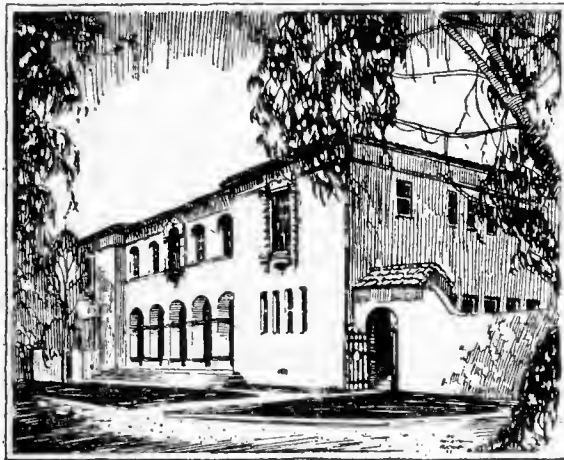


ANNUAL REPORT

ZOOLOGICAL HOSPITAL AND  
RESEARCH LABORATORY

BY

DR. R. A. WHITING



ZOOLOGICAL SOCIETY OF SAN DIEGO

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BULLETIN No. 7

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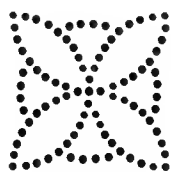
June 1, 1930

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## THE PURPOSE OF THE SOCIETY

1. To advance science and scientific study of nature.
2. To foster and stimulate interest in the conservation of wild life.
3. To maintain a permanent Zoological Exhibit in San Diego.
4. To stimulate public interest in the building and maintenance of a Zoological Hospital.
5. To provide for the delivery of lectures, exhibition of pictures and publication of literature dealing with natural history and science.
6. To operate a society for the mutual benefit of its members for non-lucrative purposes.

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BY  
DR. R. A. WHITING

June 1, 1930

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President Wegeforth, members of the San Diego Zoological Society and visitors:

I take pleasure in submitting the report of the Zoological research activities for the fiscal year of 1929 for the approval of the Society.

Our activities have been concerned chiefly with four lines of research, namely,

Pathological diagnosis and treatment of the diseases of zoological animals.

Pathological diagnosis of poultry diseases.

A serological study of abortion disease in the dairies of San Diego, and

A serological study of human sera with reference to the prevalence of tularemia and undulant fever in San Diego.

X-Ray service has been given by Mr. G. H. McCormack to 40 patients brought to the laboratories by veterinarians. From two to four pictures were taken of 59 subjects. These also included our own hospital cases and normal and well as pathological specimens. We are accumulating several pictures of normal subjects for anatomical reference.

Laboratory facilities have been supplied to four investigators.

Mr. H. G. Godsil has been interested in certain hereditary factors of fish. He has measured several hundred sardines and acquired considerable valuable data.

Mr. Joshua Baily has been interested in the study of hereditary traits of snails. In the course of this study several hundred snails have been collected and propagated in the laboratories. He has experienced considerable difficulty in propagation with the local chlorinated water and has had to use fresh water. Water containing from one-tenth to one percent of ethyl alcohol inhibited the development or killed *Physa*, *Planorbis* and *Lymnae* species of snails. Specimens of the species *Planorbis trivolvis* obtained from Lakes Lindo and Wohlford were found to be heavily infested with nematode parasites.

Dr. Hiram Newton is making bacteriological studies of dermatological material. He has succeeded in cultivating some of the higher fungi that are responsible for troublesome skin diseases.

Dr. E. G. Colby is studying the influence of turtle oil on tuberculosis of human origin.

The hospital has not been used as much perhaps as last year for the treatment of zoological animals. This may be due to the fact that the necessity has not been as great, at least the majority of the cases have been of such nature that they were treated in their respective corrals or in the service yard.

Ten monthly meetings devoted to the discussion of poultry diseases were held in the library. The attendance at these meetings varied from 15 to 55, being composed mostly of poultry breeders and poultry field men. If the discussions were popularized or given more publicity it would be necessary to obtain a larger room in order to take care of the increased attendance as there are more than 700 members in the Poultry Association.

Ten monthly meetings of the San Diego and Imperial Veterinary Medical Association were also held in the building. The average attendance was 18.

Considerable time has been spent in consultation with Physicians and Veterinarians and in conferences with individuals regarding the diagnosis and control of diseases of live stock, pet stock and poultry. No record has been kept of those conferences nor of the numerous visitors shown through the building.

