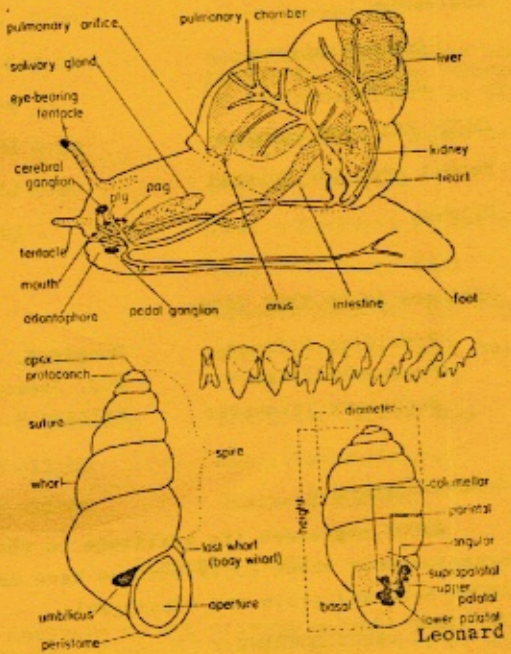
Records

ANNUAL MIDWEST CONFERENCE

OF PARASITOLOGISTS



CHICAGO MAY 31 - JUNE 2

1979

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AMCOP XXXI 1979

Contents

Officers AMCOP XXXI 1979

Presiding Officer	Donald E. Gilbertson
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Acknowledgements

AMCOP expresses its gratitude to the following organizations whose contributions have made the 31st AMCOP both enjoyable and meaningful.

ELI LILLY COMPANY

ANN ARBOR BIOLOGICAL CENTER

LOYOLA UNIVERSITY

May 31	3:00 - 8:00 P.M.	Registration: Mertz Hall Loyola University, 6525 N. Sheridan Road
	8:00 -12:00	Hospitality at local watering spots - unorganized, see map
June 1	7:30 - 8:30 A.M.	Breakfast, Mertz Hall
	8:00 -10:00	Registration, Mertz Hall
	8:00 - 9:00	Demonstration set up, Damen Hall
	9:00 -12:00	Welcome by the Dean Contributed papers
	12:00- 1:00	Lunch, Mertz Hall
	1:00 - 2:00	Roundtable discussion organized by Philip T. LoVerde: "Current Status of Schistosomiasis in Africa."
	2:00 - 4:00	Demonstrations, Damen Hall
	4:00 - 5:00	Business Meeting
	5:30	Dean's Cocktail Party, Hussey Lounge
	7:00	Banquet - Mertz Hall
	8:00	Banquet Address, Dr. Eugene Foor
	9:00 -12:00	Hospitality at local watering spots - unorganized, see map
June 2	7:30 - 8:30 A.M.	Breakfast, Mertz Hall
	8:30 -11:00	Contributed Papers
	11:00 -12:00	Business Meeting

DEMONSTRATIONS

1. Statistical analysis of Schistosoma mansoni miracidia swimming behavior. Gordo G. Plorin, Department of Ecology and Behavioral Biology, University of Minnesota, Minneapolis.

2. Demonstration of lacunar system in Moniliformis moniliformis. Donald M. Miller and T.T. Dunagan, Department of Physiology, Southern Illinois University, Carbondale, Ill. 62901.

3. Intraspecific competitive interactions between schistosome resistant and susceptible stocks of the snail Biomphalaria glabrata. Dennis J. Minchella, Department of Biological Sciences, Purdue University, Lafayette, Indiana.

4. The association of gram negative bacteria with Schistosoma. R. Melhem, Dept. of Biological Sciences, Purdue University.

5. Location and isolation of major ganglia in male Macracanthorhynchus hirudinaceus. T.T. Dunagan and D.M. Miller, Physiology Department, Southern Illinois University, Carbondale, Illinois.

6. Climbing behavior of Haemaphysalis leporispalustris (Acari:Ixodidae), G.N. Vogel, Department of Entomology, University of Kansas, Lawrence.

7. Mass cultivation of Lymnaea cubensis an intermediate host for Fasciola hepatica in the Caribbean. F.R. Medina and F.G. Etges, Department of Biological Sciences, University of Cincinnati.

8. Intestinal parasites of well cared for dogs - a re-evaluation. C. Hewell, G. LaMantia, and V. Barr, Dept. of Biology, Loyola University of Chicago.

PAPERS

9. Transmission electron microscopy of the tumulus - a new organ on the surface of Eubothrium salvelini (Pseudophyllidea). J.L. Tedesco, Zoology Dept., University of Wisconsin-Milwaukee.

10. Comparative light orientation behavior of Dermacentor variabilis and Haemaphysalis leporispalustris (Acari:Ixodidae). M.A. Stanley, Department of Entomology, University of Kansas, Lawrence.

11. Overwintering population changes of Rictularia coloradensis (Nematoda:Rictulariidae) in an intermediate and definitive host. R.T. O'Brien, Department of Biological Sciences, U. of Cincinnati.

12. Electrophoretic variation in enzymes in three schistosome species. M. Fletcher, Department of Biological Sciences, Purdue University, Lafayette, Indiana.

13. Hemolymph ion regulation in osmotically stressed Biomphalaria glabrata. R.A. Sider, University of Cincinnati, Cincinnati, Ohio.

14. Biochemistry of symbiont-containing flagellates. Gerald McLaughlin, Department of Zoology, University of Iowa, Iowa City.

15. Membrane reorganization during in vitro transformation of Ascaris sperm. L.A. Fitzgerald, Dept. of Biology, Wayne State University, Detroit, Mich.

16. Intraperitoneal Brugia pahangi infections in Mongolian gerbils: early host response to microfilariae. Jacqueline Testa, Department of Biology, Wayne State University, Detroit, Mich.

17. Antigenic changes of the ascaris oocyte surface during passage through the oviduct. Y.J. Wu, Dept. of Biology, Wayne State University

18. In vitro cultivation of Alaria mesocercariae. A.D. Johnson, R. Bury, and O. Alawiye, Biology Department, University of South Dalota, Vermillion.

19. A surgical procedure for transplanting intestinal helminths. R. Jilek and J.L. Crites, Department of Zoology and CLEAR, The Ohio State University, Columbus, Ohio.

20. Woodlot mosquitoes: host preferences and the effects of the 1978 Drought. Elizabeth L. Waffle, Eastern Michigan University, Ypsilanti, Mich. 48197.

