

Nutritional and Health Requirements for Development
and Maintenance of Conventional Animal Colonies

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OBJECTIVE: The objective of this study is to characterize and improve the quality of conventionally produced and maintained laboratory animals in Thailand and to investigate those problems that may be of significance to medical research.

DESCRIPTION: Monthly disease surveillance programs have been instituted in all the rodent production colonies to determine the incidence and extent of parasitic infestations, latent virus infections, bacterial infections, and presence of other pathological conditions which might affect the outcome of investigations utilizing these animals as biological models. The information obtained from this disease screening program is used to continually evaluate the quality of animals bred in the laboratory and to assure their uniformity. Locally purchased animals, such as primates, are also subjected to a variety of diagnostic examinations during their extensive quarantine period and at intervals during their stay in the laboratory. Every animal that dies spontaneously or shows signs of non-experimentally induced disease, is necropsied and the cause of illness is determined if possible. The resulting body of information is analyzed to determine what problems exist in the colony and what improvements should be made in the standards of husbandry, management, and medical care to bring about their solution.

PROGRESS: Information concerning the deaths and significant illnesses of all those animals in the colony except rodents and poultry are present in Table 1. With the death of 24 gibbons during the report period, mortality in this species was especially high. The most important cause of death in the gibbons were respiratory tract infections. Following an experiment in which a small number of gibbons were inoculated with two strains of influenza virus, an epizootic began which resulted in significant illness in at least 30% of all the animals in the gibbon colony and the deaths of four animals. A manuscript describing this epizootic, which is one of the few instances where human influenza virus has caused a spontaneous clinical infection in animals, has been submitted for clearance and subsequent publication. Three months following this outbreak there was another outbreak of respiratory disease which claimed the lives of another four animals. Although attempts were made to determine the etiologic agent involved, serologic studies and attempts at virus isolation were unsuccessful. Both the clinical course of the second epizootic and the pathological lesions in the dead animals resembled the first outbreak caused by influenza virus. Another problem in the gibbon, which also manifests itself frequently in the lungs, is the continuing infections caused by migrating Strongyloides larvae. Routine stool examinations show that this parasite is widespread through the colony and additional pathological evidence confirms its importance as reported in last year's annual report. Preventive measures being taken to reduce infections consist of steam cleaning cages at least once a week if possible and worming the entire colony at the time blood samples are collected each

quarter. It is too early at this time to assess the effectiveness of these measures. No deaths occurred during the year from malignant lymphoma in contrast to the four deaths reported last year. In screening blood samples taken from each of the gibbons every quarter no further developing cases of lymphoma have been discovered. Two deaths in gibbons were of special interest. One occurred in a gibbon that had been splenectomized and used in studies with malaria. It suddenly developed signs of an acute hemolytic crisis and died within 8 hours. Necropsy lesions and examination of stained blood smears showed that malaria parasites of a type found only in gibbons were responsible for its death. The other case involved a gibbon that had been given water seeded with Pseudomonas pseudomallei as part of a study concerning the infectivity of this organism. Following an illness of several days accompanied by a high fever, the animal died. At necropsy the lungs were discolored and contained many small abscesses which resembled the lesions of melioidosis described in humans. Nevertheless, Chromobacterium janthinum was isolated from these lesions. The finding of this bacteria in gibbons supports findings reported by Groves, et. al. in Kuala Lumpur in which similar deaths were caused in several gibbons by the same organism. Macaques, in contrast to the gibbons, appear to be much hardier animals. Only one death occurred in a rhesus monkey; the death was apparently resulted from blockage of the urethra by calculi. There continue to be many quarantined animals that are infected with Shigella or Plasmodium inui. Both conditions respond favorably to treatment and have not caused problems later. None of the primates in the colony reacted to the intrapalpebral inoculation of mammalian tuberculin during routine testing.