Several visits have been made to herds, flocks and hatcheries where suggestions were given gratis towards the control of the trouble involved. Several similar requests have been refused because conditions did not appear as urgent. These visits have been when absence would least inconvenience the service of the laboratories.

In regard to future needs we have no requests to make at this time in so far as the research laboratories are concerned. However, in regard to the Zoological gardens we would suggest the desirability of erecting two screened corrals behind the research hospital for the quarantine of all new four-footed mammals. We also wish to suggest that a catching chute and squeezer be constructed for the restraint and shifting of deer and other large animals. In connection with shifting, light portable frame or wire hurdles are urgent needs as well as the refitting of corral and alley gates.

The Research Hospital wishes to acknowledge its indebtedness to the Veterinary Division of the College of Agriculture of the University of California at Berkeley and to the Veterinary Department of Purdue University Agricultural Experiment Station at Lafayette, Indiana, for the gifts of cultures and antigen with which we have tested hundreds of cattle and chickens.

The Society is also indebted to Mrs. Mary A. Bailey and son, Mr. J. M. Bailey, 268 South 40th Street, San Diego, for the gift of the veterinary instruments of the late Dr. Bailey. These instruments were valued at \$300.00. The hospital is grateful for this gift and has acknowledged same, however, I would recommend, Mr. President, that some further acknowledgement be extended to the Bailey family by the Society.

#### PATHOLOGICAL DIAGNOSIS OF THE DISEASES OF ZOOLOGICAL ANIMALS

The following necropsy report contains all of the zoological animals that have either died or were killed and have been examined during 1929. The species and number of animals examined are arranged alphabetically in the first portion of the list while the diagnosis and the number of cases found are arranged in order of greatest frequency in the second portion of the list to the right.

## NECROPSY REPORT

*Mammalia*

SPECIES	NUM.	Diagnosis	Number Cases
Agouti .....	1	Gastro-enteritis .....	15
Antelope .....	3	Pneumonia .....	14
Badger .....	3	Violence-Contusions .....	14
Bear .....	3	Undetermined — No lesions.....	12
Buffalo .....	2	Enteritis .....	9
Cats .....	8	Killed by dogs .....	8
Chipmunk .....	1	Destroyed—Humanly .....	7
Coati Mundi .....	2	Cervical fractures .....	5
Deer .....	18	Septic Infection .....	5
Fox .....	11	Emaciation .....	4
Kangaroo .....	15	Exhaustion .....	4
Leopard .....	2	Hemorrhage .....	4
Llama .....	1	Kangaroo Disease .....	4
Monkey .....	20	Hepatitis .....	2
Mountain lion .....	5	Parasitism .....	3
Opossum .....	3	Debility .....	2
Porcupine .....	2	Intestinal Strangulation .....	2
Prairie dog .....	1	Suffocation .....	2
Raccoon .....	1	Tumors—Malignant .....	2
Seal .....	7	Undetermined — Putrefaction .....	2
Sheep .....	2	Anemia .....	1
Skunk .....	3	Drowning .....	1
Squirrels .....	5	Peritonitis .....	1
Weasel .....	3	Intestinal Prolapse .....	1
Wild Dog, Java.....	2	Thrombosis .....	1
Wolf .....	1	Ricketis .....	1
		Ulcers—gastric .....	1

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Total Mammalia.....125

*Aves*

SPECIES	NUM.	Diagnosis	Number Cases
Albatross .....	1	Undetermined — No lesions.....	40
Banana Eater .....	2	Pneumonia .....	35
Barbet .....	1	Enteritis — various forms.....	34
Blackbird .....	3	Hemorrhage .....	21
Booby .....	6	Violence — Contusion.....	20
Buderigar .....	4	Emaciation .....	15
Canary .....	6	Fractures — neck, etc.....	13
Caracara .....	1	Parasitism — Gastro-intestinal.....	11
Currasow .....	1	Nephritis — Pericarditis-Gout.....	10
Cockatoo .....	6	Undetermined — Putrefaction.....	10
Cormorant .....	10	Drowned .....	6
Crane .....	3	Exhaustion — Pulmonary mycosis .....	6

*Aves*—(Continued)

