

ABSTRACTS OF PAPERS PRESENTED AT THE SPRING COLLEGIATE MEETING

EASTERN REGION KING COLLEGE

Preliminary Investigation into the Biota and Water Quality of Selected Streams in Cumberland Gap National Historical Park. Elizabeth Woodall and Benjamin Woodall Lincoln Memorial University. To determine the diversity of fish, fish populations and the water quality of Davis Branch, Sugar Run, and Shilalah Creek within the Cumberland Gap National Historical Park an investigation was begun in December, 1983. Data collected to date is indicative of winter and early spring conditions. Species of fish collected in Davis Branch include; *Catostomus commersoni*, *Etheostoma caeruleum*, *Etheostoma kennicotti*, *Etheostoma sagitta*, *Camptostoma anomalum*, *Rhinichthys atratulus*, *Chrosomus erythrogaster*, *Phoxinus cumberlandensis*, *Semotilus atromaculatus* and *Notropis cornutus*. Species from Sugar Run include; *Etheostoma kennicotti*, *Rhinichthys atratulus* and *Semotilus atromaculatus*. Species collected in Shilalah Creek include: *Salvelinus fontinalis* and *Semotilus atromaculatus*. Investigations are continuing and will include flora analysis and the monitoring of atmospheric conditions.

A Preliminary Floristic Survey of the Aquatic Habitats in Western Tazewell County, Virginia. Randy F. Crouse, King College. The drainage patterns, topography, and climate of Tazewell County, Virginia are discussed. Aquatic plant growth factors, their importance to animals and man, and some difficulties involved in delineating the group are discussed. During the 1984 growing season, a floristic survey of the Clinch river tributaries and nearby mountainous areas was completed. Two hundred sixty-seven species from seventy-two families were recorded.

A Statistical Study Of Accidents And Drunk Driving. Genevieve Ritchie, Roane State Community College. In a study of drunk drivers it was found that: (1) The percent of DWI arrests at the age of 19 (legal drinking age) increases significantly over age 18 (non-legal drinking age). (2) In accidents involving drunk drivers the percent of fatalities was significantly higher than the percent of fatalities in accidents not involving drunk drivers. (3) The percent of males involved in DWI arrests was significantly higher than the percent of females involved. (4) Using a Chi-square test it was found that the proportion of DWI arrests was dependent on age, with 20-34 being the age range most likely to drink and drive.

MIDDLE REGION TENNESSEE TECHNOLOGICAL UNIVERSITY

Effects Of Malathion On Locomotor Activity Norepinephrine And Dopamine Levels In Brain, Liver, And Kidney Of Chloral Hydrate Pretreated ICR Mice. Alexander C. Wells Sr. and Kevin E. Daly, Tennessee State University. Studies have been done testing the effect of Chloral hydrate pretreatment in mice injected with various doses of malathion, a widely used organophosphate pesticide. The investigation highlights the effect of this pretreatment on locomotor activity as well as the effects of the drugs on norepinephrine and dopamine levels in brain, liver, and kidney. Mice subjected to the test were crowded into groups of 4 per test dose. Each test dose of Chloral hydrate (0mg/Kg, 50mg/Kg, 150mg/Kg, and 250mg/Kg) was followed on the second and third day of experimentation with either of two doses of Malathion (50mg/Kg, or 250mg/Kg). The data revealed a significant difference in the toxicity of malathion injections when casual doses of chloral hydrate were given. There is also demonstrated a marked difference in locomotor activity. *Norepinephrine (NE) and dopamine (DA) levels in target organs between the control and experimental groups over a 3 day period showed a significant change.* The levels of significance was established at P values of 0.0500 less. (Aided by: a NIH-MBRS Grant awarded to Alexander C. Wells Sr., Grant No. #S06 RR 08092-10.)