21. Dolichols from the rat tapeworm, Hymenolepis diminuta. W.J. Johnson, J.A. Oaks, and G.D. Cain, Department of Zoology, University of Iowa, Iowa City.

22. Further studies on the efficacy of mebendazole against Trichinella spiralis in mice. R.O. McCracken and D.D. Taylor, Department of Biology, Indiana University-Purdue University at Indianapolis, Indiana 46205.

23. Glycosphingolipids from the isolated tegument of Hymenolepis diminuta. G.D. Cain, J.A. Oaks, and D.R. Wood, Department of Zoology, University of Iowa, Iowa City.

ABSTRACTS

1. STATISTICAL ANALYSIS OF SCHISTOSOMA MANSONI MIRACIDIA SWIMMING BEHAVIOR. GORDON G. PLORIN, DEPARTMENT OF ECOLOGY AND BEHAVIORAL BIOLOGY, UNIVERSITY OF MINNESOTA, MINNEAPOLIS.

Timed exposure darkfield microphotography was used to characterize the helical swimming patterns of Schistosoma mansoni miracidia in artificial pond water. Measurements were taken of distances, wavelengths, amplitudes, and turning angles from projected images. The distribution of linear speed was determined and showed a mean of about 2 mm per second with a sample deviation of 0.8 mm per second. A negative skew was apparent. The wavelength and amplitude of the helical swimming pattern showed means of 0.81 mm and 0.02 mm respectively. The helical movement was found to increase the total distance travelled by only about 0.1%. An average of 0.44 turns per second was found. The distribution of turns could not be distinguished from a Poisson distribution with the same mean, so that turning appears to occur at random intervals. The average turning angle was 18.1 degrees. The concentration of miracidia did not appear to have any effect on their behavior. (Supported in part by the University Computer Center, University of Minnesota.)

2. DEMONSTRATION OF LACUNAR SYSTEM IN *Moniliformis moniliformis*. DONALD M. MILLER AND T. T. DUNAGAN, DEPARTMENT OF PHYSIOLOGY, SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE, ILL., 62901

Using previously published injection techniques (Miller and Dunagan, 1976) specimens of *Moniliformis moniliformis* will be injected to demonstrate the morphology of the lacunar canal system. The system in this species will be compared with the lacunar systems outlined for *Macracanthorhynchus hirudinaceus* and *Oligacanthorhynchus tortuosa* (Miller and Dunagan, 1976; Miller and Dunagan, 1978).

3. INTRASPECIFIC COMPETITIVE INTERACTIONS BETWEEN SCHISTOSOME RESISTANT AND SUSCEPTIBLE STOCKS OF THE SNAIL BIOMPHALARIA GLABRATA. DENNIS J. MINCHELLA, DEPARTMENT OF BIOLOGICAL SCIENCES, PURDUE UNIVERSITY, W. LAFAYETTE, INDIANA.

A method of interrupting the life cycle of the schistosomes by increasing the proportion of genetically incompatible snails in the intermediate host population has been proposed. The approach assumes that incompatible snails would be at a selective advantage over compatible ones. To test this assumption, intraspecific competition experiments between schistosome resistant (NIH 10-R2 Type I) and schistosome susceptible (NIH 6-4-1 Type III) stocks of Biomphalaria glabrata were run under controlled laboratory conditions in order to determine their relative fitness. Fitness was assessed by measuring its components, the survivorship of the genome through successful reproduction and individual survival. The results suggest that the resistant stock was less fit than the susceptible stock in an unparasitized environment, but that the relative fitness of the resistant stock was high under intense parasite pressure. A possible difference in life history strategies between the stocks was indicated. Genetically more similar (congenic) stocks of snails are now being tested in order to confirm that the differences in fitness are due to the differences in schistosome compatibility.

4. THE ASSOCIATION OF GRAM NEGATIVE BACTERIA WITH SCHISTOSOMA. R. MELHEM DEPARTMENT OF BIOLOGICAL SCIENCES, PURDUE UNIVERSITY, W. LAFAYETTE, IN

Various strains of gram negative bacteria, including Salmonella typhimurium, Escherichia coli, Shigella dysenteriae, Klebsiella aerogenes, Pseudomonas aeruginosa and Serratia marcescens, were interacted in vitro with two species of Schistosoma. The in vitro experiments were conducted on ligatured and non-ligatured worms to determine if the bacteria were associating on the surface tegument, gut epithelium or both. Also, glutaraldehyde-fixed schistosomes were employed to determine if live worms are needed for association. Results to date indicate that all species of bacteria tested will associate with male and female Schistosoma mansoni; however they associate more often with males than with females in ligature, non-ligature and glutaraldehyde fixed experiments.

Ongoing studies are designed to determine the range of parasite-parasite interactions between Schistosoma and gram negative bacteria to elucidate the mechanism, of this interaction, and to assess its importance in disease states.

5. LOCATION AND ISOLATION OF MAJOR GANGLIA IN MALE MACRACANTHORHYNCHUS HIRUDINACEUS. T. T. DUNAGAN AND D. M. MILLER, PHYSIOLOGY DEPARTMENT, SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE, ILLINOIS.

Male M. hirudinaceus contain three ganglia. The cerebral ganglion is located in the ventral wall of the proboscis receptacle in the anterior part of the worn whereas the genital and bursal ganglia are associated with posterior terminus. No nerve cell accumulations have been described in the remaining 95% of the worn. The cerebral ganglion is not visible through the praesomal musculature in the larger species and must be located by careful dissection. Isolation of this ganglion may be accomplished by inverting the worm to expose the proboscis receptacle then cutting the proboscis sheath between the dorsal and ventral receptacle protrusor muscles. This initial cut should begin at the retinacula and parallel the lateral receptacle protrusor muscles. The ganglion may be recognized as a grape-like mass surrounded by the receptacle wall muscle. Initial isolation may require the aid of neutral dyes.

6. CLIMBING BEHAVIOR OF HAEMAPHYSALIS LEPORISPALUSTRIS (ACARI: IXODIDAE) G.N. VOGEL, DEPARTMENT OF ENTOMOLOGY, UNIVERSITY OF KANSAS, LAWRENCE

Analysis of climbing behavior of Haemaphysalis leporispalustris larvae and nymphs on both natural and simulated vegetation indicated a preference for substrates of 12-15 cm in height. This strato-orientation predisposes the ticks to hosts such as cottontail rabbits and ground-dwelling birds. Ticks demonstrated a definite preference for substrates of small tip diameter, although the base diameters apparently had little influence on the selection process. A new climbing arena made with aluminum eliminated many of the problems encountered with glass rods, which had been used by most previous workers. Climbing patterns were recorded on film by time lapse exposure of ticks labeled with fluorescent paint. This technique revealed that ticks evidently employ an edge effect when climbing flat-

7. MASS CULTIVATION OF LYMNAEA CUBENSIS AN INTERMEDIATE HOST FOR FASCIOLA HEPATICA IN THE CARIBBEAN. F. R. MEDINA & F. J. ETGES, DEPARTMENT OF BIOLOGICAL SCIENCES, UNIVERSITY OF CINCINNATI.