SPECIES	NUM.	<i>Diagnosis</i>	<i>Number Cases</i>
Ducks .....	46	Pulmonary mycosis .....	5
Eagle .....	1	Cloacitis .....	5
Egret .....	6	Diphtheric pharyngitis .....	4
Finch .....	14	Hemorrhagic enteritis .....	4
Frigate Bird .....	1	Nutritional .....	3
Gallinule .....	2	Hepatitis .....	3
Goose .....	1	Tumors .....	2
Grosbeak .....	2	Coccidiosis .....	1
Hawk .....	6	Destroyed Humanely .....	1
Hell diver .....	1	Edema .....	1
Ibis .....	1	Egg bound .....	1
Indigo Bunting .....	2	Occlusion gizzard .....	1
Jay .....	3	Rupture oviduct .....	1
Lory .....	11	Suffocation .....	1
Lovebird .....	4	Tuberculosis .....	1
Macaw .....	2	Ulcers — intestinal.....	1
Mud hen .....	3		
Mynah .....	1		
Nonpareil .....	9		
Owls .....	18		
Parrakeets .....	?6		
Parrots .....	7		
Pea Fowls .....	6		
Pelican .....	3		
Pheasant .....	6		
Pigeon .....	15		
Raven .....	2		
Robin .....	1		
Roulroul .....	1		
Sparrow .....	1		
Spoonie Hen .....	1		
Swan .....	2		
Thrasher .....	1		
Thrush .....	3		
Turkey .....	1		
Weaver .....	4		
Whydah .....	3		
Total Aves.....			258



*Reptilia*

SPECIES	NUM.	Diagnosis	Number Cases
Alligator .....	1	Enteritis—All forms .....	101
Asculapian Snake .....	1	Undetermined — No lesions.....	62
Black Snakes .....	7	Undetermined — Putrefaction .....	59
Boa Snakes .....	11	Stomatitis .....	58
Boyles King .....	24	Pneumonia .....	44
Bull Snakes .....	9	Gastritis .....	32
Chain Snakes .....	2	Peritonitis .....	13
Chameleon .....	1	Pharyngitis .....	13
Chicken Snake .....	2	Hemorrhage .....	11
Coach whip Snake.....	8	Parasitic gastritis .....	10
Corn Snake .....	2	Parasitis enteritis .....	9
Crocodile .....	1	Abscess — Pyemia .....	8
Chuckawalla .....	9	Cystitis .....	7
Emery Pilot .....	2	Emaciation — Starvation .....	7
Fox Snake .....	4	Nephritis .....	7
Garter Snakes .....	35	Drowned .....	6
Gila Monster .....	5	Destroyed humanely.....	5
Gopher Snakes .....	67	Edema .....	5
Hognosed Snake .....	9	Laryngitis .....	5
Horned Toads .....	9	Hepatitis .....	4
Iguana .....	1	Proctitis .....	4
Indigo Snake .....	2	Violence .....	4
King Snakes .....	12	Colitis .....	3
Lizards .....	13	Fractured Vertebrae .....	2
Long-nosed Snake.....	5	Impaction—gastric .....	2
Monitor, Giant .....	2	Impaction — rectal .....	2
Patch-nosed Snakes.....	5	No examination—shipment.....	2
Pilot Black Snakes.....	4	Tuberculosis .....	2
Pythons .....	2	Anemia .....	1
Racers .....	12	Egg bound .....	1
Rainbow Snake .....	1	Exhaustion .....	1
Rattlesnakes .....	75	Gastro—hepatitis .....	1
Skink .....	2	Intussuception .....	1
Terrapins .....	10	Pericarditis .....	1
Tortoises .....	22	Ruptured Intestine .....	1
Turtles .....	76	Salpingitis .....	1
Water Moccasin .....	9	Septicaemia .....	1
Water Snakes .....	11	Ulceration — gastric.....	1
	—	Uuceration — intestinal .....	1
Total Reptilia.....	473		
	—		
Grand total .....	856		

This necropsy list appears much larger this year than in the past. This of itself might indicate a serious state of affairs, yet if mortality percentages are based on specimens that have become acclimated or have lived

at least 30 days from the time of entering the gardens, the resulting averages will be practically the same as last year. Our greatest losses in every class have been in the new accessions. We have yet to diagnose the so-called "new Parrot" disease, psittacosis.

We had considerable grief with distemper in foxes following one shipment from the Orient, but our greatest financial loss has been from local dogs. Directly and indirectly by fright, dogs have cost this Society about \$5000 this year.

In the reptiles our greatest losses are attributable to injured new accessions and to necrotic stomatitis and gastro enteritis. We believe that a large percentage of this trouble is infectious although we are aware that a considerable number of these cases are referable to a dietic or nutritional origin. Attempts in controlling the disease have not proven entirely successful. Strict sanitation has been our best means of control. This disease constitutes a zoological problem of at least national extent. Although external and internal parasites are fairly common, less than five percent of our specimens were seriously parasitised. Attempts in controlling the external parasites of reptiles have lately been more encouraging which leads us to believe that we shall soon be able to successfully exhibit parasite-free specimens.