Ronnel Alteration of Motor Activity, Body Temperature and Central Catechol Amines After Mixed Etoh-Caffeine Administration. Alexander C. Wells Sr., and Emmanuel Enemkpal. Tennessee State University. The influence of Ronnel administration on mixed ETOH-Caffeine interaction in vivo has been investigated in adult Swiss Albino male ICR mice: with respect to motor activity(MA), body temperature(BT),

Norepinephrine(NE), and Dopamine(DA). Varying doses of Ronnel was given intraperitoneally(IP) on the 1st day pursuant to prior daily (IP) treatment of either mixed (3g/kg ETOH-60mg/kg Caffeine) or 2g/kg ETOH-30mg/kg Caffeine). Data collected is based on last day 30 minutes observation. MA observations started five minutes after drug treatment for 20 minutes. BT was monitored for 60 seconds before decapitation. The results demonstrate that Ronnel was capable of significantly lowering the MA and BT while increasing the catecholamines moderately. (Aided by: A NIH-MBRS Grant awarded to Alexander C. Wells Sr.).

Thin-Layer Chromatographic Detection and Differentiation of Some Central Nervous System Stimulants and Common Adulterants. Lorie Pryor and Judith M. Bonicamp, Middle Tennessee State University. Cocaine, amphetamines, and other central nervous systems stimulants can be differentiated from each other and from common adulterant drugs using a simplified and accelerated thin-layer chromatographic detection technique. The improved detection is accomplished by distinct differences in color reactions through a sequence of four detection stages. The five-parameter specificity (color reactions with the four reagents and R_f s) reduces the need for confirmation of drug identity with the usual companion techniques of GC, GC-MS, or immunoassay analyses. We thank Analytical Systems, Laguna Hills, Ca, for support of this work.

Determinate Error During Indigo Standardization with Permanganate in Acidic Solution. Marissa Evans and Martin V. Stewart, Middle Tennessee State University. A standard solution of indigo carmine in aqueous sulfuric acid has been employed in various redox titrations. Indigo carmine, $C_{16}H_8N_2O_2(SO_3H)_2$, is the water-soluble disulfonic acid derivative prepared from water-insoluble indigo blue, $C_{16}H_{10}N_2O_2$, by sulfonation (90 °C, concentrated H_2SO_4 , one hour) prior to dilution with water and titration. Standardization is accomplished by titration against standard 50/N permanganate solution, the blue indigo carmine changing to a yellow oxidation product at the endpoint. Erroneously high results and large standard deviations encouraged a search for sources of determinate error. We found that the indigo carmine solution prepared from a synthetic sample of indigo blue by this standard analytical method contains a suspension whose heterogeneous reaction with permanganate is much slower than the nearly instantaneous homogeneous oxidation of indigo carmine. A plot of the volume of permanganate titrant versus the time required to reach the endpoint established the kinetic relationship quantitatively and showed that the suspended material is oxidized completely within 15 minutes. This data also established that further oxidation of indigo carmine is not a source of determinate error. When the indigo carmine solution is filtered, the procedure affords accurate and precise results. Acknowledgement is made to the donors of The Petroleum Research Fund, administered by the American Chemical Society, and the MTSU Subcommittee on Research for financial support.

A Review of the Reactions of Phenacyl Chloride with Some Bases. Paula Watts and James H. Hutchinson, Middle Tennessee State University. Some of the reactions of phenacyl chloride with sodium ethoxide and potassium hydroxide will be reviewed. Comparisons of the products of these reactions will be made to the products obtained from the reactions of phenacyl bromide substituted in the para position with bromo, chloro, iodo, methoxy, hydroxy, methyl, and nitro groups. Current and future work will also be discussed involving the reaction of unsubstituted phenacyl bromide with sodium methoxide.