Little is known about the biology of Lymnaea cubensis mainly due to lack of good mass culture methods. This snail is amphibious, being less aquatic than other lymnaeid species whose cultivation has been successful.

Autoclaved alkaline soil (clay preferred) is wet until paste. A mud layer 1-2 inches deep is prepared in plastic containers, 55x37.5x 12.5cm, leaving a center hole approximately 7.5cm dia. Algal masses consisting mainly of Oscillatoria sp are ground for 10 sec at low speed in a Waring blender. The algal suspension is added with a dropper approximately 2.5-5cm apart, the trays allowed to dry 2-3 hrs, and then tap water is added until 2.5cm deep. Food formula (less than 1g) made of Cerophyll, ground wheat germ, dog chow, powdered milk(4:2:2:1) and nutrient media for algae are added. Trays are then placed under continuous 40 W white florescent lights where temperature never exceeds 27°C. Once algal overgrowth is obtained, excess water is removed by siphon, except from the center hole. Adult snails (25-50) or egg clutches are placed in the trays; adult snails are removed 1 week later. Newly hatched snails may be seen after 7 days. Trays are sprinkled daily with aerated tap water using an atomizer, and covered with plastic or glass to maintain a saturated atmosphere. Snail formula is added twice a week. This method allows development of an average of 100 adults, 200 juveniles, or 400 or more newly hatched snails per tray without showing any crowding effect.

8. INTESTINAL PARASITES OF WELL CARED FOR DOGS - A RE-EVALUATION. C. Hewell, G. LaMantia & V. Barr, Dept. of Biology, Loyola University of Chicago, Chicago.

In a survey of intestinal parasites on stool samples obtained from dogs in the Rogers Park area of Chicago, Jaskoski (1970), found an infection rate of 13.69%. In order to do a comparison study, and to determine the effectiveness of a Chicago public health ordinance which requires that dog owners remove their pets' fecal matter from City property, it was thought desirable to repeat the pilot study in the same area. The same procedure was used in both studies: that is, floatation of fecal samples in sugar solution.

The results of the 1979 study, done in February through April of 1979 and encompassing 200 samples, and the 1970 study, which collected 846 samples over a two year period, are respectively as follows: Ancylostoma caninum: 12% , 3.78%; Ascarids: 4.0% , 4.25%; Trichuris vulpis: 5.5% , 1.3%; Strongyloides stercoralis: 5.0% , 2.71%. The total infection rate in the present study was found to be 26.5% - approximately double the infection rate of 13.69% found in the 1970 study. This increased infection rate may indicate that the recent Chicago public health ordinance is being ignored , and that the public health problem in this regard appears to be of increased significance.

9. Transmission Electron Microscopy of the Tumulus- A New Organ on the Surface of Eubothrium salvelini (Pseudophyllidea). J. L. Tedesco, Zoology Department, University of Wisconsin-Milwaukee.

Eubothrium salvelini is the most common parasite of adult lake trout (Salvelinus namaycush) along the western shore of Lake Michigan, where they occur primarily in the pyloric ceca of most fish examined. The tegumental surface of E. salvelini is interrupted by a presumed new organ, the tumulus, which appears to display functional significance rather than representing simple surface projections or fixation artifact. The tumulus consists of an elevation of tegumental cytoplasm and is devoid of microtriches. Tumulus density is highest on the scolex (0.04 tumuli/μm^2) and decreases posteriorly (0.02/μm^2 on the anterior strobila; absent on posterior proglottids). Transmission electron microscopy of the tegument and perikarya reveals spherical, electron-dense inclusions concentrated under the surface of the tumulus, within ducts leading into its base and within specialized subtegumental cells. These membrane-bound inclusions measure 0.24-0.29μm in diameter and are found in association with free ribosomes, granular endoplasmic reticulum, mitochondria and Golgi apparatus. Inclusions appear to be produced within the subtegumental cells and transported to the tumulus via a duct. Functional significance of the tumulus will be discussed.

10. COMPARATIVE LIGHT ORIENTATION BEHAVIOR OF DERMACENTOR VARIABILIS AND HAEMAPHYSALIS LEPORISPALUSTRIS (ACARI: IXODIDAE). M.A. STANLEY, DEPARTMENT OF ENTOMOLOGY, UNIVERSITY OF KANSAS, LAWRENCE.

Various stages of unfed and engorged Dermacentor variabilis and Haemaphysalis leporispalustris were tested for their response to overhead light of 85 foot-candles at 85% relative humidity. Unfed immatures of both species exhibited a definite positive response to overhead light. Engorged immatures also reacted positively to overhead light, but the response was somewhat diminished. Unfed adult Dermacentor variabilis were attracted to overhead light, while unfed Haemaphysalis leporispalustris adults showed a negative light response. This last observation is interesting in terms of the relatively nidicolous, host-specific habits of the adult Haemaphysalis leporispalustris, compared to the campestrine, broad-host strategy of Dermacentor variabilis.

11. OVERWINTERING POPULATION CHANGES OF RICTULARIA COLORADENSIS (NEMATODA: RICTULARIIDAE) IN AN INTERMEDIATE AND DEFINITIVE HOST. R. T. O'BRIEN, DEPARTMENT OF BIOLOGICAL SCIENCES, UNIVERSITY OF CINCINNATI.

Peromyscus leucopus and Ceuthophilus spp. were examined for the presence of Rictularia coloradensis from October to April for two and one overwintering periods respectively. In 92 P. leucopus examined the prevalence was 22% and mean burden 2.5. Parasite numbers decreased during the study period in white-footed mice from Ohio, and infection was noted in every month except March. Prevalence (10 to 56%) and intensity (1.0 to 10.9) of infection with R. coloradensis was directly related to the size of the 490 Ceuthophilus spp. from two cave sites in Kentucky. Less significant correlations of prevalence and intensity were noted with time of the overwintering period. A trend of increased mean host size was noted in uninfected, infected with single cysts, and crickets infected with mulitple cysts.

