulation 35.

Effective February 1, 1959 - Chapter 27 - Cleaning and Disinfection of Vehicles Used for Transportation of Livestock, replacing Regulation 37.

Effective February 1, 1959 - Chapter 18 - Animal Foods, replacing Regulations 41, 57, and 64

### ORDERS ISSUED

The following orders were issued during the fiscal year:

January 29, 1959 - Order No. 189, prohibiting movement of cattle from Kansas into Montana without dipping.

February 17, 1959 - Order No. 190, prohibiting the movement of sheep from Cass County, North Dakota, into Montana without dipping.

March 9, 1959 - Order No. 191, prohibiting the movement of cattle from Texas into Montana without dipping.

### COOPERATING AGENCIES

The Montana Livestock Sanitary Board's duties and responsibilities are accomplished through the cooperation, advice, and assistance of many. To the following we express our sincere thanks:

1. Agricultural Research Service, U. S. Department of Agriculture, and Dr. Dale Suplee, who is in charge of their Montana activities.
2. Montana Veterinary Research Laboratory, Bozeman.
3. Rocky Mountain Laboratory, Hamilton.
4. Montana State Board of Health.
5. U. S. Public Health Service.
6. Montana Agricultural Extension Service.
7. City and county health departments.
8. Montana Poultry Improvement Board.
9. Montana Stockgrowers.
10. Montana Wool Growers.
11. Montana Milk Distributors.
12. Montana Milk Producers.
13. Montana Hatcherymen.
14. The many local livestock organizations.

FINANCES

The financial report for the year ended June 30, 1959, is as follows:

INCOME (INCLUDING BALANCES AND REFUNDS)

Appropriated Funds - General Operation

Cash Balance 6-30-58 - Carried Forward	\$ 14,910.39	
1958-1959 Appropriation	225,400.00	
Refunds	667.66	\$240,978.05

Appropriated Funds - Brucellosis

Cash Balance 6-30-58 - Carried Forward	.80	
1958-1959 Appropriation	25,000.00	
Refunds	365.74	25,366.54

Livestock Sanitary Board Fund 151

Cash Balance 6-30-58 - Carried Forward	95,378.92	
Income - Livestock Taxes*	107,973.31	
Income - Interest on Bonds	2,070.00	
Income - Inspection Fees	441.57	205,863.80

Refunds - Meat Inspection		45,464.30
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TOTAL INCOME - - - - - \$517,672.69

EXPENDITURES

<u>Appropriated Funds - General Operation</u>	227,835.71
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<u>Appropriated Funds - Brucellosis</u>	25,306.43
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Livestock Sanitary Board Fund 151

General Operation	45,550.24	
To Veterinary Research Laboratory for:		
Annual Research Allocation	10,000.00	
Virus Abortion Work	3,000.00	58,550.24

TOTAL EXPENDITURES- - - - - \$311,692.38

BALANCE - OPERATING FUNDS 6-30-59	205,980.31
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Unencumbered Balance Appropriated Funds Returned to State General Fund 6-30-59 - End of 1957-59 Biennium	13,130.43
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TOTAL FUNDS CARRIED FORWARD TO 1959-1961 BIENNIUM**	\$192,849.88
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\* \* \* \* \*

Reserve in Bonds - Fund 151	75,000.00
Reserve in Bonds and Accrued Interest - Fund 150	74,822.24

TOTAL RESERVE FUNDS \$149,822.24\*\*\*

\* 3 mills on cattle and sheep.

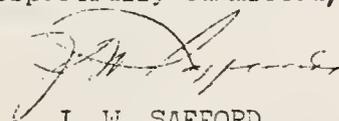
\*\* To be applied on construction of new diagnostic laboratory as authorized by the thirty-sixth Legislature.

\*\*\* Designated to be held in emergency reserve to be used to control dangerous disease outbreaks.

SUMMARY OF MAJOR ACTIVITIES DURING THE YEAR

Dairy and milk plant inspections. . . . .	1,849
Slaughterhouse inspections. . . . .	39
Rendering plant inspections . . . . .	9
Calves vaccinated against brucellosis . . . . .	290,550
Cattle bled for brucellosis tests . . . . .	45,789
Cattle tuberculin tested. . . . .	34,171
Cattle vaccinated against redwater. . . . .	12,148
Animals inspected at markets. . . . .	841,220
Miscellaneous animal investigations . . . . .	89,479
Animal inspection - meat inspection . . . . .	96,109
Quarantined feed lot inspections. . . . .	12
Pullorum tests. . . . .	84,165
Laboratory tests and examinations . . . . .	272,835
Chemical analyses . . . . .	<u>3,364</u>
TOTAL TESTS, ANALYSES AND INSPECTIONS.....	1,771,339