Establishing A Lime Rate For Potentially Acidic (Pyritic) Material On The Tennessee Tombigbee Waterway. David C. McMillen, Tennessee Technological University. A bulk sample of spoil material from Disposal area 1504 on the west side of the Tennessee Tombigbee Waterway was divided into twenty-four pots; four replications of six lime rates. Lime was added to the pots at the rate of zero, two, eight, sixteen, twenty-four, and thirty-two tons per acre. No fertilizer was added. Perennial ryegrass (*Lolium multiflorum*) and crimson clover (*Trifolium incarnatum*) were planted successively and grown in the greenhouse. Germination and presence of growth were noted. Upon termination of the greenhouse part, the clover leaves were plucked for plant analysis and the pots prepared for soil analysis, Micronutrients, macronutrients, and acid base accounting were determined on the soil samples. The resulting data showed that sixteen tons per acre lime would neutralize the active and potential acidity generated from oxidizing pyrite and make plant nutrients available.

Age And Growth Of Centrarchids In A Middle Tennessee Mountain Stream. David LaDon Swann and Frank J. Bulow, Tennessee Technological University. Age and growth rates were determined from scale samples taken during 1983 from four species of centrarchids in Station Camp Creek, a tributary of the Big South Fork River, in the Big South Fork National River and Recreation Area. Growth rates for smallmouth bass (*Micropterus dolomieu*), spotted bass (*Micropterus punctulatus*), rock bass (*Ambloplites rupestris*), and longear sunfish (*Lepomis megalotis*) were slower than those from other streams in the southeastern United States. This slow growth for warm-water fishes may be attributed to the short growing season in this stream. There were only five months during which water temperatures were above 55° F.

Growth rates for brown trout (*Salmo Trutta*) and rainbow trout (*Salmo gairdner*) from a similar nearby stream (Laurel Fork of Station Camp Creek) were found to be comparable to the national average for growth of trout in streams. Temperatures of both streams were above 40° F during ten months.

Automated Monitoring Through The Use Of Fresh Water Mussels. Lorenzo D. Richardson, Tennessee Technological University. A biological monitoring system was established which measured the physiological response of the fresh water heelsplitter (*Properia laevis*) in the presence of water quality disturbances. Techniques for measuring myoelectrical responses are developed and data management accomplished by an automated monitoring system. Responses were detected by probe-type antennae attached directly to the mussels. Antennae leads were connected immediately to a specially designed variable gain amplifier. All signals were digitized for input into a Texas Instrument 9900 microcomputer for direct streamside evaluation. The system permits exposure of several different species of aquatic organisms to test solutions and thus measuring the sensitivity and tolerance of organisms.

Migratory And Breeding Behavior Of Ambystoma Maculatum And A. Opacum. George McGovern, Tennessee Technological University. *Ambystoma* are terrestrial salamanders that breed in an aquatic environment. The Marbled Salamander (*A. opacum*) reproduces in the fall while the Spotted Salamander (*A. maculatum*) breeds in the spring. A study of their migratory and breeding behavior was begun in the fall of 1983. Sampling was done by means of drift fences. A drift fence is a 15 inch piece of plastic buried 3 inches in the ground. Cans are sunk flush to the ground every 20 feet on both sides of the fence. The salamanders run into the fence and walk along till they fall into the cans. These fences were set up from late September to mid April. Mark-Recapture data, migrational patterns, effects of weather and temperatures upon movement, species numbers, sex ratio's and length-weight measurements were recorded.

Preliminary observations indicate that *A. maculatum* exhibit directional migration while *A. opacum* move randomly. Rain, and to a lesser extent temperature, appear to stimulate the movement of these species. Sex ratio's in adult *A. Maculatum* revealed larger numbers of males while juvenile females outnumbered juvenile males. Larger numbers of *A. opacum* females are present within both the juvenile and adult age groups. Population estimates, and length-weight data are currently being computed.

