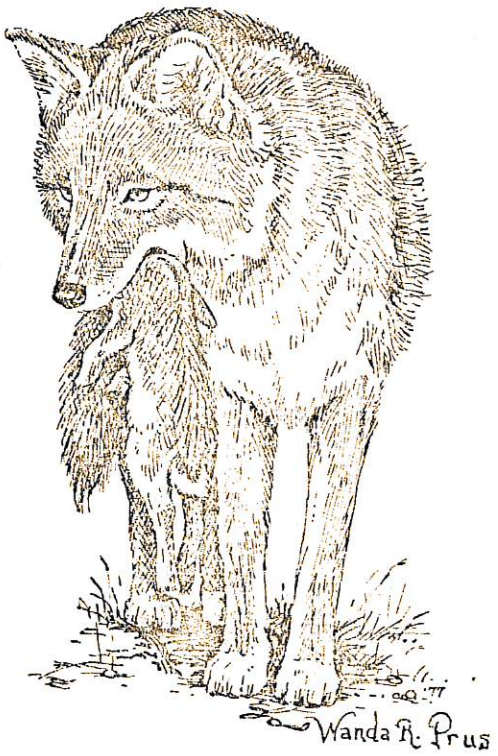
29th Annual Midwestern Conference of Parasitologists



Kansas State University

Manhattan, Kansas

June 9-11, 1977

NOTE: To keep costs low for students the local committee opted for limited dormitory service only (bedding). Visitors should plan to furnish their own towel, washcloth and soap.

[illegible] MIDWESTERN CONFERENCE OF PARASITOLOGISTS
Affiliate American Society of Parasitologists

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OFFICERS - 29th A.M.C.O.P.

Presiding Officer ..... T. T. Dunagan
Program Officer ..... William D. Lindquist
Secretary-Treasurer ..... William H. Coil

Local Arrangements Committee ..... D. J. Ameel
..... William D. Lindquist

ACKNOWLEDGMENTS

A.M.C.O.P. expresses its gratitude to the following organizations whose contributions have made the 29th meeting both enjoyable and meaningful:

ANN ARBOR BIOLOGICAL CENTER
for the G. R. LaRue Award

ELI LILLY COMPANY
for the C. A. Herrick Award

KANSAS STATE UNIVERSITY
College of Veterinary Medicine
Department of Infectious Diseases

PROGRAM

June 9	4:00 - 7:00 P.M.	- Registration; Lobby of Derby Food Center
	8:00 - 11:00 P.M.	- Hospitality at Ramada Inn, room 609 (Cash bar)
June 10	8:00 - 10:00 A.M.	- Registration; Lobby of Derby Food Center
	8:00 - 9:00 A.M.	- Demonstration setup; Veterinary Medical Teaching Building (VMT), room 204
	9:00 A.M.	- Welcome; Dean Trotter, VMT, room 201
	9:30 A.M.	- Wildlife Parasite Panel; VMT, room 201

1. Dr. Gerald D. Schmidt
   Department of Biological Sciences
   University of North Colorado
2. Dr. Charles P. Hibler
   Wildlife Disease Center
   Colorado State University
3. Dr. Glenn L. Hoffman
   Fish Farming Experiment Station
   USFWS, Stuttgart, Arkansas
4. Dr. James F. Daly
   Department of Microbiology and Immunology
   University of Arkansas Medical Center

- Discussion

LUNCH: Derby Food Center if checked on reservation or elsewhere

1:00 - 3:00 P.M.	- Demonstrations; VMT, room 204
3:00 - 5:00 P.M.	- Papers; VMT, room 201
5:00 - 5:30 P.M.	- Business Meeting
6:30 P.M.	- Banquet; Student Union Banquet Address: "Snails, Dollars, D.N.A. and Worms" Banquet Speaker: Dr. Austin J. MacInnis Department of Biology, U.C.L.A. Los Angeles, California 90024
9:00 P.M.	- Open House - Dr. Wm. D. Lindquist 1620 Baltimore Terrace
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11:00 A.M.	- Business Meeting; VMT, room 201

Local Committee and Parasitologists

Ameel	Ackert Hall, room 316	532-6615
Lindquist	Vet. Med. Sci. Bldg., room 333	532-5674
Hansen	Ackert Hall, room 232	532-6615
Leland	Waters Hall, room 139	532-6147

DEMONSTRATIONS

**1. THE DEVELOPMENT OF AN IN VITRO SYSTEM FOR ACTIVATION OF ASCARIS SPERMATOZOA. M. K. Abbas and G. D. Cain, University of Iowa.

2. COLLAGEN SYNTHESIS IN VITRO BY ISOLATED CUTICLE-HYPODERMIS FROM ASCARIS LUMBRICOIDES. G. D. Cain, J. Garwood and L. Davidsen, University of Iowa.

**3. GROWTH OF SELECTED TRYPANOSOMATIDAE ON BLOOD-AGAR PLATES. Amy Doran Keppel and J. Janovy, Jr., University of Nebraska-Lincoln (Abstract - Paper #6; page 17)

**4. LACUNAR CHANNELS AND HOW TO SEE THEM. Donald M. Miller and T. T. Dunagan, Southern Illinois University. (No abstract)

**5. FACTORS INFLUENCING HEMOCYTE NUMBERS IN BIOMPHALARIA GLABRATA. Jeffry Stumpf, University of Minnesota.

6. SCANNING AND TRANSMISSION ELECTRON MICROSCOPY OF THE ORAL SUCKER PAPILLAE OF PHILOPHTHALMUS MEGALURUS. Paul M. Nollen, H. Herbert Edwards, and Mathew J. Nadakavukaren, Western Illinois University and Illinois State University.

7. GENETIC CONTROL OF SCHISTOSOMIASIS; AN EXPLORATION OF THE EFFECTS OF GENETIC MANIPULATION OF INTERMEDIATE HOST POPULATIONS. Madeline Fletcher and P. T. LoVerde, Purdue University.

8. THE HISTOCHEMISTRY OF PENETRATION OF FASCIOLOIDES MAGNA MIRACIDIA INTO THE SNAIL HOST. W. H. Coil, University of Kansas. (No abstract)

9. SIXTEEN MILLIMETER COLOR VIDEOTAPES AS TEACHING TOOLS. William D. Lindquist, Kansas State University (No abstract)

10. MEDICAL ART DEMONSTRATION, Wanda Prus, Manhattan, Kansas. (No abstract)

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**2. HOST-PARASITE INTERACTIONS BETWEEN LYMNAEA CATASCOPIUM AND SCHISTOSOMATIUM DOUTHITTI. Eric S. Loker, Iowa State University.

**3. OBSERVATIONS ON THE SEASONAL OCCURRENCE AND PATHOGENICITY OF GRACILISENTIS GRACILISENTIS (ACANTHOCEPHALA: NEOECHINORHYNCHIDAE) IN DOROSOMA CEPEDIANUM. Reid Jilek, Southern Illinois University-Carbondale.

**4. LOCALIZATION OF FIBRICOLA CRATERA (TREMATODA: DIPLOSTOMATIDAE) METACERCARIAE IN RANA PIPIENS. Thomas W. Cook, Iowa State University.

