

Report of the Veterinary Diagnostic Laboratory

July 1, 1943-June 30, 1944, by
J. O. Foss¹

ONE of the functions of the Department of Veterinary Science is to provide diagnostic services to the livestock producers and veterinarians of the State. The diagnosis made in each case is recorded and the sum total of a year or several years work is a valuable index of the animal disease trends. This information is reflected in the activities of the North Dakota State Livestock Sanitary Board and the research work of the veterinary staff of the experiment station. The State Livestock Sanitary Board has contributed additional funds so as to enlarge the diagnostic work in the laboratory. The State Poultry Improvement Board recently cooperated with the laboratory (and effective July 1, 1944, has also made a financial contribution. The Extension Service of the Agricultural College actively assisted in furthering the work of the laboratory.

The number of the various types of specimens submitted during the 1943-44 fiscal year is shown in Table 1.

Specimens	Number
Chickens	1,589
Turkeys	437
Geese	2
Ducks	5
Sheep	73
Swine	183
Cattle	194
Horses	6
Dogs	14
Cats	1
	2,504

Since poultry raisers usually submit several specimens at a time when requesting a disease diagnosis, the preponderance of our poultry work in comparison to that of other livestock, is not as great as these figures might at first indicate.

The diagnoses most commonly made in chickens have been Pullorum disease, 128; Lymphomatosis, 110; Coccidiosis, 86; and Cholera, 37. Poultry losses from these diseases, especially the first two, are tremendous. The National Poultry Improvement Plan was instituted for the control of pullorum disease. The veterinary department is actively cooperating with the national and

state agencies and poultrymen in this battle. Lymphomatosis, a general term to include Leucosis and range paralysis, is being investigated at the U.S.D.A. laboratory, located at East Lansing, Mich. The control of this disease appears to be largely the application of genetic factors and strict hygienic measures. There are satisfactory control measures for Coccidiosis. Yearly losses from this disease result from the disregard of basic sanitary principles in poultry management. As a group, chicken raisers lag behind turkey raisers in this respect. The cause of fowl Cholera is not a mystery, but well known. Yet this disease is one which has successfully resisted control efforts. Vaccines have been long produced, but their efficiency is open to question. The veterinary department now has an active project in cooperation with the Bacteriology Department concerned with this problem.

Among turkeys, Entero-hepatitis, commonly called Blackhead, was the most common diagnosis with 20 cases. This Station has published a scientific article on the cure and prevention of this disease. Work on control measures are still under investigation. Pullorum and Paratyphoid with 9 and 7 diagnosis made respectively are important and are securing more attention. A National

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Turkey Improvement Plan formulated on the Poultry Plan has been put into force. The North Dakota Poultry Improvement Board has granted funds to the Veterinary Department for use in investigational work on these diseases of turkeys.

The bulk of the cattle specimens received were blood samples to be tested for Bang's disease and milk samples to be tested for Mastitis. The Bang's Disease laboratory has been moved to Bismarck and is under the supervision of the state and federal authorities. The remainder of the specimens were mainly concerned with the positive or negative determination of suspected Anthrax or Blackleg cases. These diseases are not easily diagnosed by practitioners in the field and require laboratory confirmation.

Swine disease diagnosis most commonly made during the past year were as follows: Infectious Necrotic Enteritis, 32; Roundworm Infestation, 29; Pneumonia, 28; and Cholera, 20. Roundworm Infestation and Pneumonia are usually related because the larvae of this parasite spends part of its life cycle in the lung. These findings indicate that inadequate use of available information on swine husbandry is made by swine raisers. The application of a sanitary system of swine husbandry and proper use of preventive vaccination would greatly decrease losses due to swine diseases.

Diseases of sheep encountered have largely been due to parasites or to errors in feeding and management. Parasites were considered as of primary importance in 41 cases, with vitamin A deficiency, Ketosis, pregnancy disease, malnutrition and overfeeding, 17 cases. Active projects on both of these subjects are in progress in this laboratory. During the last year various anthelmintic substances and systems of sheep husbandry have been investigated. A method of dosing sheep with a liquid has been described in the literature. In cooperation with the Extension Service, a circular on a general program of parasite control has been prepared.

The number of specimens submitted from other species of animals are too few to make comment. In one case of Pyelonephritis (Kidney infection) in a horse, the isolation of *Corynebacterium renalis* served as

the basis for a report in veterinary literature. This bacterium is rarely found in the horse.

For a detailed classification of all diagnoses consult the tables which follow.

Specimens and Material Examined
July 1, 1943 to June 30, 1944¹

Species or Material	Lots	Speci mens	Total Speci- mens
Chickens:	451	1572	
Viscera		9	
Feed		8	1589
Turkeys:	88	283	
Blood samples		54	437
Geese:	2	1	
Viscera		1	2
Ducks:	1	5	5
Sheep:	27	59	
Viscera	5		
Heads		1	
Blood		1	
Fecal samples		5	
Wool clippings		2	73
Swine:	56	136	
Viscera		32	
Pork samples		9	
Legs		2	
Heads		1	
Blood samples		2	
Sausage		1	183
Cattle:	55	5	
Ears		11	
Muscle tissue		21	
Heads		2	
Viscera		25	
Blood samples		18	
Bang's tests		76	
Milk samples		28	
Skin scrapings		5	
Lice		1	
Calculi		2	194
Horses:	5		
Urine		1	
Skin scrapings		1	
Roundworms		1	
Fecal samples		2	
Pus		1	6
Dogs:	6	1	
Fecal samples		10	
Skin scrapings		2	
Viscera		1	14
Cats:			
Fecal samples	1	1	1
Feed:			
Mash	8		
Water	1		
Oats	1		
Total lots	702		
Total samples			2504

¹Detailed diagnostic outline as listed in the Thirty Eighth Annual Report of the Livestock Sanitary Board to the Governor.