Evaluating Burrowing Mayfly Nymph (Hexagenia spp.) Gill Beat Response To Toxicants Utilizing A Computer-Assisted Biomonitoring System. Carl M. Crane, Tennessee Technological University. Gill oscillation frequencies of the burrowing mayfly nymph, *Hexagenia* spp., are being evaluated as a stress response to changes in water quality. Nymphs readily enter artificial burrows or chambers where they display a rhythmic peristaltic oscillation of their many paired abdominal gills. Low level bioelectric signals produced by gill beats are detected by paired probe antennae arranged in the chambers. Specially constructed variable high gain amplifiers are used to intensify analogue signals up to 10⁶ times. Amplification of the bioelectric signals received is adjusted such that each analogue signal representative of a single peristaltic gill wave is digitized and counted as a single event. Eight biosensing devices, each consisting of an artificial chamber housing a single free living nymph and a pair of probe antennae connected to a separate amplifier, are interfaced to a minicomputer with ROM data management program and dual sided high density floppy disk for data files. Whether significant increases or decreases in the number of events reflect stressful water quality episodes will be evaluated. Selected toxicants at sublethal concentrations will be introduced into test systems to examine possible cause/effect relationships between toxic treatments and gill beat activity.

Some Aspects Of Structural Geology Of La Buena Fe Cave. Frank Bogle, Tennessee Technological University. La Buena Fe Cave is located in the Central American country of Honduras. The country lies in a tectonically active region because the Caribbean plate, on which Honduras lies, is being squeezed between the cocos on North American plates. With the widespread

tectonic activity in the area, it seems probable that some of the caves of the area are influenced by geologic structures of tectonic origin.

La Buena Fe Cave is located near the Southwest corner of Lake Yojoa. The surveyed length of the cave is 320 meters and the total surveyed depth is 160 meters. Exploration and mapping was stopped by a flooded passage. This passage is presumed to be part of an underground drainage system that begins at a swallet near Lake Yojoa and resurges 9½ kilometers to the Southeast as the headwaters of the Rio Zacapa. La Buena Fe Cave is located almost exactly between the insurgence and resurgence of the underground river.

The entrance of La Buena Fe Cave is located in the Atima Formation on El Milagro normal fault. The fault has down dropped the Atima limestone an estimated 410 meters. Another minor splay fault is found just to the east of the cave. Both the El Milagro and the splay fault controls the development of the cave passage. Thin sections made from samples along faults in the cave indicate the El Milagro fault has undergone much more deformation.

The cave apparently developed along the faults because of the high degree of brecciation found in the Atima Limestone. Presumably the brecciated rock is more susceptible to solution as well as to erosion by abrasion.

WESTERN REGION MEMPHIS STATE UNIVERSITY

Response Of Lactobacillus PLantarum To Pantothenate Concentration. Lynne K. Ammon, Christian Brothers College. A microbiological assay was done to determine the quantitative requirement of an essential nutrient, for growth of *Lactobacillus plantarum*. A standard growth curve for *L. plantarum* at optimum conditions, pH 7.2 at 37 C, was plotted. Then variables of temperature and pH were manipulated, to determine their effects on dosage requirement of pantothenic acid to the organism. The pH was altered to 6.8, 7.2, and 7.6, while the temperatures used were 25, 31, and 37 C. Using a Spectronic 20 setting at 550 mu, the optical densities of the cultures were determined and significant differences in dosage requirements were noted under each set of conditions. From this study, it was determined that the lower the temperature, the greater the concentration of pantothenate needed for optimum growth, and the higher the pH, the greater the concentration needed.

Pneumocystis Carinii Antigen And Antibody In Children With Pneumonia. Frank Anderson, Christian Brothers College. The prevalence of pneumonia in pediatric patients in Papua, New Guinea, and the unknown causes of this condition warrant further investigation so that complete treatment can be offered to these children. Antibody titers to *Pneumocystis carinii* were found using enzyme-linked immunosorbant assay and indirect immunofluorescence for three groups: pediatric subjects from Papua, New Guinea who were a) positive, and b) negative, for the presence of the pneumocystis antigen but who demonstrated clinical pneumonia; and c) pediatric patients being treated at LaBonheur children's hospital. It was found that New Guinean subjects positive for the antigen exhibited a higher antibody titer than did those who were negative and those in Memphis, thus reflecting an immune response to this antigen. Results of indirect immunofluorescence titer determination showed no significant difference from those found by enzyme-linked immunosorbant assay.