**5. MIGRATION AND DEVELOPMENT OF GIGANTOBILHARZIA HURONENSIS IN THE DEFINITIVE HOST. David L. Daniell, Iowa State University

**6. STUDIES ON FLOTATION-TECHNIQUES FOR THE RECOVERY OF HELMINTH EGGS FROM SOIL AND THE PREVALENCE OF EGGS OF TOXOCARA SPP. IN SOME KANSAS PUBLIC PLACES. B.J.O. Dada, Kansas State University.

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**8. EXPERIMENTAL LIFE-CYCLE FOR ASCARIDIA COLUMBAE IN INTRAVENOUSLY INFECTED PIGEONS. Roy D. Melendez, Kansas State University.

** 9. THREE NEW SPECIES OF SYNDESMIS (TURBELLARIA: UMAGILLIDAE) FROM PHILIPPINE SEA URCHINS. K. L. Komschlies, Gustavus Adolphus College and Silliman University Marine Lab.

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14. THE INEFFICACY OF METRONIDAZOLE IN ANIMAL MODELS OF LEISHMANIASIS AND TRYPANOSOMIASIS. J. S. Keithly, The City University of New York, Lehman College.

15. THE HYDROGENOSOME OF TRICHOMONAD FLAGELLATES. Miklós Müller and Donald G. Lindmark, The Rockefeller University.

The Development of an *in vitro* System for Activation of *Ascaris* Spermatozoa. M. K. Abbas and G. D. Cain, University of Iowa, Iowa City, Iowa.

Available evidence indicates that maturation of *Ascaris* spermatozoa is associated with transformation from round to amoeboid cells. This transformation is influenced by a sperm activating substance (SAS) produced by the male accessory gland. An *in vitro* system was developed and utilized in investigation of this phenomenon. The spermatozoa contained in the seminal vesicle were drained into 1 ml of 0.01 M phosphate-buffered saline (pH 7.4) before exposure to SAS and/or other substances. Anaerobic conditions were accomplished by using a moist gas phase (95% N_2 and 5% CO_2) at 37-39°. Under the influence of SAS, 95% of the sperm change into the amoeboid form within 10-15 minutes. This activation system is being utilized in investigations of the molecular basis of sperm activation and the mode of SAS action. (Supported by NIH Grant No. 5T01 HD00152.)

Collagen Synthesis *in vitro* by Isolated Cuticle-Hypodermis from *Ascaris lumbricoides*. G. D. Cain, J. Garwood, and L. Davidsen, University of Iowa, Iowa City, Iowa.

Cuticle-hypodermis (CH) preparations were obtained from adult female worms by injecting 3 µl collagenase (3.25 mg/ml in Harpur's saline) at three sites along the anterior third of the body and incubating for 5 hours at 39°. Worms were slit lengthwise, the muscle and viscera washed away with saline, and the remaining CH strips were cut into 2 cm pieces for incubation (8 hrs.) in 50 ml of medium 199 containing 5 µCi/ml ^3H proline. Reduced, carboxymethylated (RCM) collagen was isolated by treating the washed CH tissue with 1% β-mercaptoethanol in 8 M urea (pH 7.2), followed by carboxymethylation with iodoacetic acid. RCM collagen was separated from other soluble proteins by SDS-acrylamide gel electrophoresis, and the gels were sliced for determination of incorporated radioactivity. At least three proteins, two of which were RCM collagen, contained radioactivity, indicating that CH preparations were capable of protein synthesis *in vivo*.

Factors Influencing Hemocyte Numbers in Biomphalaria glabrata.
Jerry Stumpf, University of Minnesota, Minneapolis, Minnesota.

The circulating hemocyte number in Biomphalaria glabrata varied under the influence of snail size, temperature, mechanical stimulation, and infection with Schistosoma mansoni. The relationship between the number of circulating hemocytes and the size of the snail as measured by shell diameter was studied. A logarithmic increase in cell number was noted with increasing snail size. At temperatures between 15° and 21° C an increase in hemocyte numbers was observed. At 21° C no significant increase in hemocyte numbers occurred. Leucocytosis was noted following an infection with S. mansoni and following mechanical stimulation. The size and duration of the leucocytosis was greater following infection than following mechanical stimulation.

Scanning and Transmission Electron Microscopy of the Oral Sucker Papillae of Philophthalmus megalurus.
Paul M. Nollen and H. Herbert Edwards, Western Illinois University, Macomb, Illinois and Mathew J. Nadakavukaren, Illinois State University, Normal, Illinois.

Scanning electron microscopy reveals papillae on both the inside and outside of the oral sucker of the eyefluke, Philophthalmus megalurus. In the transmission electron microscope the papillae can be divided into three different types with two of these occurring on the outside of the oral sucker. One type of outer papilla contains a bulb cell which is terminated by a cilium having an apparent typical arrangement of microtubules. This type is a presumed sensory receptor having tango- and/or rheoreceptor function. The second type of outer papilla contains a gland cell which secretes electron-dense granules to the outside of the fluke. The third type of papilla is found only on the inside of the oral sucker and contains a bulb cell terminated by a cilium which does not have the typical 9 + 2 arrangement of microtubules. Instead, their numbers increase to over 60 randomly arranged microtubules. This inner papilla is thought to have chemoreceptor function because of its location and the presence of the modified cilium. The bulb cell of the inner papilla contains two newly described features. The first is granular and associated with microtubules; it may be a possible nucleating site for microtubules snythesis. The second structure is a crystalline inclusion of unknown function and origin.

The Influence of Selected Helminth Infections on Phospholipase B Activity in the Upper Duodenum of the Canine. Katherine E. Sartain, A. Alan Kocan, and Harold E. Laubach, Department of Veterinary Parasitology, Microbiology, and Public Health, Oklahoma State University.

Phospholipase B activity was assessed and quantitated by chemical analysis in the upper duodenum of dogs infected with varying numbers and species of helminth parasites. Enzyme activity levels were also tested over varying lengths of time following freezing. Enzyme activity levels were significantly lower after freezing under all conditions tested at periods of 24 hours or more. Enzyme levels in dogs infected with selected helminths showed a general tendency towards elevated levels in relation to severity of infection, but extreme variability eliminated statistical proof. The variability observed will be discussed in relation to factors influencing enzyme levels.

Host-Parasite Interactions Between Lymnaea Catascopium and Schistosomatium douthitti. Eric S. Loker, Iowa State University, Ames, Iowa.

Laboratory reared Lymnaea catascopium ranging from one to 265 days of age were exposed individually to three miracidia of Schistosomatium douthitti. Neonatal snails (1-3 days of age) exhibited high mortality rates during the prepatent period and the percentage of shedding snails among the survivors was low. Snails ranging in age from 15-65 days were very susceptible to infection and retained patent infections for several months. Older snails (100-265 days) were considerably less susceptible to infection. Cercarial shedding among all exposed snails generally began 27-33 days post-exposure, although some snails did not begin to shed until more than 50 days post-exposure. In some cases, those snails not becoming infected after an initial exposure could be successfully infected by subsequent exposures. Self cures were not observed among infected snails.

Infected snails with rare exceptions completely cease egg production shortly after exposure. Histological examinations revealed that although gametes continue to be produced in the ovotestes of infected snails, accessory reproductive organs usually become extremely atrophied and nonfunctional.