12. ELECTROPHORETIC VARIATION IN ENZYMES IN THREE SCHISTOSOME SPECIES. M. FLETCHER, DEPARTMENT OF BIOLOGICAL SCIENCES, PURDUE UNIVERSITY, WEST LAFAYETTE, INDIANA.

The electrophoretic analysis of proteins provides valuable information for systematics and evolution, but the potential of this approach for the study of parasites has not been fully exploited. This report documents the usefulness of the technique in quantitating genetic variation within and between populations and species of Schistosoma. To study polymorphic variation in proteins in populations of S. mansoni from Egypt and Puerto Rico, individual worms were electrophoresed on starch gels, then stained for specific enzymes. Estimates of the proportion of polymorphic loci (P) for 16 loci surveyed ranged from 0.000 for a laboratory strain to 0.125 for a recent isolate. This indicates that laboratory strains of schistosomes are inbred and may be atypical of natural populations, and thus insufficient material for taxonomic work. Laboratory strains of S. japonicum and of the newly-described S. mekongi were also monomorphic for 13 loci surveyed. However, enzyme differences in electrophoretic mobility between S. mekongi and S. japonicum affected 82 to 91% of the loci examined, while the 4 geographical strains of S. japonicum studied differed from each other at 17 to 36% of the same loci. These data provide strong evidence for the species status of S. mekongi and attest to the potential of the electrophoretic method for the genetic analysis of parasite populations.

13. Hemolymph Ion Regulation in Osmotically Stressed Biomphalaria glabrata. R.A. Sidner, Univ. of Cincinnati, Cincinnati, Ohio 45221

Adult Biomphalaria glabrata snails were maintained in double distilled water (DDW), 1, 5, 10, 15 and 20% artificial sea water (ASW). ASW (1%) raised snails served as controls. Hemolymph (HL) osmolality, Na, K, Cl, Mg, Ca and total protein were determined on 12 individuals of each group. Pooled samples were used for amino N determinations. Concentrations of ions in 10% ASW were approximately 110mOs/Kg, 50mM, 1.4mM, 63mM, 6mM and 4mg% for osmolality, Na, K, Cl, Mg and Ca respectively. Snail HL remained hyperosmotic between 0 and 15% ASW and isosmotic at 20% ASW. HL Mg and K increased in DDW and 20% ASW, and decreased in 10% ASW. K was generally hyperionic becoming isoionic at 15% ASW, Mg was hypoionic at 5% ASW and above. HL Na and Cl increased with ambient salinity. Na was hyperionic (44-107mM) and Cl increased more slowly, becoming hypoionic at concentrations greater than 10% ASW (44-112mM) HL Ca was hyperionic to the media (11-18.5mg%). Bound Ca, protein and amino N remained constant except for a 2X increase in the latter at 20% ASW. Fecundity and growth were enchanced in 5 and 10% ASW. Oviposition ceased in 20% ASW Heart rate was elevated in DDW (51 bpm) and reduced (35 bpm) in 15 and 20% ASW. These data indicate that no hemolymph osmolyte is maintained passively in tolerable salinities and that the isosmotic condition in 20% ASW is the result of an overloading of the osmoregulatory system.

14. BIOCHEMISTRY OF SYMBIONT-CONTAINING FLAGELLATES. GERALD MCLAUGHLIN, DEPARTMENT OF ZOOLOGY, UNIVERSITY OF IOWA, IOWA CITY.

Normal strains of Crithidia oncopelti and Blastocrithidia culicis contain a rickettsia-like bacterium, shown by Trager and Chang (Science 183, p. 532) to supply heme and growth factors to the flagellate. Dwyer and Chang (PNAS 73, p. 852) showed that aposymbiotic strains of C. oncopelti bind about 3.5 times more than con A to their surfaces than do aposymbiotic strains. With the assumption that con A binds glycoproteins of the plasma membrane, normal and aposymbiotic strains were examined with freeze-fracture EM. Normal and aposymbiotic strains were found to contain approximately the same number of intermembranous particles per unit surface area. No discernable differences between symbiotic and aposymbiotic strains of each of the 2 species were found by any of the following methods: 1) dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) patterns of total proteins, 2) specific localization of con A-binding proteins detected in gels by horseradish-peroxidase histochemistry following SDS-PAGE, and 3) uptake kinetics for ^{3}H leucine, its incorporation into SDS-PAGE-separated proteins, and the differential susceptibility of this process to eu- and prokaryotic protein synthesis inhibitors (cycloheximide and chloramphenicol, respectively). ^{125}I-lactoperoxidase labelling of intact flagellates, followed by SDS-PAGE and autoradiography, showed about 5 labelled bands of identical migration in all 4 strains; bands near 25 and 35 kilodaltons appear to label more intensely in the aposymbiotic strains of each species.

15. MEMBRANE REORGANIZATION DURING IN VITRO TRANSFORMATION OF ASCARIS SPERM. L.A. FITZGERALD DEPT. OF BIOLOGY, WAYNE STATE UNIVERSITY, DETROIT, MI.

Spherical, immotile spermatids were collected from the seminal vesicle of Ascaris suum and labelled with either fluorescein-concanavalin A (Fl-conA) or rabbit antisera prepared against seminal fluid (SF-As) followed by fluorescein conjugated sheep anti-rabbit IgG. Spermatids were then transformed into ameboid, bipolar spermatozoa in vitro using homogenates of a male sex gland, the glandular vas deferens, and examined by fluorescent microscopy. Initially, spermatids showed a uniform surface labelling by Fl-conA or SF-As. However, after transformation both labels were excluded from the surface of newly formed pseudopodia, and the interior of membraneous organelles. The label was observed only on the posterior plasmalemma opposite the pseudopod. Fluorescent intensity was increased over the posterior cell region indicating that membrane reorganization occurred by lateral movement and concentration of surface receptors. The surface membrane of in vitro transformed spermatozoa can also be uniformly labelled with Fl-conA and SF-As, and Fl-conA intensely labelled the interior of fused membraneous organelles. Thus, this membrane reorganization does not eliminate specific Fl-conA or SF-As receptors, but perhaps exposes other membrane components over the pseudopod region. Membrane bipolarity appears to be mediated by the fusion of membraneous organelles, and Fl-conA was not observed to diffuse back into the pseudopod membrane for up to 90 min. following transformation. (supported by NIH grant HD-10280)

16. INTRAPERITONEAL BRUGIA PAHANGI INFECTIONS IN MONGOLIAN GERBILS: EARLY HOST RESPONSE TO MICROFILARIAE. JACQUELINE TESTA
DEPARTMENT OF BIOLOGY, WAYNE STATE UNIVERSITY, DETROIT, MICHIGAN.