Effect Of Species Of Animal On The Size And Content Of The Muscle Phase Of Trichinella Spiralis. Sanaa N. Antonios, Tanta University (Egypt). Male albino mice and male rats 1 month old each were used as two different experimental hosts. The animals were each orally infected with 100 *Trichinella* larvae previously isolated by peptic digestion. Two months later the infected animals were killed and some of their diaphragms were subjected to digestion for larval count per gram and the others were compressed between glass plates and stained with Haematoxylin and eosin for the measurements of the cysts using 20X. The presence of double infection in the capsules was also noticed. The results of this study showed that the cyst measurements differ in the two species. In the rat the cysts had mean length of 0.59 mm and a width of 0.06 mm whereas in mice the mean cyst length and width was 0.30 and 0.02 mm. It has been found that 35% of cysts in rats contained two larvae while in mice it was only 10%. It has been concluded that the size of cysts depends on the hosts physiology with a better host producing a larger cyst.

Inefficient Renal Function Effects On Electrophoretic Banding Patterns. Kathy Atwill, Christian Brothers College. One obvious consequence of inefficient renal function is an accumulation of urea in circulating blood. An increase in two minor hemoglobin components, HbA_{1c} and HbA₁, as well as overall increase in carbamylated proteins has been primarily attributed to the spontaneous dissociation of this urea into cyanate whose reactive form, isocyanic acid, then forms a stable adduct with amino groups. Since car-

bamylation is a non-specific binding reaction it has been implied that proteins other than hemoglobin may be affected. The present study was designed to show alterations in plasma proteins possibly resulting from the excess urea present in the blood stream. Whole blood samples from sixteen male and female individuals, ranging in age from 25 to 66 years, were acquired. Six of the individuals were accepting continuous Ambulatory Peritoneal Dialysis (CAPD) treatments. Ten were undergoing hemodialysis and one was diabetic. Polyacrylamide gel electrophoresis was performed using small aliquots of plasma separated from the whole blood samples. Abnormalities in the banding patterns obtained occurred in all but two of the Hemodialysis subjects and in each of the six CAPD subjects. The abnormalities seemed to be primarily localized in the central region of the banding patterns. No correlation has yet been found between blood urea nitrogen levels and types of abnormalities. Nor do there seem to exist specific abnormalities distinctive of the type of treatment being utilized.

Polysomnographic Analysis Of Sleep In Anxiety And Depression. Ron Cowan, Christian Brothers College. Sleep of thirty-two patients who were referred to a sleep disorders center, and who were subsequently diagnosed as having anxiety or depressive disorders, was analyzed. The patient population consisted of 16 people having anxiety disorders and 16 people having depressive conditions. Patients were matched as closely as possible for age and sex. All patients underwent a minimum of two nights of evaluation in the sleep disorders center. In addition to polysomnographic recording, each patient was given a Beck inventory and a psychiatric evaluation. Sleep was analyzed for differences between the two groups in individual night's sleep, as well as for differences between the two groups over both nights. Parameters evaluated included sleep latency, rapid eye movement period latency, total sleep time, total time in bed, sleep efficiency, percentage of each stage of sleep, number of awakenings, total awake time, and number of micro-awakenings. Data analysis is not completed at this date.