Disease problems in the rodent breeding colonies were negligible. There has been no reappearance in newly established colonies of the Salmonella infections that necessitated the destruction of both the hamster and guinea pig colonies. It is likely that better security and sanitation procedures have reduced the likelihood of such infections being introduced into the colony. The bacteriologic findings obtained from the monthly disease screening program are summarized for the year in Table II. The bacterial fauna of these animals is unremarkable. Of the 220 mice examined, eleven had gross lesions of the lungs or respiratory lesions identical with those described last year in the study on murine pneumonia. There were no other gross lesions observed except in one animal with a fatty liver. A small percentage of rats, approximately 5%, also have lesions resembling chronic murine pneumonia. It is possible that the incidence of this disease will be further reduced as the Sprague Dawley rats are replaced with the Fischer strain which is less susceptible to this disease. The rats were also infected to a small degree with the tapeworm cyst, Cysticercus fasciolaris, which most likely results from contact with bedding contaminated by dogs or cats. In hamsters there was an approximately equal incidence, less than 2%, of pulmonary and hepatic lesions whose cause was undetermined. Pneumonic lesions were present in less than 2% of the animals necropsied and were the only lesions of significance found. Rats and guinea pigs were free of endoparasites, but mice were found to be infected with pinworms, Aspicularis tetraoptera and Syphacia obvelata, and the dwarf tapeworm, Hymenolepis nana. Unidentified helminth ova were found in the feces of two of the hamsters examined. The control of these endoparasites is virtually impossible without having even hot water in the areas where cages are washed. The only ectoparasites found in the rodents were mild louse infestations on rats and guinea pigs.

Table 1. Summary of Deaths and Significant Illnesses of Animals in the SMRL Animal Colony from April 1969—March 1970

Species	Code#	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Gibbon White-handed	S-1	Constipation, inappetence, dehydration, weakness.	Blood cult: <u>Chromo-bacterium janthinum</u> Heart: _____ Lung: _____ Kidney: <u>E. coli</u> <u>S. intest.</u> <u>GPO 119:B14</u> Stool: _____	1. Pneumonia 2. Hepatic 3. Cysticercosis, heart 4. Strongyloidosis	Stool exam: <u>Strongyloides</u> larvae	
Gibbon White-handed	S-12	Depression, loss of appetite, vomiting & dehydration.	Stool: <u>E. coli</u> 0127: B8 and 0112: B11	Not Completed.	Blood smear: (-ve)* Stool exam: (-ve)	
Gibbon White-handed	S-30	Found dead in cage	Mediastinal lymphnode: <u>Enterobacter aerogenes</u> Lung: _____ Stomach: _____ Heart: <u>Providencia</u> and <u>E. coli</u> Intestine: <u>E. coli</u> Liver: <u>No bacterial growth</u> after 48 hrs. incubation.	1. Pneumonitis, interstitial, moderate, with hemorrhage, lung. 2. Congestion, moderate, kidney, brain. 3. Nephritis, interstitial, chronic, focal, kidney. 4. Congestion, severe, liver. 5. Autolysis, stomach, liver, brain.	Virus isolation: (-ve)	
Gibbon White-handed	S-62	Found dead in cage	Small intestine: <u>Shigella sonnei</u> form I Kidney: _____ Liver: <u>Proteus mirabilis</u> Lung: _____	Not Completed.	None	

*Negative

Table 1. (Continued)