Once-mated Brugia pahangi females were surgically implanted into the peritoneal cavities of young, male gerbils. At two, four, six, eight and 12 weeks post infection groups of animals were sacrificed, serum collected and pooled, and the number of microfilariae (mf) in the body cavity determined. Sera from infected and control gerbils were absorbed with excretory/secretory antigen (ESA) or with whole mf which had been pre-treated with glycine-HCl buffer (pH 2.8) to remove surface antibodies. ESA was produced by incubating mf in Medium 199 at 37°C, concentrating the supernatant in a B-15 Minicon concentrator (Amicon Corp.) then dialyzing it against PBS. Gerbil immunoglobulins were detected by rocket immunoelectrophoresis using goat anti-mouse gamma globulins (Cappel Laboratories, Inc.) in the antibody containing gel. Total immunoglobulin levels in infected gerbils rose sharply until the fourth week then declined until week eight and remained steady. After absorption with whole mf rocket height decreased 4.8-9.4% when compared to PBS absorbed controls. The pattern of peak reduction corresponded to that of total antibody levels. Absorption of whole sera with dilutions of ESA did not reduce peak height. Since mf were present in very low numbers (0-250) at two weeks post infection and rose to a high of 851,000 at week 12, there appears to be no correlation between the number of mf present and the amount of detectable anti-mf serum immunoglobulins. (Supported by NIH Grant HD10280.)

17. Oocytes removed from the upper oviduct of Ascaris have an irregular, lobate appearance. In the lower oviduct they are smooth elongate cells which, following fertilization, assume the characteristic oval shape. In the present study antisera were prepared against oocytes removed from both upper and lower oviduct regions. In each instance populations of washed isolated cells, in combination with Freund's adjuvant, were injected weekly into the peritoneal cavity of a female New Zealand white rabbit. After seven weeks, serum was collected from each rabbit. Following cross absorption with mature oocytes, the anti sera against immature oocytes (A-I sera) were used as primary antibody in conjunction with fluorescein-labeled-sheep-anti-rabbit-IgG fraction and utilized to illustrate a reaction against immature oocytes. The antisera against mature oocytes (A-M sera) were utilized in a like manner to illustrate a reaction against mature oocytes. Cross reacting antisera, i.e., A-I sera against mature oocytes and A-M sera against immature oocytes produced negative results. Alteration of the oocyte surface were also evident at the electron microscopic level using the perosidase anti-perosidase unlabeled antibody enzyme procedure as well as the ferritin-labeled-sheep-anti-rabbit-IgG technique. From the obvious differences in the surface antigenic determinants between these two cell populations it is concluded that oocytes acquire new surface antigen during their passage through the oviduct. Possibly these changes are related to some "conditioning" which prepares the oocytes for penetration by the spermatozoan.
(Supported by NIH grant HD10280)

18. IN VITRO CULTIVATION OF ALARIA MESOCERCARIAE. A. D. JOHNSON, R. BURY, AND O. ALAWIYE, BIOLOGY DEPARTMENT, UNIVERSITY OF SOUTH DAKOTA, VERMILLION.

Attempts were made to culture the mesocercariae of Alaria arisaemoides, A. mustelae and A. marcianae using the tissue culture medium NCTC-135 with varying amounts of different types of sera. None of the larvae showed any advancement in development in any of the media, although survival time was sufficient for transformation to occur. Initial results with all three Alaria spp. indicated that survival was best in NCTC-135 plus 50% chick serum. In subsequent studies with only A. marcianae, the best survival was found with NCTC-135 plus 50% calf serum. Lipid-like globules appeared in the larval tissues after a few days in culture and the number increased to eventually completely obscure the internal structures of some of the larvae. The globules were smaller and more numerous in A. mustelae and A. arisaemoides than in A. marcianae. (Supported in part by Univ. of South Dakota Graduate School Research Grant)

19. A SURGICAL PROCEDURE FOR TRANSPLANTING INTESTINAL HELMINTHS. R. JILEK & J. L. CRITES, DEPARTMENT OF ZOOLOGY AND CLEAR, THE OHIO STATE UNIVERSITY, COLUMBUS, OHIO.

Methods of transplanting helminth parasites serve an important role in parasitology. The processes of transplantation and subsequent removal are useable means of studying general parasite development as well as repair and regeneration.

A surgical procedure has been developed whereby one may introduce and remove intestinal parasites. A hollow "T" tube is inserted and secured in the intestinal lumen. The parasites are introduced through the section of the "T" tube projecting out of the intestinal wall. Once the parasites are introduced the exposed portion of the tube is capped shut to eliminate intraperitoneal infections. Parasites may later be removed by an aspirator. The procedure requires 30 to 60 minutes initially to insert and secure the "T" tube. Subsequent surgical procedures to remove previously inserted parasites takes approximately 20 minutes. Minimal surgical experience is required. The surgical removal and introduction of parasites may be performed several times on a given animal at 3 to 4 week intervals.

10.

20. WOODLOT MOSQUITOES: HOST PREFERENCES AND THE EFFECTS OF THE 1978 DROUGHT

ELIZABETH L. WAFFLE, EASTERN MICHIGAN UNIVERSITY, YPSILANTI, MI. 48197

11.

Food preference studies were conducted in a southeastern Michigan woodlot to determine which species were most apt to be potential vectors of canine heartworm and human encephalites.

In the first series of collections two German Shepherd volunteers and one human served as free choice bait, usually during evening hours. Four different test sites within and along side of the woodlot were used for 20 min. periods each. The species most commonly collected from dogs were Aedes stimulans complex and Aedes vexans. Aedes triseriatis, vector of California (LaCross) Encephalitis, fed more readily on humans than dogs.

A second series of collections to test nighttime feeding habits was made by placing a dog overnight in a Magoon trap and collecting the entrapped mosquitoes the next morning. The most commonly collected mosquitoes were the Aedes stimulans complex.

The late summer-fall drought severely decreased the numbers of Aedes vexans collected in comparison with previous years. Tires used as artificial tree holes and with additions of water increased the numbers of Aedes triseriatis.

21. DOLICHOLS FROM THE RAT TAPEWORM, HYMENOLEPIS DIMINUTA. W. J. JOHNSON, J. A. OAKS AND G. D. CAIN, DEPARTMENT OF ZOOLOGY, UNIVERSITY OF IOWA, IOWA CITY.