Delayed Cryopreservation Of Blood Platelets. Kathleen Delaney, Christian Brothers College. This experiment was undertaken to investigate the effect of the post-collection time interval before freezing, on the morphology and percent recovery of platelets cryopreserved in 5% glycerol, 4% glucose. Whole blood was centrifuged and separated by mechanical means, and the platelets were obtained. After either less than 2.5 hours or more than 2.5 hours, cryopreservant was added. The platelets were frozen in liquid nitrogen and stored at -180 C. After thawing, the platelets were assayed by calculating the platelet recovery and by morphology scoring. It was found that there was a positive correlation between the post-collection freezing time interval and normal morphology, and there was a negative correlation between the post-collection freezing time interval and platelet recovery. This suggests that for better quality platelets, the quantity of platelets is reduced.

Osteogenesis Imperfecta Types II And III: Collagen Analysis. Jeff Grise, Christian Brothers College. Osteogenesis imperfecta II (OI-II) is a lethal, perinatal genetic disorder characterized by poorly ossified bones. Though no consistent biochemist basis is known for the disease, abnormal metabolism of collagen has been observed. Type I collagen from dermal fibroblasts of one control and five OI-II patients was analyzed by radioactive labelling, separation of the chains by polyacrylamide gel electrophoresis, and autoradiography. Type I collagen from dermal fibroblasts of a patient with OI-III, a more progressive form of the disease, was also analyzed. In all cases, the autoradiographic banding pattern revealed a characteristically darker alpha 1(I) band and a lighter alpha 2(I) band, qualitatively indicating the 2:1 ratio of alpha 1(I) to alpha 2(I) chains in type I collagen. However in all cases, a third, unidentified, collagen-like band was observed, which was pronouncedly darker in the OI-III patient, and remains to be analyzed for collagen content. In the OI-II cases, pro-collagen analysis is needed, since no abnormalities in collagen structure were observed.

Quantitation Of 5-Fluorouracil In Human Vitreous Fluid. John Arnold, Christian Brothers College. Periretinal complications are fairly common in such conditions as retinal detachment or penetrating ocular injuries. Massive periretinal proliferation is the common cause of failure in retinal reattachment surgery because periretinal tumors are one direct cause of retinal displacement. The use of 5-fluorouracil (5-FU) as an anti-metabolite in the post-operative prevention of massive periretinal proliferation has been suggested by several ophthalmologists. After the solid tumor is removed, 5-FU is injected into the vitreous cavity to prevent complications. This investigation examined an assay procedure to determine concentration of 5-FU in the vitreous fluid after its administration. The method used was high-performance liquid chromatography (HPLC) and it yielded a satisfactory retention time of 4.20 minutes with a flow rate of 1.0 ml per min through the system. This HPLC assay proved to be a convenient, reliable way of detecting 5-FU concentrations as low as 1.0 ng per ml.

The Toxic Effects Of Coal Smoke On The Cotton Plant. Ginger Manie, Christian Brothers College. After exposing cotton plants to varying concentrations of smoke from high sulfur coal for successive time intervals, a range of toxicity was determined and the effects on the plant, especially the leaf stomata, were observed. Significant differences between groups were noted. Stomatal closures seemed to provide early resistance to the smoke exposure. Groups receiving smoke exposure at low concentrations fared quite well. The group receiving the maximum exposure began to die after five weeks and the control group receiving no smoke exposure began to die after seven weeks. Cotton plants exposed to low concentrations of sulfur-coal smoke flourished more than the control plants kept in the ambient atmosphere where all plants were grown.