Species	Code#	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Gibbon, White-handed	S-62	Found dead in cage	<p><u>Small intestine:</u> <u>Shigella sonnei</u> form I</p> <p><u>Kidney:</u></p> <p><u>Liver:</u> <u>Proteus</u></p> <p><u>Lung:</u> <u>mirabilis</u></p> <p><u>Nodule from diaphragm:</u></p>	Not Completed.	None	
Gibbon, White-handed	S-64	Found dead in cage	<p><u>Pleural effusion:</u> <u>Staphylococcus epidermidis</u> and <u>alpha-Streptococcus</u></p> <p><u>Kidney:</u> <u>alpha-Streptococcus</u></p> <p><u>Heart bld:</u> <u>alpha-Streptococcus</u></p> <p><u>Liver:</u> <u>E. coli</u> <u>Enterobacter cloacae</u> <u>alpha Streptococcus</u></p>	<ol style="list-style-type: none"> 1. Pneumonia, exudative, subacute, lung. 2. Congestion moderate lung, adrenal, kidney, uterus, liver, tonsil. 3. Lymphadenitis, suppurative, with hemorrhage, lymph node. 4. Autolysis, intestine, kidney, liver. 5. Basal cell tumor, skin. 	None	
Gibbon, White-handed	S-79	Constipation, inappetence, dehydration, weakness	<p><u>Lung:</u> <u>Proteus</u> spp.</p> <p><u>Liver:</u> <u>E. coli</u>, <u>Aerobacter aerogenes</u> <u>Pseudomonas</u> spp. and <u>Proteus</u> spp.</p> <p><u>Small int:</u> No enteric bacterial pathogen detected.</p> <p><u>Cecum:</u></p>	<ol style="list-style-type: none"> 1. Pulmonary strongyloidosis, 2. Pneumonia 3. Pulmonary hemorrhage 4. Multiple abscesses 	<p><u>Stool exam:</u> Numerous strongyloides larvae</p>	

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Gibbon, White-handed	S-80	Found dead in cage	<u>Liver:</u> No bacterial growth after 24 and 48 hrs. incubation	<ol style="list-style-type: none"> 1. Pneumonia, suppurative, marked, lung. 2. Reticular hyperplasia, with hemorrhage, lymph node 3. Enteritis, subacute, with <u>Balantidium coli</u>, large intestine 4. Hepatitis, periportal, mild, liver. 5. Congestion, moderate, liver, kidney, adrenal, cerebrum, pars 6. Nephritis, interstitial, chronic, kidney 7. Extramedullary hematopoesis, lymph node. 	None	
Gibbon, White-handed	S-84	Found dead in cage	<u>Trachea:</u> <u>Proteus</u> spp. <u>Enterobacter</u> spp. <u>Lung:</u> <u>Proteus</u> spp. <u>Liver:</u> <u>alpha Streptococcus</u>	<ol style="list-style-type: none"> 1. Pneumonia, suppurative, diffuse, with hemorrhage, lung. 2. Spenitis, severe, with necrosis, spleen. 3. Congestion, moderate, liver, heart. 	None	
Gibbon, White-handed	S-87	Found dead in cage	<u>Dura-mater:</u> <u>Enterobacter</u> <u>Pleural fluid:</u> <u>aerogenes</u> <u>Peritoneal fluid:</u>	<ol style="list-style-type: none"> 1. Pneumonitis interstitial, subacute, moderate, lung 2. Congestion, moderate, with autolysis, liver, brain, kidney. 	Virus isolation: (-ve)	