Dolichols are long-chain, polyisoprenoid alcohols, the phosphate esters of which serve as intermediates in protein glycosylation. Minor components of the non-saponifiable lipids of whole H. diminuta have been characterized with a view toward identification of endogenous dolichols. Analysis of these lipids by thin-layer chromatography (TLC) reveals two components migrating similarly to pig liver dolichols in three separate TLC systems. The tapeworm components also resemble the authentic standards in producing a brown color in response to anisaldehyde spray reagent and in reacting positively to phthalic anhydride, a reagent specific for alcohols and amines, but which--under the conditions employed--does not affect hydrocarbons, ethers and most quinones, and which only partially derivatizes tocopherol. Further experiments to establish the identity of these putative dolichols are in progress. (Supported by NSF Grant PCM 77-09112).

22. FURTHER STUDIES ON THE EFFICACY OF MEBENDAZOLE AGAINST Trichinella spiralis IN MICE. R. C. McCRACKEN* and D. D. TAYLOR, DEPARTMENT OF BIOLOGY, INDIANA UNIVERSITY-PURDUE UNIVERSITY AT INDIANAPOLIS, INDIANAPOLIS, INDIANA 46205.

Recent reports have demonstrated the chemotherapeutic effectiveness of a benzimidazole anthelmintic, mebendazole (methyl-5-benzoyl-benzimidazole-2-carbamate), in the treatment of Trichinella spiralis infections in rats and mice. Although the dosages used were much higher than those employed for other purposes in man, the reports are of the utmost importance in relation to the possibility of treating trichinellosis in man. Mebendazole has now been found effective against Trichinella spiralis in a 3-day treatment course during the invasive and encystment phases of the infection in mice at dosages close to, or within the range of those used in man for the control of other helminthoses. Beginning 2 or 4 weeks after inoculation, the number of larvae developing in the musculature was greatly reduced by twice-daily doses of mebendazole at 3.125, 6.25, and 12.5 mg/kg. Considered in conjunction with the previous reports, the total available data show that satisfactory reductions in muscle parasitism can be achieved with an appropriate dosage of mebendazole, thereby reducing the severity of the infection.

23. GLYCOSPHINGOLIPIDS FROM THE ISOLATED TEGUMENT OF HYMENOLEPIS DIMINUTA. G.D. CAIN, J.A. OAKS, AND D.R. WOOD, DEPARTMENT OF ZOOLOGY, UNIVERSITY OF IOWA, IOWA CITY.

Teguments of H. diminuta were isolated by treatment with 0.2% Triton X-100 and separated by differential centrifugation into tegumental (2,500 xg) and vesicular (30,000 xg) fractions (Oaks and Knowles, J. Parasitol., in press). Glycosphingolipids (GSLs) in total lipid extracts of each fraction were recovered and analyzed by a combination of solvent partitioning, column and thin-layer (TLC) chromatography. Neutral GSLs in the Folch lower phase were selectively eluted from silicic acid columns in acetone-MeOH (9:1) and analyzed by TLC on Silica gel G in chloroform-MeOH-H_2O (60:35:4). Polar GSLs in the upper phase were dialyzed vs H_2O and analyzed by TLC in chloroform-MeOH-2.5N NH_4OH (65:45:9). Neutral GSLs of both fractions contained large amounts of mono- and dihexosyl ceramides (CMH, CDH). Tegumental fractions contained four GSLs with mobilities similar to sulfatide standards. These could represent either sulfatides or trihexosyl ceramides (CTH). Tegumental fractions also contained 3-4 GSLs running slightly faster, and three bands slightly slower, than globoside (tetrahexosyl ceramide). The vesicular fraction was notably deficient in GSLs more polar than CDH. Both tegumental fractions were deficient, compared with whole worms, in two prominent bands with mobilities between globoside and sulfatides.

(Supported by NSF Grant PCM 77-09112)

REPORT OF THE 30TH ANNUAL MIDWEST

CONFERENCE OF PARASITOLOGISTS

JUNE 15-17, 1978

The 30th Annual Midwest Conference of Parasitologists was held at Indiana Central University, Indianapolis, June 15-17, 1978. Milo C. Brandt was in charge of local arrangements. E. J. Hugghins was the Presiding Officer.

Sixty-five members attended the 30th meeting. There were ten demonstrations and sixteen papers given in formal sessions. Through the courtesy and generosity of the Eli Lilly Co., the participants toured the Lilly Greenfield agricultural facility and ate lunch at the facility. The banquet address was delivered by Dr. J. P. Dubey entitled: "Recent Advances in Feline and Canine Coccidae and Related Organisms."

The Herrick Award (supported for the twelfth year by Eli Lilly) was presented to Dennis M. McNair for his demonstration entitled, "Techniques for nerve cell mapping in small nematodes." The La Rue Award (supported by Ann Arbor Biological and Private donations) was awarded to Gary L. Hendrickson for his paper, "Migrations of Ornithodiplostomum ptychocheilus (Trematoda: Diplostomatidae) in the fish intermediate host."

The Awards Committee (Ameel, Coil and Cain, chairman) polled the membership concerning the eligibility and criteria for awards. The results are as follows: Both graduate and undergraduate students are eligible for the awards. Students may be eligible for a single award but may not repeat that award subsequently. No joint authorship is allowed. There shall be two judging committees with a common member for coordination.

The "Kemp Proposal" was presented in its final form. A letter from Dr. O. G. Huffman concerning NSF grant reviews was discussed. Brief comments were passed on. Dr. W. H. Coil reported in writing concerning the ASP council meeting in Las Vegas. Extended discussion centered around the 1978 AMCOP program and the amount of time required to handle the extremely lengthy and taxing business of the conference. After forty-five minutes of heated debate, it was the unanimous decision of the Conference to follow the program as printed.

The Site Committee selected Chicago as the place for the 31st annual meeting, May 31, - June 3, 1979.

The officers for AMCOP XXXI are:

Dr. Don Gilbertson, Presiding Officer
Dr. B. J. Jaskowski, Program Officer
Dr. William H. Coil, Secretary-Treasurer

1979 Committes

Judging Papers - David Daniell & Peter Pappas
Judging Demonstrations - Allen Johnson & John Crites
Future Meeting Sites - Milo Brandt & Don Miller
Future Programs - Elizabeth Waffle & Madeline Fletcher
Nominating - Darwin Wittrock & William Dyer
Resolutions - George Cain & Tom Fritsche

AMERICAN SOCIETY OF PARASITOLOGISTS

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Annual Midwestern Conference of Parasitologists
Southeastern Society of Parasitologists
Rocky Mountain Conference of Parasitologists
Helminthological Society of Washington
Southwestern Association of Parasitologists
Northern California Parasitologists
New Jersey Society for Parasitology

The 68th Council Meeting of the American Society of Parasitologists was held on 5 November 1978. All voting members of Council were in attendance —— Significant actions of Council were as follows:

1. The sale of the Anniversary Medal has been discontinued. The remaining 20 will be held by the Society for potential use as gifts in the future.