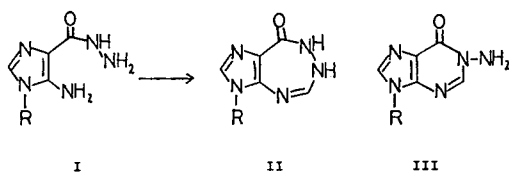
Lectin Effects On Epidermal Cell Migration In Skin Wounds Of *Notophthalmus Viridescens*. Jet Thomas, Christian Brothers College. Epidermal cell migration was used as an indicator to study the effects of the plant lectins, Concanavalin A, *Ulex europaeus* agglutinin, wheat germ agglutinin, soybean agglutinin, and *Dolichos biflorus* agglutinin. Wounded limbs of adult newts were continuously immersed in 25 ug per ml solutions of each of these lectins for 8 hours. There was significant inhibition of epidermal cell migration found in the limbs treated with Concanavalin A and wheat germ agglutinin. The competing sugars for these lectins are alpha-methyl-D-mannoside and n-acetyl-glucosamine. When the wounded limbs were treated with a mixture of one of these lectins and its specific sugar, the effects of the lectin were blocked. The mechanism by which these lectins suppress epidermal migration is not known, but it involves binding of the lectin molecule to specific glycoprotein or glycolipid receptors on the epidermal cell surface.

Some Effects Of Benzo(A)Pyrene And Ultra-Violet Light On Mouse Skin. Carol T. Wismer, Christian Brothers College. Skin cancer is the most prevalent type of malignancy in the United States. Benzo(a) pyrene is a common and widespread chemical present in the environment. This chemical, as a suspected carcinogen, was combined with a petroleum jelly to create a salve that was applied in a thin film topically to a shaven area on the backs of ten mice. Five of these mice were then exposed to a daily dosage of ultra-violet light from a lamp located 24 centimeters above. Two other groups, five mice each, were also shaven and a salve of pure petroleum jelly was applied. One group was exposed to the ultra-violet light under similar conditions as above. Another ten mice were treated to a smear of deionized water and then five mice were exposed to the ultra-violet dosage already described. The results were recorded and interpreted.

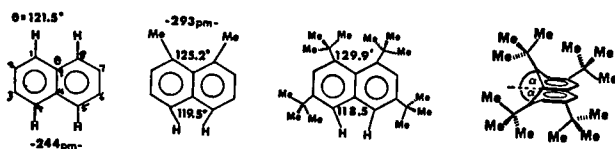
Effects Of Dimethyl Sulfoxide On Vancomycin Penetration Across The Blood-Brain Barrier Of Rabbits. Russell L. Woodard, Christian Brothers College. Dimethyl sulfoxide (DMSO) did not enhance the penetration of the antibiotic vancomycin across the blood-brain barrier of rabbits. A single injection of vancomycin at a rate of 25 mg per kg body weight in 30 percent DMSO at a rate of 5.0 mg per kg body weight into a peripheral ear vein failed to produce detectable amounts of vancomycin in cerebrospinal fluid assays 120 minutes postinjection. Vancomycin concentrations in cerebrospinal fluid greater than 0.5 ug per ml were not detected by fluorescent polarimetry in either the animals injected with vancomycin and DMSO, or the animals injected with vancomycin only. DMSO appears to be discriminating in its opening of the blood-brain barrier depending upon such factors as the compound's molecular weight, effective diameter, lipid solubility, and degree of polarity.

Reaction Of 5-Aminoimidazole-4-Carbohydrazides With Orthoesters: Synthesis Of 1-Aminohypoxanthines. P. K. Bridson and R. A. Davis, Memphis State University. Purine nucleotides play an important role in metabolism. Hence there is great potential for the use of purine analogs in the treatment of clinical abnormalities. We have explored the ring closure of 5-aminoimidazole-4-carbohydrazides (I) with orthoesters as a potential route to analogs of hypoxanthine. Literature suggests that this reaction should give imidazotriazepines (II) by comparison with similar benzotriazepine syntheses. 5-Aminoimidazole-4-carbohydrazides were prepared from the corresponding esters by refluxing with hydrazine hydrate. The esters were prepared by a literature method.