Observations on the Seasonal Occurrence and Pathogenicity of Gracilisentis gracilisentis (Acanthocephala: Neoechinorhynchidae) in Dorosoma cepedianum. Reid Jilek, Southern Illinois University at Carbondale, Carbondale, Illinois.

The pyloric caeca and small intestine of 1,117 gizzard shad, Dorosoma cepedianum, collected from Crab Orchard Lake, Williamson County, Illinois, between March, 1976 and February, 1977, were examined for the presence of Gracilisentis gracilisentis. Infection is initiated in mid-September and terminates in mid-May with immature adults occurring between September and November. This period coincides with the seasonal mortality of the host which occurs between the months of October and April. Histopathological examinations revealed severe damage to the mucosa and submucosa at the site of penetration with subsequent separation of these two layers. It was concluded that G. gracilisentis infections may totally, or in part, contribute to the seasonal mortality of D. cepedianum. In addition to D. cepedianum, 5 species of fish which serve as predators on the gizzard shad were also examined for the presence of G. gracilisentis. Indications of viability of G. gracilisentis were evidenced exclusively in D. cepedianum, therefore suggesting a high degree of host specificity.

Localization of Fibricola cratera (Trematoda: Diplostomatidae) Metacercariae in Rana pipiens. Thomas W. Cook, Iowa State University, Ames, Iowa.

Most cercariae, when exposed to larval tadpoles, remain under the dermis for approximately 60 minutes before moving into the peritoneal cavity. Tadpole embryos are refractive to infection from Shumway stages 1-22. In metamorphosing frogs, migration commences at Taylor and Kollros stage XXIII, and by stage XX the great bulk of metacercariae have left the peritoneal cavity. Large numbers are present in the gastrocnemius muscle by stage XXV + 10 days, having migrated through the thigh area between the basal layer of dermis and muscle fascia. High hormonal levels, metabolic changes and tail resorption occurring during metamorphosis are suggested as possible stimulatory mechanisms inducing migration. Blocking metamorphosis with thiourea causes metacercariae to remain in the peritoneal cavity; some eventually move to pharyngeal muscles and connective tissue and encapsulate. Accelerating metamorphosis with thyroxin causes precocious migration of metacercariae by 31-38 days, some 60 days earlier than normal.

Migration and Development of Gigantobilharzia huronensis in the Definitive Host. David L. Daniell, Iowa State University, Ames, Iowa.

Migration and development of the avian schistosome, Gigantobilharzia huronensis, were studied by examining fresh tissue and stained sections from experimentally infected chickens. Cercariae readily penetrate the skin of the upper leg and the linings of the oral cavity, pharynx, and esophagus. The scaly skin of the lower leg is penetrated less readily. Twenty-four hours after percutaneous exposure, most schistosomula are still present in the skin, but 48 hours after exposure, few remain. After two days, most schistosomula are in the lungs where they grow for approximately 12 days. Growing schistosomula are also found in the liver and kidneys, where rate of growth is similar to that in the lungs. By day 14, most worms have migrated to the intestinal veins; however, a few are found in the lungs as long as 30 days after exposure.

By the end of the fourth day, body length of the schistosomule has doubled, and cecal union has been completed. Sexes can be distinguished by the eighth day after exposure. Sexual maturity is attained at 14 days, and patency is reached as early as 25 days after exposure.

Studies on Flotation Techniques for the Recovery of Helminth Eggs From Soil and the Prevalence of Eggs of Toxocara spp. in Some Kansas Public Places. B.J.O. Dada, Department of Infectious Diseases, Kansas State University, Manhattan, Kansas.

A non-modified technique having about 68% recovery efficiency for the extraction of Toxocara spp. eggs is described. This new modified technique has been used to elucidate the degree of worm eggs contamination of several public places in Manhattan, Kansas, and some Kansas highway rest areas.

Based on these surveys, the following prevalences were obtained: Elementary schools 22.95% (14/61); city and state parks (18.4% (23/125); Kansas highway rest areas 16.0% (8/50); and Kansas State University married students' quarters 39% (9/23 sandboxes) and 17.4% (4/23 swing areas).

Responses of Miracidia of the Liberian Strain of Schistosoma mansoni to Monochromatic Light. William T. McGeachin, Iowa State University, Ames, Iowa.

Responses of miracidia of the Liberian strain of Schistosoma mansoni to an equal energy spectrum of monochromatic light at an irradiance of 2.90 W/m^2 were studied. Miracidia were recovered in the usual manner from mice. Experiments were conducted in a plexiglass chamber similar to that used by Yasuroaka (1954) and involved the use of commercial spring water (pH 8.2). Responses were recorded at 50 nm intervals from 450 to 700 nm. Significant ($P<0.01$) positive-directed responses were shown to wavelengths of 450, 500, 550, and 600 nm with a maximal response at 500 nm. Although Wright (1974), using the Puerto Rican strain of S. mansoni, observed a second peak in response at 650 nm, no such peak was observed in the present study. Results obtained in this study agree more closely with those reported by Wright et al. (1972) for Schistosomatium douthitti miracidia and tend to confirm the belief that miracidia of S. mansoni move toward light in the blue-green range.

Experimental Life-Cycle for Ascaridia columbae in Intravenously Infected Pigeons. Roy D. Melendez, Department of Infectious Diseases, Kansas State University, Manhattan, Kansas.

Fully embryonated eggs of Ascaridia columbae were artificially hatched in sterile saline, and free infective larvae were intravenously inoculated in twelve 14-18 week old pigeons. The migration and development of Ascaridia columbae were followed after infected birds were periodically sacrificed and tissues analyzed by the Baerman technique, artificial digestion and histopathological methods.

Ascaridia columbae larvae apparently performed a tracheal migration, arriving to the small intestine, and establishing a patent infection with adult worms which exhibited an uncommon and unmatched length. The absence of migration of those larvae through the host's gut wall and liver probably explains the unexpected length for these materials.

Three New Species of Syndesmis (Turbellaria: Umagillidae) from Philippine Sea Urchins. K. L. Komschlies, Biology Department, Gustavus Adolphus College, St. Peter, Minnesota and Silliman University Marine Lab., Dumaguete, Philippines.

Seventh-six sea urchins of 11 species from the south-central Philippines were examined. Two species harbored symbiotic turbellarians belonging to three new species of Syndesmis Silliman 1881. Echinometra oblonga harbored two species and Heterocentrotus mammilatus a third. The first species from E. oblonga most closely resembles S. franciscana (Lehman, 1946) from the California coast, however, body and egg capsule are smaller, testes are smaller and confined to the anterior vitelline field and the bursal canal is not cuticularized; from 1-12 ($\bar{x}$=3.4) were recovered from nine of 17 (53%) E. oblonga. The second species most closely resembles S. glandulosa Hyman 1960 from Madagascar, however, ventral glandular papillae form two rather than one row. The body of the seminal receptacle is anterior to the ootype and the seminal bursa multilocular. Four of 17 (24%) hosts contained from 2-9 ($\bar{x}$=5.5) turbellarians of this species. Three of 17 (18%) E. oblonga held both species. The third species also resembles S. franciscana, however, the seminal bursa is multilocular and large testes extend anteriorly to the level of the pharynx. All five H. mammilatus were infected with 2-80 ($\bar{x}$-30.6) worms per host. Others report the number of turbellarians per host increases with host size; this was not the case with E. oblonga. (Supported in part by a Sigma Xi - Holcomb undergraduate research grant.)