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Gibbon, White-handed	B-50	None	<p><u>Lung</u>: <u>Paracolobactrum intermedium</u>, <u>E. coli</u></p> <p><u>Liver</u>: <u>Paracolobactrum intermedium</u>, <u>E. coli</u>, <u>alpha Streptococcus</u></p> <p><u>Heart</u> <u>bid</u>: No bacterial growth after 48 hrs. incubation.</p>	<ol style="list-style-type: none"> 1. Pulmonary strongyloidiasis 2. Pulmonary hemorrhage 3. Pneumonia 	None	
Gibbon, White-handed	B-57	Found dead in cage	<p><u>Pericardial fluid</u>: <u>Enterobacter cloacae</u>, <u>E. coli</u>, <u>Proteus mirabilis</u>.</p> <p><u>Vagina</u>: <u>Enterobacter cloacae</u>, <u>E. coli</u>, <u>Proteus mirabilis</u></p> <p><u>Liver</u>: <u>Enterobacter cloacae</u></p> <p><u>Lung</u>: No bacterial growth after 48 hrs. incubation.</p> <p><u>Heart</u> <u>bid</u>: incubation.</p>	<ol style="list-style-type: none"> 1. Pleuritis, chronic, moderate, lung 2. Pneumonia, acute, moderate with diffuse hemorrhage, lung. 3. Fatty degeneration, moderate, kidney 4. Nephritis, interstitial, chronic, focal, kidney. 5. Congestion, moderate, liver. 6. Lymphoid hypoplasia, spleen. 7. Autolysis, liver, large intestine pancreas, adrenal. 	<p><u>Stool exam</u>: <u>Strongyloides</u> ova and larvae</p>	
Gibbon, White-handed	B-30-S	Diarrhea occurred for about 2 wks. with occasional vomiting. Anorexia & dehydration 2 days before death.	<p><u>Stool</u>: No enteric bacterial pathogen detected.</p>	<ol style="list-style-type: none"> 1. Pneumonia, interstitial, with congestion and parasites, lung. 2. Nephritis, interstitial, chronic, focal, with autolysis, kidney. 3. Autolysis, marked, with nematodes, intestine. 4. Autolysis, with multiple cysticercosis liver. 	<p><u>Stool</u>: No ova and parasites seen.</p>	

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Gibbon, White-handed	B-31-S	Acute parasitic anemia.	<u>Blood</u> : No bacterial growth after 24 and 48 hrs. incubation.	<ol style="list-style-type: none"> 1. Malaria 2. Interstitial nephritis, mild. 3. Alveolar emphysema, mild. 4. Hepatitis, focal. 	<u>Blood smear</u> : Malaria para- sites.	
Gibbon, White-handed	P-10	Found dead in cage.	<u>Stool</u> : No enteric bacterial pathogen detected.	<ol style="list-style-type: none"> 1. Nephritis interstitial, chronic, kidney. 2. Congestion, moderate, heart, liver, meninges, cerebrum cerebellum. 3. Cysticercus cyst, cerebrum. 4. Hemorrhage massive, lung. 	<u>Stool exam.</u> : <u>Giardia</u> <u>lamblia</u> cyst, <u>E. coli</u> cyst, <u>Strongyloides</u> larvae.	
Gibbon, White-handed	B-57			<ol style="list-style-type: none"> 8. Necrosis, hemorrhage, fallopian tube. 9. Endometritis, with hemorrhage, uterus. 10. Enteritis, subacute, with nematode larvae, small intestine. 		
Gibbon, White-handed	B-79	Presumed dead	None	None	None	Kled Kaoo Island.

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other finding	Remarks
Gibbon, White-handed	B-80	Respiratory failure due to acute pulmonary hemorrhage.	<u>Trochea</u> : No results <u>Lung</u> :	<ol style="list-style-type: none"> 1. Hemorrhage, severe, lung. 2. Nephritis, interstitial, mild, kidney. 3. Congestion, moderate, kidney, liver, intestine. 4. Autolysis, liver, intestine. 	None	
Gibbon, White-handed	B-87	Found dead in cage	<u>Liver</u> : No bacterial <u>Heart bld</u> : growth after 48 hrs. incubation <u>Large intestine content</u> : No enteric bacterial pathogen detected.	<ol style="list-style-type: none"> 1. Pneumonia, acute, severe with edema and hemorrhage, lung 2. Congestion, moderate, with fatty degeneration, kidney. 3. Splenitis, moderate, spleen. 4. Lymphadenitis, with necrosis, lymph node. 5. Necrosis, severe, liver. 6. Enteritis, subacute, severe, with peritonitis, large intestine 7. Metritis, necrotic, acute, uterus. 	<u>Stool exam</u> : <u>E. coli cyst</u> <u>Virus isolation</u> : (-ve)	
Gibbon, White-handed	S-66	Complete fracture of the distal end of left femur. Amputated due to infection.	None	None	None	Treat with Cortisone acetate and chloramphenicol, intramuscularly.