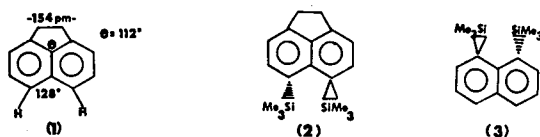
5-Amino-1-benzylimidazole-4-carbohydrazide was reacted with three different orthoesters. Each reaction gave a single product as judged by TLC analysis. These products were characterized as the 9-benzyl-1-aminohypoxanthines (III), and not the triazepines, by the following methods. Proton magnetic resonance gave spectra with a broad singlet at 5.8 τ , strongly suggesting the 1-aminohypoxanthine structure. The structure was confirmed by deamination to 9-benzyl-hypoxanthine. Finally, direct amination of 9-benzyl hypoxanthine, prepared by an unambiguous method, gave material identical to that isolated from the ring closure.



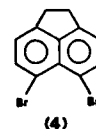
Strained Molecules—A Study Of The Peri Interaction in Naphthalenes.
Kathy L. Reed and Richard Vaughan Williams, Memphis State University.
The strong steric interaction between substituents of the 1 and 8 positions of naphthalene is well recognized. This "peri" interaction leads to distortion of the naphthalene nucleus, the degree of distortion depending upon the steric bulk of the substituents.



In acenaphthene (1) the peri interaction is reduced by the constraining ace bridge. We thus conclude that preparation of compound (2) is feasible even though Seyferth was unable to prepare the analogous (3).



Our approach to the synthesis of (2) begins with acenaphthene (1). Although the dibromide (4) has been prepared, we have developed a much superior, operationally simple, procedure yielding dibromide (4) in improved yield and purity.



The dianion from dibromide (4) can be generated in dry diethyl ether at ambient temperature and quenched with chlorotrimethylsilane to give the desired silane (2). We are currently investigating the physical and chemical properties of (2).

Insulin Pump Vs. Injection In Relief Of Acidosis Investigated By Chromatographic Determination Of Plasma Catecholamine Levels. Susan Lemley, Christian Brothers College. The relative effectiveness of the insulin pump versus traditional insulin injections in relieving diabetic keto-acidosis was investigated, using plasma catecholamine levels as indicators of stress and glucose availability to the cells. A second topic of investigation was the practicality and effectiveness of the newer method. The catecholamines were extracted from the plasma by adsorption on alumina and elution with perchloric acid. High pressure liquid chromatography with electrochemical detection was used to separate and quantitate norepinephrine, epinephrine and dopamine. Data is still being collected and studied.

JOURNAL OF THE TENNESSEE ACADEMY OF SCIENCE

VOLUME 59, NUMBER 4, OCTOBER, 1984

FIRST RECORD OF THE SEMINOLE BAT (*LASIURUS SEMINOLUS*) IN TENNESSEE

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INTRODUCTION

The seminole bat (*Lasiurus seminolus*) has been reported in several states in proximity to Tennessee (e.g., Mississippi, Miller, 1897; Alabama, Howell, 1921; Arkansas, Sealander and Hoiberg, 1954; Georgia, Constantine, 1958; North Carolina, Barkalow and Funderburg, 1960; South Carolina, Layne, 1974; Louisiana, Lowery, 1974). Additionally, Hall (1981) indicated *L. seminolus* to range into a portion of southern Tennessee. However, at present, there are no reports known to the authors which document the occurrence of this species in the state. The purpose of this paper is to record the existence of *L. seminolus* in Tennessee and add it to the list of known Tennessee mammals.

EVIDENCE

During October 1977, a female *L. seminolus* was taken at Meeman-Shelby Forest State Park, Shelby Co., Tennessee. On 6 August 1983, a male specimen was collected at Shiloh National Military Park, Hardin Co., Tennessee, and, on 11 September 1983, a female *L. seminolus* was taken at Whigg Meadow, Cherokee National Forest, Monroe Co., Tennessee. Specimens averaged 102 mm in total length, 50 mm in length of tail, 9 mm in hind foot length, and 10 mm in ear length. All specimens were taken by mist nets.

At the Hardin Co. site, nets were placed across a stream measuring about 6 to 12 m in width. Water level varied from dry stream bed to approximately 1 m. Dominant