The Effect of Sera from Snakes in Oogenesis on the Staining of Hepatozoon-infected Erythrocytes. James J. Daly, Department of Microbiology and Immunology, University of Arkansas for Medical Sciences, Little Rock Arkansas and Charles H. Calhoun, Jr., Little Rock Zoological Gardens, Little Rock, Arkansas.

Telford (1971, J. Fla. Acad. Sci., 34: 78-80) and Ayala and Spain (1975, Copeia, 1975: 138-141) have reported that blood smears taken from female lizards undergoing oogenesis exhibited a pink to brick-red color, rather than the expected bluish-gray, when stained with Giemsa. Microscopically, a precipitate can be seen between and around the erythrocytes markedly outlining their shape. We have found this same reaction to occur with blood smears from ophidians that presumably are producing yolk for their eggs. However, the membranes of erythrocytes from snakes infected with hepatozoons do not accumulate the reddish stain as well as uninfected cells. This differentiation is most obvious with hepatozoons that are large enough to mechanically distort and lengthen the host cell. Such a discrimination in staining reaction indicates a structural or physiological difference between the membranes of infected and uninfected erythrocytes. The nature of the strongly eosinophilic material in the plasma of female snakes and lizards is as yet unknown and apparently appears only during oogenesis. Its significance and possible use as a membrane stain for other than reptilian blood cells awaits chemical identification.

Effect of Trypanocidal Diamidines on Lysosomes of Trypanosoma brucei.
Lori Smurro and James Ketchum, Laboratory for Biochemical Parasitology, Department of Biological Sciences, Southern Illinois University, Edwardsville, Illinois.

One hypothesis on the mode of action of clinically effective trypanocides of the diamidine class e.g. diminazene (DA), hydroxystilbamidine (HS), pentamidine (PA) etc. considers that these drugs may stabilize the lysosomal membranes of blood and tissue forms of Trypanosoma in vivo. Such stabilization would presumably interfere with 'turnover' and division by blocking release of proteolytic enzymes (hydrolases) during the trypanosome's cell cycle. As a test of this hypothesis we have investigated the effect of these agents on an enriched lysosomal fraction derived from cell-free preparations of DEAE-purified bloodstream forms of T. brucei harvested from infected rats at the peak of a fulminating parasitemia.

To determine stabilization activity by diamidines, the final resuspended pellet fraction (P3) was either initially incubated in the presence of known stabilizers (cortisol and cyannidinol @ 5×10^{-4}M) followed by exposure to known labilizers (diethylstilbestrol or retinol @ 5×10^{-4}M) - Controls - or exposure to drugs (DA and HS @ 5×10^{-4}M) followed by incubation with labilizer(s). Assay of released acid phosphatase reveals that under the in vitro conditions employed these diamidines prevent release of near 30-35% of total releasable phosphatase activity (full releasability is the total soluble enzyme activity in the supernatant resulting from exposure to 0.1% Triton X-100).

Since we do not yet know the effective plasma concentration of these compounds in the host nor the amount taken up by the trypanosomes, the extent to which these in vitro findings indicate a component of drug action in vivo will require quantitation of the activity levels of hydrolases in the cytosol and lysosomal fractions of bloodstream forms exposed to a minimum curative dose of drug in vivo compared to non-drug treated organisms. Such studies are planned.

These investigations were supported by the U.S. Army Medical Research and Development Command, Communicable Diseases Branch, DAMD 17-74-C-4140 to A. C. Zahalsky.

Lungworms in Coyotes on the Great Plains. Edward E. Morrison and H. T. Gier, Department of Anatomy and Physiology, Kansas State University, Manhattan, Kansas

A total of 390 coyotes (Canis latrans) were examined in the field for lungworms (Filaroides osleri and Capillaria areophilla) with 35 trachea and bronchial trees returned to the laboratory for detailed examination. Coyote carcasses were examined from eight central states (Oklahoma, Colorado, Wyoming, Iowa, South Dakota, Nebraska, Texas, and four regions of Kansas). Filaroides osleri cysts were present in the trachea or first division of bronchia of 59 (15%) of the coyotes examined. Capillaria areophilla infections were identified during field examinations primarily by the excess mucus in the bronchi verified by microscopic examination in the laboratory, in 146 (37%) coyotes. Nearly 6% of the coyotes examined were infected with both lungworm species. A total of 205 (52%) coyotes had at least one species of lungworms present. Filaroides were less frequent in Colorado, Nebraska, Iowa and Kansas; Capillaria were most abundant in Texas, Wyoming and South Dakota.

Cultivation of Cytauxzoon sp., A Recently Discovered Theileria-like Parasite of Cats. Belinda R. Fender and Robert M. Corwin, University of Missouri, Columbia, Missouri.

Cytauxzoon spp. have been described from the duiker, the eland, the kudu and the giraffe of South Africa and the domestic cat of southwestern Missouri. All reported cases have had acute, fatal infections. Schizogony apparently occurs in histiocytes lining blood vessels and piroplasms are found in erythrocytes.

Successful methods of growing Theileria spp. in cell culture have been developed in recent years and are now used in studies on immunity, life cycle and in serologic testing. In our laboratory, we are attempting to grow Cytauxzoon on several culture media. Various serologic tests also have been employed for the detection of antibodies to Theileria, but none have been reported for Cytauxzoon. We plan to use successful cell cultures as a source of homologous antigen for developing an indirect fluorescent antibody test for later use in diagnosis and epidemiologic surveys. Results of our research to date will be reported.

Sarcoptic Mange in Coyotes. Sally Robinson and H. T. Gier, Department of Anatomy and Physiology, Kansas State University, Manhattan, Kansas.

Although relatively few cases of sarcoptic mange in coyotes have been previously reported, we have found the problem relatively widespread from Canada to Mexico. Red foxes were severely infected with Sarcoptes in Minnesota and Iowa during the late 1960's. Infections spread to coyotes in the early 1970's, spreading rapidly through an excessively high coyote population, reaching a peak of about 30 to 50% obviously infected in 1973, then decreasing as the coyote population decreased from 1974 to date. In January-February, 1977, 10 to 20% of the coyotes in Kansas and Oklahoma were visibly mangy, with lesser incidence in Colorado, Wyoming, and South Dakota.

Nutrient Amino Acids Essential for the Asexual Development of Eimeria tenella Cultured In Vitro. William L. Sofield, Kansas State University, Manhattan, Kansas and Richard G. Strout, University of New Hampshire, Durham, New Hampshire.

Each of the 13 amino acids included in Eagle's Basal Medium were doubled or deleted from the nutrient at the time of cell culture initiation or sporozoite inoculation and the effects on the asexual development of Eimeria tenella cultured in vitro are described.