In connection with the inspection of feed, we have made agglutination tests of 54 horses and mules for glanders. All of these tests were negative. In several rather high titers the results were confirmed by examinations of carcasses without finding evidence of disease.

#### *Pathological Diagnoses of Poultry Diseases*

The past year was our first complete year of this project in cooperation with the San Diego Poultry Association and the San Diego County Farm Bureau.

During this time we examined 333 chickens, 6 ducks, and 63 turkeys from 178 flocks. Infectious diseases probably constitute the greatest apparent loss to poultrymen with the age-old problem of economical production responsible for the greatest actual loss. The latter we have called malnutrition and in the following list it ranks second in prevalence of all that we have received.

## POULTRY DISEASE DIAGNOSIS, 1929

## CHICKENS

<i>Disease</i>	<i>No. Specimens</i>	<i>No. Flocks</i>
Pullorum Disease chicks, B. W. D.....	114	33
Malnutrition .....	50	25
Infectious Paralysis .....	35	19
Coccidiosis .....	32	16
Parasitism Intestinal .....	20	10
Cholera — typhoid .....	17	12
Tumors .....	11	10
External Parasites .....	10	9
Pox — Roup .....	9	8
Pullorum, Diseased hens.....	9	7
Intoxication — Nephritis .....	8	2
Peritonitis — enteritis .....	5	4
Conjunctivitis .....	4	2
Egg concretions .....	3	3
Contusions .....	2	2
Infectious Bronchitis .....	2	2
Vent picking .....	2	2
Bumble foot .....	1	1
Exhaustion — soft shelled egg.....	1	1
Hemorrhagic liver .....	1	1
Moulting .....	1	1
Ulcerating gizzard .....	1	1
Wound gangrene (pox vaccination).....	1	1
	333	156
<i>Ducks</i>		
Cholera .....	5	1
Food Impaction .....	1	1
	6	2
<i>Turkeys</i>		
Food Intoxication .....	18	4
Pullorum Disease (BWD).....	14	1
Malnutrition .....	13	6
Roup — Pox .....	6	2
Rickitis .....	4	1
Blackhead .....	3	3
Intestinal Ulceration .....	3	1
Pneumo-enteritis .....	1	1
Wound Infection .....	1	1
	63	20

Pullorum disease or bacillary white diarrhoea as it is commonly known, is the most important infectious disease of chickens. Since it

is primarily involved in economic production we have given considerable service towards its control.

We obtained 50 blood samples from five flocks of heavy breeds of chickens that had been blood tested. Chicks hatched from these flocks had given trouble to buyers. The buyers blamed the hatcherymen and the hatcherymen blamed the buyers for failure to properly brood their chicks. The results of the blood testing of these flocks showed a prevalence of 18, 20, 21, 26, and 54 percent of infection in the flocks. Four of the flocks were then entirely tested and no further complaints were received last year.

We have blood tested two small flocks of heavy breeds twice with the result that in one case the infection was reduced from 21 to 7 per cent and in the other case from 4 to 1 per cent. There were practically no chick losses the following season, yet the season before they had experienced severe losses in the first case and slight but annoying losses in the second case.

We have received so many complaints from buyers of locally hatched light breeds of chickens that we obtained 50 or more blood samples from each of 14 flocks. The results of these tests showed from 0.4 to 21 percent of infection in those flocks.

#### SEROLOGICAL STUDY OF ABORTION DISEASE IN THE DAIRY CATTLE OF SAN DIEGO

This is a cooperative project with the San Diego dairymen and veterinarians in assisting in the control and eradication of this economic dairy problem.

Blood samples of 523 cattle from 21 herds were tested for agglutinins of *Brucella abortus*; sixty-two animals in seven herds were negative, eighty-nine animals in 14 herds gave positive reactions, an average incidence of nearly 20 per cent. The percentage of reactions in the different herds varied from 3 to 41 per cent. In every case efforts are being made to control and eradicate this infectious disease.

##### *A Serological Study of Human Sera with Reference to Undulant Fever*

This project is being carried on in cooperation with local hospitals and physicians in order to determine the incidence of undulant fever in humans and possible local sources of the infection.

Twenty samples of human blood serum were tested for agglutinins of *Brucella abortus*; one gave a high partial reaction. The case is now convalescing.

One patient's serum gave a high partial reaction to pullorum disease antigen of chickens.

No tests have been made for tularemia. We will make several this year.

R. A. WHITING.