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Gibbon, White-handed	S-73	Watery diarrhea	None	None	None	Kaopectate and Terra- mycin orally.
Gibbon, White-handed	VM-64	Endoparasites	None	None	Stool exam.: Whip worm ova	Treat with thiobenda- zole orally.
Gibbon, White-handed	VM-65	Endoparasites	None	None	Stool exam.: Whip worm ova.	Treat with thiobenda- zole orally.
Gibbon, White-handed	VM-66	Endoparasites	None	None	Stool exam.: Hook worm ova.	Treat with thiobenda- zole orally.
Monkey, Rhesus	KL-9	Found dead in cage.	Urine: <u>Bacillus</u> spp. Lung: <u>Pseudomonas</u> spp. <u>Proteus</u> spp.	1. Peribronchitis, chronic, with edema and lung. 2. Congestion with autoly- sis, liver. 3. Urethritis, purulent, with necrosis penis. 4. Nephritis, focal subacute, with autolysis, kidney. 5. Necrosis, focal heart.	Calculi analy- sis not completed.	

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Gibbon, White-handed	PC-2	Subnormal temp., distended belly, dilated pupils, loss of appetite, weakness, dehydration, watery diarrhea, and prostration. About 10 ml of clear ascitic fluid was present with enlargement of mesenteric lymph nodes and gall bladder.	<u>Rectal swab</u> : No enteric bacterial pathogens detected.	<ol style="list-style-type: none"> 1. Enteritis, mucoid, severe, with nematodes, large intestine. 2. Pneumonia, moderate, with hemorrhage, lung. 3. Autolysis and congestion, liver, kidney, brain. 	None	
Gibbon, White-handed	PC-3	Anesthetic accident.	None	<ol style="list-style-type: none"> 1. Pneumonia, interstitial, acute, severe, lung. 2. Congestion, moderate, liver. 3. Congestion, severe, kidney, brain. 	<u>Virus isolation</u> : (-ve)	
Gibbon, Capped	VM-17	None	None	None	None	Suffocation during handling
Gibbon, White-handed	PC-1	Watery diarrhea, Strongyloidosis.	None	None	<u>Stool exam.</u> : <u>Strongyloides</u> larvae.	Treat with thiobendazole orally.

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Gibbon, White-handed	B-46	Diarrhea	<u>Stool</u> : No enteric bacterial pathogen detected.	None	None	Symptomatic treatment.
Monkey, Rhesus	KL-14	None	<u>Spleen</u> : <u>Enterobacter</u> spp.	1. Degeneration, vacuolar, moderate, liver. 2. Pigment, lung, spleen.	<u>Blood smear</u> : (P. Inuj + ve)	
Monkey, Cynomolgus	MS-91	Endoparasites	None	None	<u>Stool exam</u> : <u>Hook worm</u> ova, <u>Strongyloides</u> larvae.	Treat with thiobendazole orally.
Monkey, Cynomolgus	MS-92	Endoparasites	None	None	<u>Stool exam</u> : <u>Hook worm</u> ova, <u>Strongyloides</u> larvae, <u>Giardia</u> <u>lamblia</u> cyst.	Treat with thiobendazole orally.
Monkey, Cynomolgus	MS-93	Endoparasites	None	None	<u>Stool exam</u> : <u>Hook worm</u> ova, <u>Strongyloides</u> larva, <u>I. butschlii</u> cyst	Treat with thiobendazole orally.
Monkey, Cynomolgus	MS-94	Endoparasites	None	None	<u>Stool exam</u> : <u>Hook worm</u> ova, <u>Strongyloides</u> larvae.	Treat with thiobendazole orally.