Deleting seven amino acids (glutamine, methionine, tryptophan, isoleucine, leucine, histidine, tyrosine) resulted in significant reductions in the numbers of developing parasites after 72 hours, while the deletion of cystine produced a significant increase in parasite development. The deletion of five amino acids (arginine, threonine, valine, phenylalanine, lysine) had no observable effect on the asexual development of Eimeria tenella. Doubling glutamine, leucine, histidine, or tyrosine also produced adverse effects on parasite development, while doubling tryptophan significantly increased the number of developing parasites at 72 hours.

The effect of doubling or deleting amino acids on unparasitized host cells are also described.

Growth of Selected Trypanosomatidae on Blood-Agar Plates. Amy Doran Keppel and J. Janovy, Jr., School of Life Sciences, University of Nebraska, Lincoln, Nebraska.

Selected protozoan species of the family Trypanosomatidae were grown on blood agar petri dish plates as discrete clonal colonies and the colony phenotypes described. Organisms were loop-inoculated onto plates under a sterile hood, spread with a glass spreader and incubated in a high humidity chamber for one week. Species used were: Leishmania donovani (2S and Khartoum strains), L. mexicana, L. hertigi, L. adleri, Herpetomonas megaseliae, H. samuelpessoai, Crithidia harmosa and Leptomonas costoris. Colony phenotypes were described in terms of color, discoloration or bleaching of the underlying medium, sinuosity of the colony edge, presence or absence and extent of the colony apron, profile of the raised central portion(s) and "granulation" and relective properties of the surface. Colony phenotype differences ranged from subtle to striking. A key was constructed for the above species, and successfully tested in double-blind trials. Potential uses of these culture techniques and observations range in turn from rapid field diagnosis of trypanosomatid infections in humans, reservoir hosts and vectors, including mixed infections, to a realistic approach to trypanosomatid genetics. (Supported in part by a grant from the UN- Research Council.)

What's Your Diagnosis. Stanley E. Leland, Jr., Agricultural Experiment Station, Kansas State University, Manhattan, Kansas.

The condition recorded in the film clip was experimentally induced and was of nematode origin. Respirations reached over 50 per minute. This animal recovered and appeared normal 24 hours later. In another animal the condition terminated fatally 2 hours after induction. This condition was induced in calves raised helminth free as well as a calf that had previous experience with the inducing agent. Lungworms were not involved.

Notes on the Coccidian Parasites of the Soft-Shell Turtle, Trionyx spiniferus Le Sueur, in Iowa. Richard S. Wacha and James L. Christiansen, Department of Biology, Drake University, Des Moines, Iowa.

Oocysts of Eimeria dericksoni Roudabush, Eimeria mascoutini Wacha and Christiansen, and an Eimeria sp. were isolated from the Spiny Soft-shell Turtle, Trionyx spiniferus Le Sueur, in Iowa. The sporulated oocysts of E. dericksoni are redescribed to include, for the first time, the dimensions of the sporocyts (5.8 - 8.3 x 3.2 - 5.1 micrometers) and the structural appearance of the Stieda body (thinly convex); the oocysts of the E. sp. are newly described as being thick-walled, narrowly ovoid to narrowly ellipsoid, 21.8 - 25.6 x 16.6 - 20.5 micrometers in size, and having a polar granule, a sporocyst residuum, and a vesicle-like Stieda body; the oocysts of E. mascoutini are documented photographically.

Michigan Mosquitoes of Kennel and Stable Areas with Emphasis on Seasonal Distribution and Food Preferences. Elizabeth L. Waffle, Eastern Mighican University, Ypsilanti, Michigan.

Mosquitoes were primarily collected at one kennel-horse farm with additional student collections at several other kennel areas in southeastern Michigan. All kennels were in areas with dogs infected with heartworm, Dirofilaria immitis.

The primary collecting site was a small fluorescent light inside a very open house trailer baited with one human and several German shepherd dogs. It was parked about 100 feet from two horse barns and a half mile away from a dense woodlot.

The dominant spring form was the Aedes stimulans complex. It was replaced by a heavy population of Aedes vexans in early June through frost. Small numbers of other species of Aedes, Anopheles, and Psorophora were also noted.

Analysis of collections from additional sites and hosts is in progress.

Aspects of the Larval Development of Ophthalmophagus sp. (Trematoda: Cyclocoelidae). Stephen J. Taft, University of Wisconsin-Stevens Point. Richard W. Heard, III, Gulf Coast Research Laboratory, Ocean Springs, Mississippi.

Specimens of Ophthalomophagus (near) singularis were collected from nasal cavities and orbits of clapper rails (Rallus longirostris) from Mississippi tidal marshes. When gravid worms were placed in dilute sea water miracidia hatched in utero, emerged and attached themselves to marine snails (Melampus bidentatus and Detricia floridanus), but not to (Littorina irrorata). The redia within each miracidium bored into the snails, leaving empty miracidia behind. By three weeks postexposure the rediae contained metacercariae. This is the first report on the life history of cyclocoelids in the genus Ophthalmophagus and the first demonstration of cyclocoelids parasitizing marine snails.

Concurrent with the above life cycle study, gravid Ophthalmophagus singularis were recovered from sora (Porzana carolina) and Virginia rails (Rallus limnicola). Miracidia of O. singularis did not attach to M. bidentatus or L. irrorata.

Intra- and Interspecific Variation in Dehydrogenases from Larval Anisakine Nematodes. G. D. Cain and R. K. Raj, University of Iowa, Iowa City, Iowa.

Identification of larval anisakine nematodes from fish hosts is complicated by morphological similarities among different species. In an attempt to develop reliable biochemical criteria to aid in differentiating these larvae, electrophoretic patterns of NAD-dependent oxidoreductases were obtained from four Genera, Anisakis, Phocanema, Sulcascaris, and Contracaecum. Each showed characteristic isozyme patterns for alcohol (ADH) and malate (MDH) dehydrogenases. Two major isozymes were detected in each genus, with the slow (cathodic) isozyme having approximately the same mobility in all but Sulcascaris, where its position was nearly equal to that of the fastest anodic isozyme of Phocanema. The slow isozyme of Anisakis was thermolabile (50° for 10 min postelectrophoresis) and completely inhibited by pretreatment with 0.05M thioglycollic acid, while the corresponding isozyme of Phocanema was unaffected by these conditions. Phocanema contained a third isozyme (lacking in Anisakis) sensitive to isopropanol, sec-butanol and amyl alcohol, while Anisakis, unlike Phocanema, did not employ n-propanol or n-butanol as substrates. Examination of ADH isozymes of over 600 individuals of Anisakis and Phocanema revealed a low frequency of variation (0.02 for each). Although this variation could be due to misidentification during sorting, it more likely represents intraspecific protein polymorphism due to genetic variation. (Supported by FDA Contract No. 223-76-2138)

Internal Parasites of Coyotes in the Great Plains. H. T. Gier, Dept. of Anatomy and Physiology, College of Veterinary Medicine, Kansas State University, Manhattan, Kansas.

Parasites of coyotes were collected from the digestive tract 1948-1962. Hearts were examined for Dirofilaria 1954-1962, and 1973-1977. During January and February, 1977, an extensive coyote study from Oklahoma to Wyoming resulted in recovery of parasites from hearts, lungs and stomachs of 450+ coyotes, and intestinal parasites of 168. The 1977 counts indicated a rather drastic reduction in occurrence, and numbers of Taenia pisiformes, a significant increase in occurrence of Toxascaris leonina and Mesocestoides corti, and a northward extension of the known range of the esophageal worm Spirocerca lupi. Lesser occurrence of T. pisiformes reflects decreased dependency on lagomorphs as a major item in the diet. Increase of S. lupi is correlated with increasing and spreading of its normal host, the bobcat.