Respectfully submitted,



J. W. SAFFORD,  
State Veterinarian.

## MONTANA VETERINARY RESEARCH LABORATORY

E. A. Tunnicliff, Head of the Montana Veterinary Research Laboratory, submits the following report:

"The research budget of the Veterinary Research Laboratory is supported by the Livestock Sanitary Board to the extent of \$10,000 per year. This financial assistance is supplemented by the work of the deputy state veterinarians who make a very considerable contribution through the information supplied by the field studies related to the research problems. The State Veterinarian serves as a member of the Advisory Committee of the Laboratory. The research projects under study are as follows:

1. A study of Immunization Products Against *Pasteurella* Ovine Mastitis.
2. Ulcerative Dermatitis of Sheep.
3. Bacillary Icterohemoglobinuria of Cattle.
4. Nutritional Muscular Dystrophy of Lambs and Calves.
5. Bionomics of *Eimeria zurnii*.
6. Bionomics of *Nematodirus spathiger*.
7. Ovine Vibriosis.
8. Urolithiasis of Beef Cattle.
9. The Chemoprophylaxis of Nematode Infestation in Sheep.
10. Identification of Tapeworm Larvae.
11. Ovine Virus Abortion - Incidence of the Disease and Characteristics and Relationship of Etiological Agent to Viruses of the Psittacosis-Lymphogranuloma group.
12. Miscellaneous Studies.
  - (a) Investigation of miscellaneous unpredictable death losses.
  - (b) Anaplasmosis study of cattle at North Montana Branch Station.
  - (c) Enterotoxemia-enteritis complex of lambs and calves.
  - (d) Fluorosis survey of land and animals near Silver Star, Montana.
  - (e) Progressive pneumonia of sheep.
  - (f) Bovine asthma.
  - (g) Vaccination of paratuberculosis-exposed sheep with Johnin vaccine.
  - (h) Study of bovine grub and louse control with systemic insecticides.

A list of technical publications issued from the Veterinary Research Laboratory is as follows:

Fritts, D. H., W. W. Hawkins and W. C. Marquardt. A Comparison of Three Anthelmintic Preparations Against Nematodes of Sheep. JAVMA 133, 1958, 113-115.

Marquardt, W. C., and W. W. Hawkins. Experimental Therapy of Fly Strike in Sheep Using a Systemic Insecticide. JAVMA. 132, 1958, 429-432.

Young, Stuart and B. D. Firehammer. Abortion Attributed to *Listeria monocytogenes* Infection in a Range Herd of Beef Cattle. JAVMA. 132, 1958, 434-438.

Seghetti, Lee and C. M. Senger. Experimental Infections in Lambs with *Nematodirus spathiger*, Am. J. Vet. Res., 19, 1958, 642-644.

- Young, Stuart, H. Parker, and B. D. Firehammer. Abortion in Sheep Due to a virus of the Psittacosis-Lymphogranuloma Group. JAVMA., 133, 1958, 374-379.
- Marsh, Hadleigh. Newsom's SHEEP DISEASES, 2nd Edition, The Williams & Wilkins Company, Baltimore, Md. 406 pages. 1958.
- Gray, M. L. Listeriosis in Fowls - A review. Avian Diseases, 2, 1958, 296-314
- Swingle, K. F., S. Young, and H. C. Dang. The Relationship of Serum Glutamic Oxalacetic Transaminase to Nutritional Muscular Dystrophy in Lambs. Am. J. Vet. Res., 20, 1959, 75-77.
- Smith, L.D.S. and T. Matsuoka. Maternally Induced Protection of Young Lambs Against the Epsilon Toxin of Clostridium perfringens using Nonactivated Vaccine. Am. J. Vet. Res., 20, 1959, 91-93.
- Cartan, G. H. and K. F. Swingle. A Succinoxidase Inhibitor in Feeds Associated with Muscular Dystrophy in Lambs and Calves. Am. J. Vet. Res., 20, 1959, 235-238.
- Keeler, R. F. and K. F. Swingle. A Partial Chemical Analysis of the Mucoprotein of Siliceous Urinary Calculi of Bovine Origin. Am. J. Vet. Res., 20, 1959, 249-254.
- Keeler, R. F. and S. A. Lovelace. The Metabolism of Silicon in the Rat and Its Relation to the Formation of Artificial Siliceous Calculi. J. Exp. Med., 109, 1959, 601-614.
- Keeler, R. F. Color Reaction for Certain Amino Acids, Amines and Proteins. Science, 129, June 1959, 1617-18.
- Marquardt, W. C. and D. H. Fritts. Internal Parasites of Sheep. Circular 224, 1959."

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