* Positively

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Monkey, Cynomolgus	MS-95	Endoparasites	None	None	Stool exam.: Hook worm ova, <u>E. coli</u> cyst, <u>Giardia lamblia</u> cyst.	Treat with thiobendazole orally.
Monkey, Cynomolgus	MS-96	Endoparasites	None	None	Stool exam.: Hook worm ova, <u>Strongyloides</u> larvae, <u>E. coli</u> cyst.	Treat with thiobendazole orally.
Monkey, Cynomolgus	MS-97	Endoparasites	None	None	Stool exam.: Hook worm ova.	Treat with thiobendazole orally.
Monkey, Cynomolgus	MS-98	Primate malaria	None	None	Blood smear: (P. Inui + ve)	Treat with Primaquine PO ₄ and Resorchin, intramuscularly.
Monkey, Cynomolgus	MS-100	Endoparasites	None	None	Stool exam.: Hook worm and Whip worm ova.	Treat with thiobendazole orally.

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Monkey, Cynomolgus	MS-101	Endoparasite	None	None	Stool exam.: <u>Strongyloides</u> larvae. None	Treat with thiobenda- zole orally.
		Shigellosis	Stool: <u>Shigella sonnei</u> form I	None	Blood smear: (P. inui + ve)	Treat with Chloromy- cefin, intra- muscularly.
		Primate malaria	None	None		Treat with Primaquine PO ₄ and Re- sorcin, intra- muscularly.
Monkey, Cynomolgus	MS-102	Endoparasite	None	None	Stool exam.: <u>Strongyloides</u> larvae.	Treat with thiobenda- zole orally.
		Endoparasite	None	None	Stool exam.: Hook worm ova Whip worm ova, and <u>Strongy-</u> <u>loides</u> larvae.	Treat with thiobenda- zole orally.
Monkey, Cynomolgus	VM-55	Endoparasite	None	None	Stool exam.: Hook worm ova, <u>Strongy-</u> <u>loides</u> larvae, <u>E. coli</u> cyst, <u>I butschlii</u> cyst. None	Treat with thiobenda- zole orally.
		Shigellosis	Stool: <u>Shigella sonnei</u> form	None		Antibiotic treatment.
Monkey, Cynomolgus	VM-56	Endoparasites	None	None	Stool exam.: Hook worm ova, <u>Strongy-</u> <u>loides</u> larvae, <u>Giardia</u> <u>lamblia</u> cyst.	Treat with thiobenda- zole orally.

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Monkey, Cynomolgus	VM-58	Shigellosis Endoparasites	<u>Stool: Shigella sonnei form I</u> None	None None	None <u>Stool exam.:</u> <u>Hook worm</u> ova, Whip worm ova.	Antibiotic treatment. Treat with thiobenda- zole orally.
Monkey, Cynomolgus	VM-59	Endoparasites	None	None	<u>Stool exam.:</u> <u>Hook worm</u> ova, Whip worm ova, <u>E. coli</u> cyst.	Treat with thiobenda- zole orally.
Monkey, Cynomolgus	VM-60	Shigellosis Primate malaria Endoparasites	<u>Stool: Shigella sonnei form I</u> None None	None None None	None <u>Blood smear:</u> (P. Invi + ve) <u>Stool exam.:</u> <u>Hook worm</u> ova, Whip worm ova.	Antibiotic treatment. Anti-malaria treatment. Treat with thiobenda- zole orally.
Monkey, Cynomolgus	VM-67	Endoparasites	None	None	<u>Stool exam.:</u> <u>Strongyloides</u> larvae.	Treat with thiobenda- zole orally.
Monkey, Cynomolgus	VM-68	Endoparasites	None	None	<u>Stool exam.:</u> <u>Strongyloides</u> larvae.	Treat with thiobenda- zole orally.

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Monkey, Cynomologus	VM-69	Endoparasites	None	None	Stool exam: Whip worm ova and <u>Strongyloides</u> larvae.	Treat with thiobenda- zole orally.
Monkey, Cynomologus	VM-70	Endoparasites	None	None	Stool exam: Hook worm ova.	Treat with thiobenda- zole orally.
Monkey, Cynomologus	VM-72	Shigellosis Endoparasites	Stool : <u>Shigella</u> <u>flexneri 2</u> None	None None	None Stool exam: <u>Strongyloides</u> larvae.	Antibiotic treatment. Treat with thiobenda- zole orally.
Monkey, Cynomologus	VM-73	Primate mararia Endoparasites	None None	None None	Blood smear: (P. inui + ve) Stool exam.: <u>Strongyloides</u> larvae.	No treat- ment. Treat with thiobenda- zole orally.
Monkey, Cynomologus	VM-74	Endoparasite	None	None	Stool exam.: <u>Strongyloides</u> larvae.	Treat with thiobenda- zole orally.