2. Dr. Frank Sogandares-Bernal moved at the recent SWAP meeting that the ASP Council be asked to consider passing a resolution petitioning the National Science Foundation to form a Parasitology program within the Biomedical Division. The intended purpose of this recommendation would be to insure that all our NSF proposals would be reviewed by persons better able to understand the special problems and advantages of using host-parasite systems as research models. Council considered this matter one of the most important on the agenda. An ad hoc committee on Funding Basic Research in Parasitology was formed.

3. Several actions were taken regarding the Business Advisory Committee's recommendations:

   1st — Short-term interest learning plans: Council did not recommend entering into negotiations with Allen Press to set up an "Allen Press Savings Account" because it was felt that our money probably could not be insured against loss by the company. A modified motion was passed which directed the Secretary-Treasurer to make use of such short-term interest earning plans such as 6-month Treasury Bills, 6-month certificates of deposit, or checking-savings inter-transfer accounts with financial institutions where our funds would be fully insured. This motion further stated that this is a one year trial procedure and that the BAC would fully review this activity and present a report at the next annual Council Meeting.

   2nd — Journal Press Run: Council passed the motion that beginning with volume 65 of the Journal in 1979, the Journal press run will be reduced from 3700 to 3600. This action was considered appropriate because Council took action earlier in its meeting to begin phasing out the Back Issue Program.

   3rd — Reduction in Back Issues Account: No action was taken on this recommendation because Council concluded it was not appropriate to make a decision at this time regarding discontinuation of

printing the Journal index. Instead, the President of Council charged the BAC to present a report at the next annual Council meeting to address in detail all aspects of this question to include all feasible options.

4th — Diversification of Reserve Funds: In general, Council was sympathetic with this recommendation but did modify it somewhat. The point was made that feasibility of diversification was already a forgone conclusion. Therefore, Council passed a motion simply authorizing the Secretary-Treasurer to begin such action with investment in Treasury Bonds being preferred.

4. Council approved the Education Committee's recommendation to reproduce the list of "Opportunities for Graduate Training in Parasitology" by the most economical means possible, and its distribution at cost to all persons or institutions requesting it.

5. Council established an ad hoc committee to evaluate the Techniques in Clinical Laboratory Medicine. It also requested the By-Laws revision committee to consider making this a Standing, rather than ad hoc Committee in the Society.

6. Council approved two recommendations of the Endowment Fund Committee:

   1st — Up to $1000 can be used for a special lecture at the Annual Meeting in 1979. The Endowment Fund Committee will recommend an individual to Council for approval.

   2nd — Up to $2,500 can be used for the President's Symposium at the Annual Meeting in 1979, with the approval of Council.

7. Council recommends that the By-Laws revision committee consider making the Endowment Fund Committee a standing instead of an ad hoc committee in the Society.

8. Council directed the Secretary-Treasurer to inform our Canadian colleagues that we would be receptive to an invitation from ICOPA V to meet in Toronto in August in 1982.

9. Council approved a quarterly ASP Newsletter, supported by Society Funds (no more than $2,500 in 1979) and that the Editor will be appointed by the President with the approval of Council for a 4 year term.

10. Council approved the following recommendations of the Ad hoc Committee to review the Selection Process of the Awards Committee of the American Society of Parasitologists.

    1st — Increase the time table for the consideration of nominations by committee members to allow for more discussion within the committee.

    2nd — The circular sent to Society members calling for nominations for the Ward Medal requires more specific wording concerning guidelines to nominators and the information needed by the committee. Also

increase timetable from call for nominations to deadline for receipt of nominations.

3rd – The letter from the Secretary-Treasurer to the Awards Committee members as to their duties and responsibilities should contain additional guidelines regarding the responsibilities and constraints of committee membership.

11. The American Society of Parasitologists will meet next in Minneapolis, Minnesota at the Raddison Downtown Hotel from 29 July to 3 August 1979.

The 1980 meeting will be held in San Francisco from 3 August to 8 August at the Jack Tarr Hotel.

The 1981 meeting will be held in Montreal on the University campus.

12. The ad hoc Committee on Council-Membership Communication submitted for Councils consideration a proposal by which nominations for certain offices in the Society, specifically Councilor, would be made on the basis of geographical regions. Council did not adopt this proposal.

AMERICAN SOCIETY OF PARASITOLOGISTS

1 January 1979

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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.