Digenea from Naso lopezi, a Philippine Surgeon Fish, and Notes on Hemiurid Larvae in a Pelagic Gastropod. F. J. Vande Vusse and G. Severinson, Gustavus Adolphus College, St. Peter, Minnesota and Silliman University Marine Lab, Dumaguete, Philippines.

Gastrointestinal tracts were examined from Naso lopezi 21 to 55 cm collected in the south-central Philippines during January 1977. Six species of digenea were recovered, four of which appear to be new. Nineteen of 20 fish examined (95%) harbored from 1 to 5 species ($\bar{x}$ = 2.1). Trematodes recovered and percent occurrence are: Prosorchiopis nasonis (75%), and Lecithocladium chingi (50%) from the stomach; Pseudopisthogonoporous sp. (45%), Preptetos sp. (15%), Flagellotrema sp. (5%) and an as yet unclassified form (10%) from the intestine. All represent new host and locality records. Presence of a hemiurid (L. chingi) in N. lopezi, a fish that feeds on planktonic invertebrates, and recovery of rediae bearing immature hemiurid cercariae from a pelagic gastropod (Clio pyramidata) provide evidence for existence of totally pelagic hemiurid life histories.

The Inefficacy of Metronidazole in Animal Models of Leishmaniasis and Trypanosomiasis. J. S. Keithly, The City University of New York, Lehman College, Bronx, New York.

Metronidazole has been claimed in several reports to be active against human cases of both cutaneous and visceral leishmaniasis and trypanosomiasis. Therefore, the efficacy of metronidazole against the protozoa causing these diseases was tested in hamsters infected with Leishmania mexicana texana or L. donovani, and in mice infected with Trypanosoma brucei brucei. In separate experiments, hamsters were either inoculated intranasally with 5 million amastigotes of L. m. texana or intracardially with 10-30 million amastigotes of L. donovani, and mice were infected intraperitoneally with 30 million T. b. brucei. Metronidazole was administered orally in four doses on alternate days for a total of 375 mg/kg to hamsters and 500 mg/kg to mice. In hamsters the extent of infection was assessed both by the appearance of parasites in blood agar cultures of nose and spleen and by counting the number of parasites in nose and liver impression smears. Infection in mice was assessed by the extent of parasitemia and/or survival to 30 days. In no case did treated animals differ from controls. Thus, metronidazole shows no activity against experimental infections with these kinetoplastids.

Supported by a grant from Searle Laboratories, Chicago, Illinois.

The Hydrogenosome of Trichomonad Flagellates. Miklós Müller and Donald G. Lindmark, The Rockefeller University, New York, New York 10021.

Many parasitic and symbiotic "anaerobic" protozoa have no morphologically recognizable mitochondria. In the trichomonad and hypermastiginid flagellates, Dientamoeba fragilis, etc., however there is a population of cytoplasmic organelles which are membrane bounded and have a granular matrix, i.e. resemble microbodies. Recent studies in trichomonads confirmed the assumption that they play a role in energy metabolism. The biochemically defined organelles received the name "hydrogenosome". Their only known function is the metabolism of glycolytically formed pyruvate to acetate, with the conservation of energy by substrate level phosphorylation only. Reducing equivalents are removed as H_2 under anaerobic conditions and are used to reduce O_2 under aerobic conditions. The organelles contain low redox potential enxymes (pyruvate:acceptor oxidoreductase forming acetyl-CoA and hydrogenase) which resemble similar activities of clostridia. Acetyl-CoA is converted to acetate via the action of acetate-succinate CoA-transferase and a phosphorylating succinate thiokinase.

C. A. Herrick Award Winners

1967 P. M. Nollen (Purdue)

1968 W. G. Barnes (Kansas Medical College)

1969 (co-awards) B. A. Caveny (Univ. Cincinnati)
T. P. Bonner (Univ. Cincinnati)

1970 H. D. Blankespoor (Iowa State Univ.)

1971 R. A. Campbell (Iowa State Univ.)

1972 E. M. Conford (Iowa State Univ.)

1973 D. L. Danley (Purdue)

1974 (co-awards) P. T. LoVerde (Univ. Michigan)
D. P. Prechel (Western Illinois Univ.)

1975 Darwin D. Wittrock (Iowa State Univ.)

1976 W. L. Current (Iowa State Univ.)

La Rue Awards

1975 Valerie Nelson (Iowa State University)

1976 Carol A. Klucas (Univ. Nebraska-Lincoln)

Herrick and La Rue Awards sponsored by the Eli Lilly and Company and the Ann Arbor Biological Supply, respectively. These awards are for the two best contributions given by graduate students, either by demonstration or paper.

Summary of A.M.C.O.P. Meetings

	Year	Site	Presiding Officer
1st	1949	University of Wisconsin (Madison) Speaker: J. G. Baer	H. J. Van Cleave
2nd	1950	University of Michigan (Ann Arbor) Speaker: W. W. Cort, "Trends in Helminthological Research"	R. V. Bangham
3rd	1951	Purdue University (Lafayette) Speaker: J. E. Ackert, "Some Observations on Hookworm Disease"	L. O. Nolf
4th	1952	University of Illinois (Urbana) Speaker: A. C. Walton	R. J. Porter
5th	1953	Iowa State College (Ames) Speaker: R. M. Cable, "Parasitological Experiences in Puerto Rico"	C. A. Herrick
6th	1954	Michigan State University (East Lansing) Speaker: G. F. Otto, "Mosquitoes, Worms, Samoans, and the Parasitologist in Samoa"	A. C. Walton
7th	1955	Notre Dame University Speaker: G. R. LaRue, "Relationships in the Development of Digenetic Trematodes"	R. M. Cable
8th	1956	University of Iowa (Iowa City) Speaker: W. H. Headlee	W. D. Lindquist
9th	1957	University of Michigan (Ann Arbor) Speaker: A. C. Chandler	J. E. Ackert
10th	1958	Kansas State University (Manhattan) Speaker: H. W. Manter, "Trematodes of Many Waters"	G. R. LaRue
11th	1959	Northwestern University (Evanston) Speaker: H. Van der Schalie, "Contrasting Problems in the Control of Schistosomiasis in Egypt and in the Sudan"	G. F. Otto
12th	1960	Purdue University (Lafayette) Speaker: P. P. Weinstein, "Aspects of Growth and Differentiation of Parasitic Helminths *in vitro* and *in vivo*"	F. J. Kruidenier
13th	1961	Ohio State University (Columbus) Speaker: B. Schwartz, "Parasitology - Old and New"	N. D. Levine
14th	1962	University of Nebraska (Lincoln) Speaker: O. W. Olsen, "The Life History of the Hookworm of Fur Seals"	G. W. Kelley, Jr.