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology findings	Other findings	Remarks
Monkey, Cynomolgus	VM-75	Endoparasite	None	None	Stool exam.: <u>Strongyloides</u> larvae.	Treat with thiobendazole orally.
Monkey, Cynomolgus	VM-76	Endoparasite	None	None	Stool exam.: <u>Hook worm</u> ova, <u>Strongyloides</u> larvae.	Treat with thiobendazole orally.
Monkey, Cynomolgus	VM-77	Endoparasite	None	None	Stool exam.: <u>Strongyloides</u> larvae.	Treat with thiobendazole orally.
Monkey, Cynomolgus	VM-78	Primate malaria Endoparasite	—	—	Blood smear: (P. inui + ve) Stool exam.: <u>Hook worm</u> ova.	No treatment. Treat with thiobendazole orally.
Monkey, Stumptailed.	VM-79	Endoparasite	None	None	Stool exam.: <u>Hook worm</u> ova.	Treat with thiobendazole orally.

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology finding	Other findings	Remarks
Canine	Pup #1	Died due to air passage obstruction during anesthesia.	None	None	None	Dirofilaria- sis Study.
Canine	Pup #2	Demodectic mange	None	None	Skin scrap- ping: <u>Demodex</u> <u>canis.</u>	Treat with "Ectoral" and B-complex.
Canine	Pup #4	Canine Distemper	None	None	None	Antibiotic and supporting treatment.
Feline	#103	Gangrene, wet, hind quarter. Found dead in cage.	None	None	None	Treated ex- perimentally with "Ancyloj", subcutane- ously.
Feline	#106	Endoparasites	None	None	Stool exam.: <u>Hook worm</u> ova.	Treated ex- perimentally with "Ancyloj", subcutane- ously.
Feline	#109	Endoparasites	None	None	Stool exam.: <u>Hook worm</u> ova.	Treated ex- perimentally with "Ancyloj", subcutane- ously.

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology findings	Pathology finding	Other findings	Remarks
Feline	#111	Endoparasites	None	None	Stool exam: Hook worm ova	Treated experimentally with "Ancylo", subcutaneously.
Feline	#112	Endoparasitise	None	None	Stool exam: Hook worm ova.	Treated experimentally with "Ancylo", subcutaneously.
Feline	#113	Endoparasites	None	None	Stool exam: Hook worm ova.	Treated experimentally with "Ancylo", subcutaneously.
Feline	#114	Endoparasites	None	None	Stool exam: Hook worm ova.	Treated experimentally with "Ancylo", subcutaneously.
Bovine	—	Unknown	None	1. Mesenchymona	Stool exam: Hook worm ova.	Treated experimentally with "Ancylo", subcutaneously.
Bovine	—	Unknown	None	1. Pneumonia, lobar, acute	None	