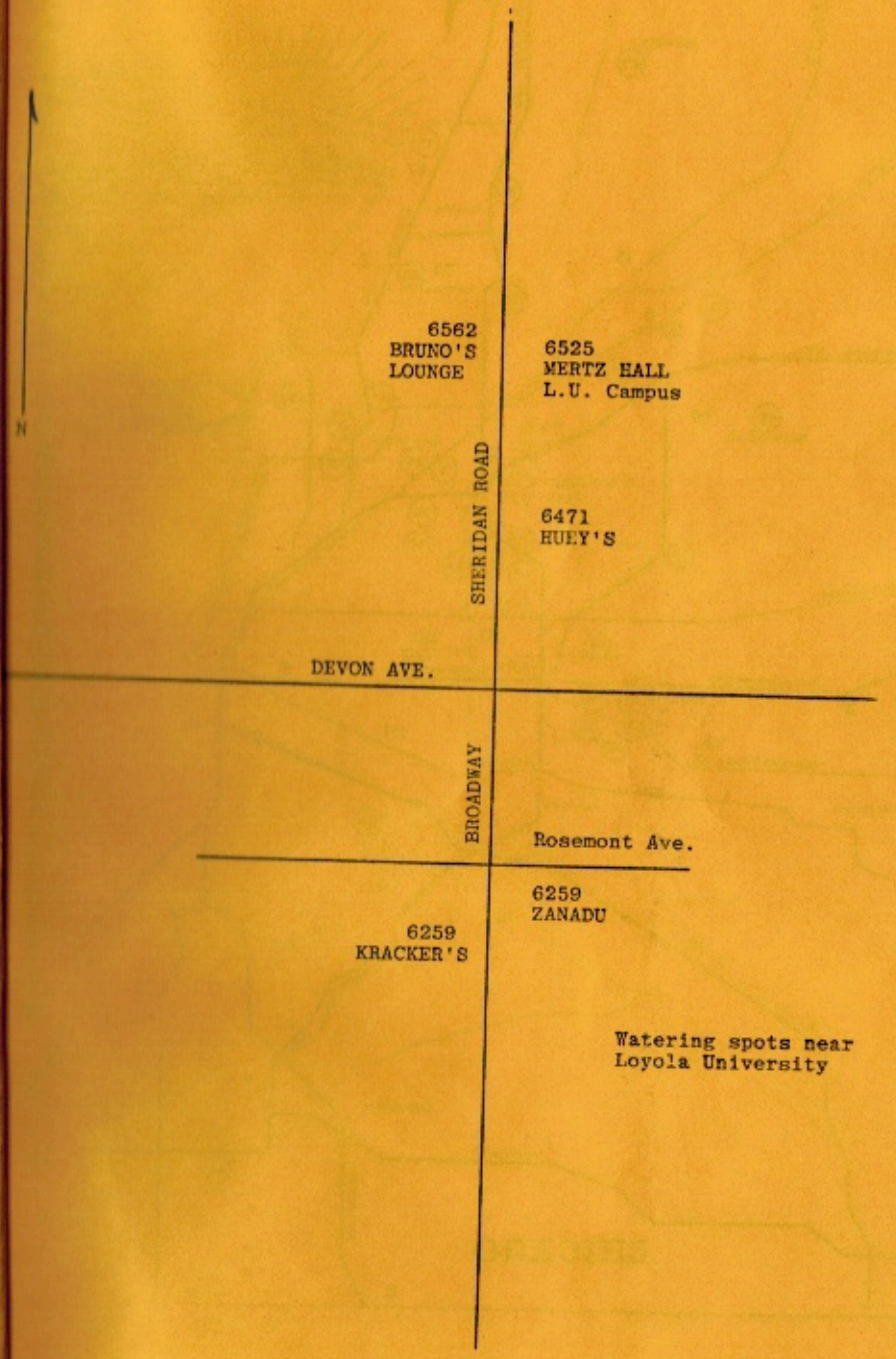
On the first day of a Conference he shall appoint the following committees, which shall serve until they have reported on the last day of the annual Conference: (1) Nominating Committee, (2) Committee to Recommend Future Meeting Places, (3) Committee to Suggest Program Possibilities for Future Meetings,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

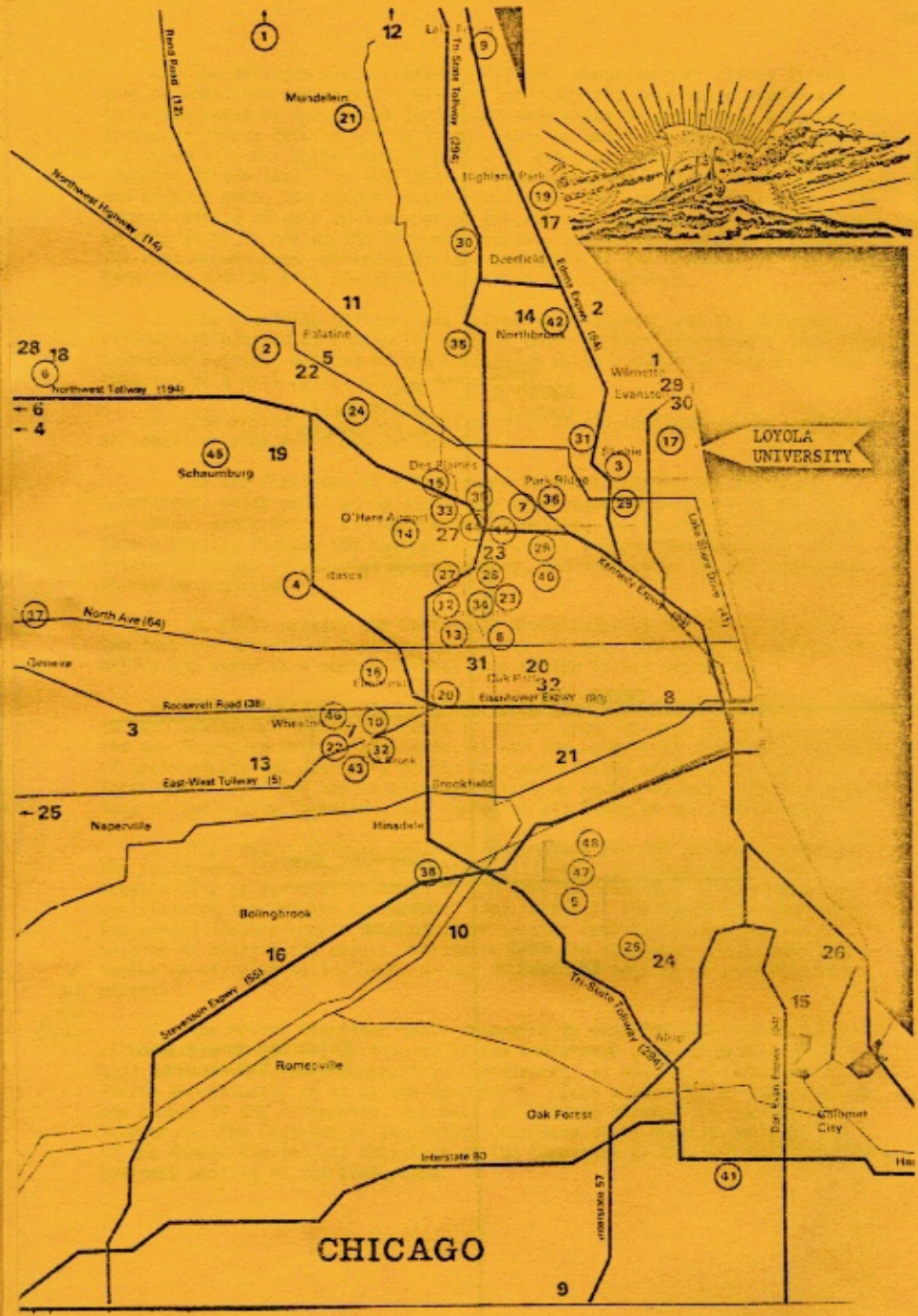
He shall appoint the Conference Representative for the Council of the American Society of Parasitologists for the year following his tenure of office and serve as a member without vote of the Policy Committee.

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.

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