15th	1963	University of Minnesota (St. Paul) Speaker: F. G. Wallace, "Observations on the Louisiana State University Inter-american Program in Tropical Medicine"	M. F. Hansen
16th	1964	University of Chicago Speaker: R. E. Kuntz, "Paragonimiasis in Formosa"	D. T. Clark
17th	1965	Kellogg Biological Station of Michigan State University (Gull Lake) Speaker: L. Jacobs, "Toxoplasmosis"	P. E. Thompson
18th	1966	University of Illinois (Urbana) Speaker: D. L. DeGuisti, "The Acanthocephala"	M. J. Ulmer
19th	1967	Iowa State University (Ames) Speaker: N. D. Levine, "Parasitology - Problems and Promise"	P. J. Silverman
20th	1968	University of Wisconsin (Madison) (joint meeting with ASP, AIBS) Speaker: D. R. Lincicome, "The Goodness of Parasitism"	F. G. Wallace
21st	1969	University of Cincinnati Speaker: H. W. Stunkard, "Life Histories and Systematics of Parasitic Flatworms"	H. W. Manter
22nd	1970	Loyola University (Chicago) Speaker: M. J. Ulmer, "Helminths from Midwest to Mediterranean"	J. L. Crites
23rd	1971	University of Louisville Speaker: M. Van der Schalie, "Dam Large Rivers - Then What?"	F. Etges
24th	1972	Southern Illinois University (Carbondale) Speaker: R. M. Cable, "The Lighter Side of Parasitology"	B. J. Jaskowski
25th	1973	Notre Dame University Speaker: R. F. Riek (Merck Laboratories), "Babesiosis and the Development of Babesia in Ticks"	R. Shumard
26th	1974	University of Michigan (Ann Arbor) Speaker: M. J. Ulmer, "Snails, Swamps, and Swimmer's Itch"	D. Ameel
27th	1975	Iowa State University (Ames) Speaker: P. M. Nollen, "Studies on the Reproductive Systems of Parasitic Flatworms or All You Wanted to Know About Sex in Worms and Were Afraid to Ask"	W. Benrick

28th	1976	University of Nebraska Speaker: Arlie C. Todd, "A Redefinition of Subclinical Parasitism and Its Impact on World Politics"	John Greve
29th	1977	Kansas State University Speaker: Austin J. Mac Innis "Snails, Dollars, D.N.A. and Worms"	T. T. Dunagan

Date: June 9, 1977

THE ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS

Objectives and Organization

A restatement to incorporate changes approved in 1974. Earlier statements had been approved in 1948, 1953, 1971, 1972, and 1973.

Name

The organization shall be known as the ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS, hereinafter referred to as the Conference.

Affiliation

The Conference is an affiliate of the American Society of Parasitologists

Objectives

The Conference is a gathering of parasitologists and students of parasitology for the purpose of informal discussion of research and teaching in parasitology and the furthering of the best interests of the discipline of parasitology.

Members

The Conference is open to all interested persons regardless of place of work, residence, or affiliation in other recognized societies.

Dues

No regular dues are collected, but a registration fee is charged members during registration at annual conferences. The amount of this fee will be decided for each Conference by a committee composed of the Presiding Officer, the Secretary-Treasurer, and the Program Officer, who is to serve as its chairman. Amended by ballot vote 1977. Students - $2.00 and faculty - $3. W. H. Coil, Secretary-Treasurer.

Meetings

The Conference is held in the general midwestern area in mid-June, unless otherwise specified by a majority vote of the previous Conference or a majority vote of those listed members replying by mail ballot.

Bylaws

1. Simple majority vote of members in attendance at regularly scheduled business meetings of the Conference shall determine the policies of the Conference.

2. The officers are a Presiding Officer, whose term of office is one year or until his successor is elected (normally his term would expire with the adjournment of the annual Conference over which he presides); a Secretary-Treasurer, whose term of office is two years or until his successor is elected; a Program Officer, whose term of office is one year; and a Policy Committee composed of the last five available retired Presiding Officers plus, ex officio and without vote, the current Presiding Officer and Secretary-Treasurer. The term of office of each full member of the Policy Committee is five years, or so long as he is one of the five most recent, available Presiding Officers. The most recent past Presiding Officer available is the Chairman of the Policy Committee and the Vice Presiding Officer of the Conference.

3. The Presiding Officer, the Secretary-Treasurer, and the Program Officer are elected by a majority vote of those members attending a regularly scheduled business meeting of the Conference or by a majority vote of those replying to a mail ballot of the membership.

4. The Presiding Officer shall preside at all meetings of the Conference and shall arrange for a banquet speaker.

On the first day of a Conference he shall appoint the following committees, which shall serve until they have reported on the last day of the annual Conference: (1) Nominating Committee, (2) Committee to Recommend Future Meeting Places, (3) Committee to Suggest Program Possibilities for Future Meetings, (4) Resolutions Committee, and such other ad hoc committees as may be required.

He shall appoint the Conference Representative for the Council of the American Society of Parasitologists for the year following his tenure of office and serve as a member without vote of the Policy Committee.

5. The Secretary-Treasurer shall issue a call at least four months prior to each Conference for participants in the program for each conference; inform the new Presiding Officer of his duties and the members of the Policy Committee of their tenure and Secretary of the American Society of Parasitology within three weeks after the annual election; serve as member without vote and Secretary of the Policy Committee; and supervise all funds of the Conference.

6. The Program Officer shall be responsible for the general format of the Conference for arranging suitable facilities. It shall also be his responsibility to serve as chairman of the special committee to determine the registration fee for the Conference. The format of the Conference may vary, but should include both a demonstration session open to all members and a session of contributed papers limited to graduate students. Occasionally a symposium may also be included, or may replace the session of contributed papers.

7. The Policy Committee shall determine by majority vote all matters of procedure and policy pertaining to the Conference upon which decision must be reached between consecutive Conferences, as well as all matters referred specifically to it by the membership. Such a vote may be requested by any member of the Conference, but must be directed through the Secretary-Treasurer. The Chairman of the Policy Committee shall request the approval of the membership for all decisions of the Committee at the earliest subsequent business meeting of the Conference.

DIVISION OF CONTINUING EDUCATION

MIDWEST CONFERENCE OF PARASITOLOGISTS

Kansas State University
Manhattan, Kansas
June 9 - 11, 1977

REGISTRATION FORM

Please return this entire Registration Form by May 27 to:

Conference Office
208 Hollis House
Kansas State University
Manhattan, Kansas 66506

NAME _____

ADDRESS _____

_____

_____

Please check the appropriate amounts in the right hand columns below, add the total cost and enclose check made out to "Kansas State University" for the total cost.

Conference Registration Fee (no food or lodging)	@ $4.00	4.00
Dorm Breakfast, June 10	@ $1.35	
Double room (furnished with bed linen only) — Night of June 9	@ $5.50	
Double room (furnished with bed linen only) — Night of June 10	@ $5.50	
Single room (furnished with bed linen only) — Night of June 9	@ $7.50	
Single room (furnished with bed linen only) — Night of June 10	@ $7.50	
Optional Dorm Lunch, June 10	@ $1.75	
Optional Banquet, June 10	@ $5.50	
	TOTAL	

Roomate Preference, if any

_____

PREPARATION OF ABSTRACT

Title, Author(s), and Institution(s)

Please follow the style of the following example without variation.