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology finding	Pathology findings	Other findings	Remarks
Bovine	D1-23	Depression, abdominal distension, but normal pettite.	Lung: <u>Proteus spp.</u> Intestine: <u>Proteus spp.</u> Heart bldg: No bacterial growth after 72 hrs. incubation.	<ol style="list-style-type: none"> 1. Congestion, moderate, with autolysis, lung. 2. Congestion and hemorrhage, lymph node. 3. Enteritis, acute, diffuse, with autolysis, small intestine. 4. Serositis, purulent, serosa, bladder. 5. Congestion, mild, liver. 6. Inflammation, purulent, spermatic cord. 	None	
Ovine	#1	Neoplasia in the posterior nares, coughing and sneezing with nose bleeding, labored breathing and loss of weight.	Post. nares: <u>Staphylococcus epidermidis</u> , <u>alpha Streptococcus</u> , <u>Diphtheroids</u> .	<ol style="list-style-type: none"> 1. Granuloma, peribronchial, lung. 2. Fat infiltration, periportal, moderate, liver. 3. Adenocarcinoma, turbinates. 	None	Sacrificed
Ovine	#28	None	Abd. fluid: <u>Proteus mirabilis</u> , <u>Sarcina spp.</u> , <u>Streptococcus fecalis</u> , <u>Staphylococcus aureus</u> , <u>Bacillus spp.</u> (not <u>B. anthracis</u>) and <u>Enterobacter aerogenes</u> Thoracic fluid: <u>Staphylococcus aureus</u> , <u>Proteus mirabilis</u> , <u>Enterobacter aerogenes</u> .	<ol style="list-style-type: none"> 1. Periportal hepatitis 2. Toxis hepatitis. 3. Renal hemosiderosis. 4. Cortical necrosis, kidney. 	None	
Ovine	#29	Dystocia	None	None	None	
Ovine	#35	None	None	None	None	Decayed

Table 1. (Continued)

Species	Code #	Nature of Death or Clinical symptoms	Bacteriology finding	Pathology findings	Other findings	Remarks
Ovine	#45	Shedding soft stool and stiff gait, and separate from the flock.	Heart bld: <u>alpha Streptococcus</u>	1. Autolysis, with bacteria, liver, spleen, intestine. 2. Congestion, moderate, lung. 3. Necrosis, moderate, kidney.	None	
Ovine	#79	Stiffness of the extremities, persistent tremor, grinding of teeth and salivation, temp. 108°F.	Swab from spleen: <u>Bacillus spp. (not B. anthracis), Aerobacter cloacae, Pseudomonas spp.</u>	1. Congestion and edema, moderate, lung. 2. Congestion, moderate, liver. 3. Funiculitis, acute and chronic, with necrosis, spermatific cord.		
Rabbit New Zealand White	-	Stomach rupture	Lung: No bacterial growth after 72 hrs. incubation. Liver: <u>Staphylococcus epidermidis, Enterobacter spp.</u>	1. Hemorrhage and edema, lung. 2. Congestion, moderate, liver.		
Rabbit New Zealand White	-	Progressive weight loss; extremely emaciated and rear quarters soiled.	Lung: <u>E. coli</u> , Alpha streptococcus Liver: <u>E. coli</u>	1. Pneumonitis, interstitial, mild, with edema and congestion, lung. 2. Congestion, moderate, kidney. 3. Necrosis, midzonal, with coccidia, liver.	None	
Rabbit New Zealand White	-	Found dead in cage.	Lung: <u>Proteus spp. E. coli</u> Uterus: <u>Proteus mirabilis</u> Heart bld: <u>No bacterial growth after 24 and 48 hrs. incubation.</u>	Not Completed	None	

Table II. Bacteriologic findings—Breeding Colony Disease Screening Program

Animal	Organs Cultured	Proteus Spp.	Bacillus Spp.	Pseudomonas	Salmonella-Streptococcus	Micrococcus	S. epidermidis	Diphtheroids	Paracolon	Providencia	Enterobacter aerogenes	Proteus mirabilis	E. Coli	A. aerogenoides	P. coliforme	S. aureus	Shigella flexneri II	Average # Organisms per # Animal Screened
MICE	Lung	2	3		63	42	33	1		28			1					25/220
	Stool	140		12					6	16	4		139				1	53/220
RATS	Lung		7		55	8	29											25/200
	Stool	72		53							1		98		10			47/200
HAMSTERS	Lung	16			37		16			5								19/165
	Stool	59		8						31			12			5		23/165
GUINEA-PIGS	Lung	6	2		7		13			6	2		37	3				9/110
	Stool	24	41	26														16/110