Diagnoses of Chickens

July 1, 1943 to June 30, 1944

Abscesses	4
Bronchitic (adult)	7
(chicks)	10
Bruise	1
Bumble foot	2
Cholera	37
Coccidiosis	86
Colds	16
Cysts	2
Decomposed	42
Diphtheria	3
Egg Bound	2
Enteritis	4
Everted rectum	3
Eye infection	1
Fibrous feed & litter	8
Flesh mites	1
Fowl pox	5
Frozen comb	1
Gout	1
Histomoniasis	2
Hemorrhage (internal)	2
Impaction:	
Crop	3
Gizzard	6
Intestine	2
Laryngotracheitis	3
Limber neck	3
Lymphomatosis:	
Neural	45
Ocular	3
Visceral	62
Overfeeding	3
Malnutrition	23
Miscellaneous parasitism	8
Mineral deficiency	2
Navel infection (Mushy chick disease)	19
Negative	71
Neuro-respiratory disorder	2
Paratyphoid	5
Pickout	2
Peritonitis	13
Poisoning (potato sprouts)	1
Pneumonia	11
Protein deficiency	1
Pullorum	128
Pus in air sacs	3
Roup	16
Trichomoniasis (crop)	1
Tuberculosis	21
Typhoid	7
Vitamin A deficiency	11
Vitamin D deficiency	12

Diagnoses of Turkeys

July 1, 1943 to June 30, 1944

Abscesses	1
Arthritis	4
Coccidiosis	13
Cholera	4
Decomposed	10

Enteritis	4
Enterohepatitis	20
Fibrous feed & litter	9
Hemorrhage (internal)	1
Impaction:	
Crop	0
Gizzard	3
Malnutrition	5
Negative	22
Navel infection or mushy chick dis.	9
Paralysis	1
Paratyphoid	7
Perosis	6
Pneumonia	5
Pullorum:	
Blood samples. Positive	38
Blood samples. Negative	45
Blood samples. Suspicious	2
Roup	1
Tapeworms	2
Trichomoniasis	4
Typhoid	2
Vitamin D deficiency	2

Diagnoses of Cattle

July 1, 1943 to June 30, 1944

Bang's tests:	
Positive	0
Negative	76
Blood clot (dehydrated)	1
Decomposed	3
Diphtheria (calf)	2
Edema	1
Enteritis	1
Lice (short nosed sucking)	2
Malignant Catarrhal fever, Suspect	1
Milk samples: Mastitis Test	
Positive	13
Negative	0
Negative specimens	66
Paratyphoid	1
Pneumonia	2
Pus samples contain Staph. & Strep. bacteria	2
Tumors	
Lymphocytoma	1
of liver (unidentified)	3
Melanoma-skin	1
Urinary calculi	3

Diagnoses of Swine

July 1, 1943 to June 30, 1944

Abscess	2
Anthrax	1
Brucellosis	1
Bullnose	1
Cholera	20
Cirrhosis of liver	1
Cystitis	1
Decomposed	1
Eczema	1
Enteritis	9

Erysipelas	5	Nodular	2
Flu	1	Stomach worms	16
Foreign matter in stomach	1	Strongyloides	3
Gas infection	1	Tapeworms	4
Incoordination	1	Ticks and eggs	1
Infectious necrotic enteritis	32	Unidentified intestinal worms..	3
Liver hypertrophy	1	Whip worms	1
Mold on sausage	1	Pinkeye	1
Muscular hemorrhage, bruise	1	Pneumonia	6
Necrobacillosis	1	Pregnancy disease (& ketosis) ..	8
Negative	33	Tetanus	2
Pig anemia	4	Urinary Calculi	2
Pig scours	2	Vitamin A deficiency	2
Plant poisoning	1		
Pneumonia	28	Miscellaneous Diagnoses	
Ricketts	1	July 1, 1943 to June 30, 1944	
Roundworms	29	Dogs:	
Roundworms scars	1	Hookworms	1
Salt poisoning	3	Mange	0
Sunburn	4	Negative	6
Tetanus	1	Roundworms	4
		Tapeworms	1
Diagnoses of Sheep			
July 1, 1943 to June 30, 1944			
Abscesses	1	Cat:	
Decomposed	1	Negative fecal sample	
Encephalitis	1	Horses:	
Enteritis	2	Corynebacterium renalis in	
Grub in head	1	urine	
Johne's disease	1	Miscellaneous bacteria from	
Malnutrition	5	lung pus	
Negative	3	Strongyles	
Overfeeding	2	Geese:	
Paratyphoid	1	Fowl cholera	
Parasites:		Negative	
Coccidiosis	5	Ducks:	
Lungworms	6	Botulism	
		Mineral deficiency	

Sunlight Destroys Riboflavin in Milk

RECENT experiments have shown that leaving milk bottles (clear glass) in bright sunlight for two hours destroys nearly one-half of the riboflavin, or vitamin B₂, in the milk. Brown glass bottles or paper bottles gave far greater protection. Exposure of milk to sunlight in such bottles for six hours caused a destruction of only 10 percent of the riboflavin, as compared to 80 percent in the clear bottles. A light-proof box for the milk bottles should be provided if they cannot be taken inside immediately.

Riboflavin is essential for growth and physical well-being. It is one of the vitamins that may be deficient in ordinary diets. Milk is an excellent source of this vitamin for both children and adults, and, therefore, the milk should be cared for so as to save the riboflavin.

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