Please make your abstract fit the following outline; excess will be cropped to fit into the program. We do not plan (nor can we afford) to retype the abstract.

Ultrastructoral Cytochemistry of the Tegumental Surface Membrane of Paragonimus kellicotti. F.M. GRESS* and R.D. LUMSDEN, Biology Department, Tulane University, New Orleans, Louisiana.
(indicate with asterisk person giving paper)

Place title, author(s), institution(s), and abstract within the box below.

Paper: Projectors required,

☐ 2 x 2 and/or ☐ 3-1/4 x 4

Other: _____

_____

Demonstration

Square feet space _____

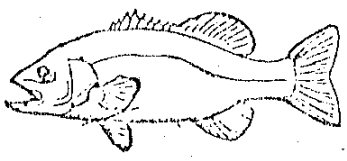
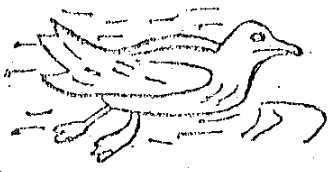
Microscopes _____

Other _____

_____

☐ Graduate Student; Advisor: _____

Send to: Mary Hanson Pritchard
Harold W. Manter Laboratory of Parasitology
W-529 Nebraska Hall, UN-L
Lincoln, Nebraska 68588


29th ANNUAL CONFERENCE OF MIDWESTERN PARASITOLOGISTS

Dear AMCOP Members:

Our annual meeting this year will be held in the Veterinary Medicine Complex at Kansas State University, Manhattan, Kansas, June 9-11, 1977.

Registration: see enclosed materials.

Call for papers and demonstrations:

There will be ample time for both faculty and students to present papers. In addition, there is a two hour demonstration or poster session. Titles and abstracts will be included in the program, which will be mailed to the membership sometime before the meeting.

Call for dues:

The membership overwhelmingly voted for dues (57-14). This means that every dues-paying parasitologist will receive the abstracts for the meeting whether or not that person attends.

The dues are $2.00 for students and $3.00 for faculty. Please make checks payable to AMCOP and send them to Dr. W. H. Coil, Biology-Snow Hall, University of Kansas, Lawrence, Kansas 66045.

Author's name(s) _____

Institution _____

Title: _____

_____

____ Paper, ____ Demonstration, ____ Student (Major Professor _____)

Equipment and space:

Projectors: ___ 2 X 2, ____ 3¼ X 4 , ____ Overhead _____ other

Microscopes: ____ Compound, ____ Dissecting

Space: ____ ft.^{2} of table, ____ ft.^{2} of chart or poster space

Abstract: Please type the abstract single space, no wider than 15 cm and no longer than 11 cm. Use the following format for the title: Tissue site finding in Trichinella spiralis. Caleb Lottogall, Mossyrock University, Americus, Indiana.

DEADLINE DATES:

Dues:	April 1, 1977
Abstracts:	April 25, 1977
Preregistration:	June 1, 1977 (closing date)

Send abstracts and the lower third of this page to: Professor W. D. Lindquist, Department of Infectious Diseases, Kansas State University, Manhattan, Kansas 66506.

Deadline Dates:

Dues: April 1, 1977
Abstracts April 25, 1977
Pre-registration: June 1, 1977 (Closing date)

P R O G R A M

June 9	4:00 - 7:00 P.M.	- Registration; Lobby of Derby Food Center
	8:00 - 11:00 P.M.	- Hospitality at Ramada Inn, room 609 (Cash bar)
June 10	8:00 - 10:00 A.M.	- Registration; Lobby of Derby Food Center
	8:00 - 9:00 A.M.	- Demonstration setup, Veterinary Medical Teaching Bldg. (VMT), room 204
	9:00 A.M.	- Welcome, Dean Trotter, VMT, room 201
	9:30 A.M.	- Wildlife Parasite Panel, VMT, room 201 1. Dr. Gerald D. Schmidt Department of Biological Sciences University of Northern Colorado 2. Dr. Charles P. Hibler Wildlife Disease Center Colorado State University 3. Dr. Glenn L. Hoffman Fish Farming Experiment Station USFWS, Stuttgart, Arkansas 4. Dr. James F. Daly Department of Microbiology and Immunology University of Arkansas Medical Center
		- Discussion
	LUNCH: Derby Food Center if checked on reservation or elsewhere	
	1:00 - 3:00 P.M.	- Demonstrations, VMT, room 204
	3:00 - 5:00 P.M.	- Papers, VMT, room 201
	5:00 - 5:30 P.M.	- Business meeting
	6:30 P.M.	- Banquet, Student Union - Banquet Speaker - to be announced
	9:00 P.M.	- Open House - Dr. W. D. Lindquist 1620 Baltimore Terrace
June 11	8:00 A.M.	- Coffee & Donuts; Foyer and VMT, room 201
	8:30 A.M.	- Papers; VMT, room 201
	11:00 A.M.	- Business meeting, VMT, room 201

Local Committee and Parasitologists

Ameel	Ackert Hall, room 316	532-6615
Lindquist	Vet. Med. Sci. Bldg., room 333	532-5674
Hansen	Ackert Hall, room 232	532-6615
Leland	Waters Hall, room 139	532-6147

Ameel, Donald J., Dept. of Zoology, Kansas State University, Manhattan, Ks. 66502
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Bemrick, William, College of Vet. Med., Univ. of Minn., St. Paul, Minn. 55101
Brandt, Milo, Dept. of Vet. Research, Eli Lilly & Co., Box 708, Greenfield, Ind. 46140
Bricker, Maryann, Dept. of Zoology, Univ. of Iowa, Iowa City, Iowa 52242
Cable, Raymand, Dept. of Biol. Sciences, Purdue Univ., Lafayette, Indiana 47907
Cain, George, Dept. of Zoology, State Univ. of Iowa, Iowa City, Iowa 52240
Coil, W. H., Systematics & Ecology, Univ. of Kansas, Lawrence, Ks. 66045
Corwin, Robert, Veterinary Medicine, Univ. of Missouri, Columbia, Mo. 65201
Cook, Thomas, Science and Tech., Iowa State Univ., Ames, Iowa 50011
Dada, Dept. of Infect. Dis., Kansas State Univ., Manhattan, Kansas 66506
Daniell, David, Dept. of Zoology, Butler Univ., Indianapolis, Indiana 46207
Dickerson, Charles, Research Parasitologist, Ralston Purina Res. Farm, Grey Summit, Mo. 63039
Dillon, Raymond, Dept. of Zool., Univ. South Dakota, Vermillion, South Dakota 57069
Dunagan, Tommy, Dept. Physiology, Southern Illinois Univ., Carbondale, Illinois 62901
Duwe, Arthur, Lake Superior State College, Sault Ste. Marie, Michigan 49783
Dyer, William, Dept. of Zool., Southern Illinois Univ., Carbondale, Illinois 62901
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Garoian, George, Dept. of Zool., Southern Illinois Univ., Carbondale, Ill. 62901
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James, Hugo, Dept. of Biology, Bridgeport University, Bridgeport, Connecticut 06602
Jeska, Edward, Vet. Med. Res. Inst., Iowa State Univ., Ames, Iowa 50010
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