ABSTRAETS OF PAPERS PRESENTED AT THE SPRING COLLEGIATE MEETINGS

EASTERN REGION

CARSON-NEWMAN COLLEGE

"Short Tone Versus Tonic Tone on the Self-Concept of Adolescent Girls," Rose McConnell, Marrvll College. Three groups of girls age 13 to 17 were administered the Tennessee Self-Concept Scale within weeks of their regular physical examinations. Girls receiving medical care outside as well as self-care was observed in three of the subjects. The other two girls showed little change in behavior or self-concept. Behavior of the subjects appeared to be related to their self-concept. It was concluded that the group home provided adequate care, and that mothers of the girls were satisfied.

"A Search for Brightness Variation of Pericar A Star: Results of a Two-Year Study," Susan C. Ladd, King College. (No abstract provided.)

Photoelectric Study of Seeing Binary Stars," Jeffery M. Lallone, King College. (No abstract provided.)

"Isomerization of Dimethylamine to Dimethyleamide," W. G. K. Kinser, Amine Catalysis and Steric Effects," Andy Pickard and Irving T. Glover, Roane State Community College. The isomerization of maleic anhydride to fumaric esters is catalyzed by primary and secondary amines but not by tertiary amines. The reaction is first order in amine and first order in maleic anhydride. Comparison of the relative rates of the reaction when catalyzed by amines with varying degrees of steric hindrance indicates that steric requirements are important in the transition state.

"Isomerization of Dimethylamine to Dimethylamide Part 2: Enantioselectivity and Kinetic Energy of Activation," Claude Birtuin and Irving T. Glover, Roane State Community College. The isomerization of maleic anhydride to fumaric esters, whereas tertiary amines are ineffectual as catalysts. This suggests a particular role for hydrogen bonds to nitrogen in the catalytic action of the amines. The existence of a reaction mechanism in accord with a cyclic transition state where hydrogen bridging may be involved.

"Prediction of Substituted Nitrobenzenes in 2-Fenylcyclohexane," David L. Lippscomb, Delaware State University. (No abstract provided.)

"Effects of Vision E on Reproduction in White Rats," Richard R. Tidmarsh, Carlow College. This study investigated the effects of vitamin E on the offspring of eight Sprague-Dawley females, a total of 24 litters. The mean number of live births was 24 to 26 (95% CL 24.2 to 25.8). The body weights of the offspring were significantly lower than the mean body weight of the gestational period for each of the groups of offspring. The offspring were of normal weight and did not show any abnormalities.

"Vitamin A and B12 in Human Lymphocytes. A Study of Selected Aminotransferases on the West Pottage of the Little Pigeon River," J. Greg Johnson and James A. Kinsey, Roane State Community College. This study was undertaken with the objective to determine the effects of vitamin A and B12 on the aminotransferase activities in human lymphocytes. The enzyme activities in vitamin-deficient individuals were compared with those in normal individuals. The results indicated that vitamin A and B12 are essential for the proper functioning of the immune system.

"Standard Methods for the Examination of Water and Wastewater, Simplex Point A. A Study of the Tennessee Valley University," Chris Kinsey and James A. Kinsey, Roane State Community College. This study was undertaken to determine the effects of vitamin A and B12 on the aminotransferase activities in human lymphocytes. The enzyme activities in vitamin-deficient individuals were compared with those in normal individuals. The results indicated that vitamin A and B12 are essential for the proper functioning of the immune system.


"Attitudes of Interracial Marriage as a Function of Sex, Race and Experience of Race," Janet Donnellon and James A. Kinsey, Roane State Community College. (No abstract provided.)

"Effects of Oxygen Inhalation on Digital Nerve," Debbie K. Kinsey, Roane State Community College. (No abstract provided.)

"Acetylcholinesterase and Sensitivity of the Upper Extremities to Cold," Macie C. Holthofer, Tennessee Technological University. (No abstract provided.)

"The Reaction of Metal Vapors with Cyanotriphenyls," Steve Hay, Christian Brothers College. (No abstract provided.)

"E lectrophoretic Separation of D aspartic Acid Derivatives," Giuseppe G. Gait, Christian Brothers College. (No abstract provided.)

WESTERN REGION

CHRISTIAN BROTHERS COLLEGE

"Study of Effective Field Strength of Salt Solutions on Lenna minor, Duckweed," Michael Sharp, Christian Brothers College. This study was undertaken to determine if ammonium nitrate and potassium chloride, with sucrose acid solutions, provide for use in nitrogen metabolism. Due to a lack of evidence, there was no significant evidence to support this, though there is some evidence from the work of others that indicates that the plant grows much like duckweed in an aquarium.

"A Study of the Egg Embryo of the Pacific Fowl (Gallus Gallus)," Tom K. Ballard and John Martinetti, Lambuth College. This project was designed to obtain information pertinent to the research currently being undertaken concerning the effects of use of lead versus stainless steel shot in shotguns. Since iron and other elements or alloys are hallucinatory to lead shot, the extent of lead poisoning must be known to enable a comparison of its effects with those of今日的 heating limits due to the use of less suitable shotshell projectiles. The results showed no immediate change in the egg embryo of the Pacific Fowl as compared to the control egg embryo (middle fork of Forked Deer River near Eaton, Tennessee. Therefore, the use of lead versus stainless steel shot in shotguns was not warranted.

The list continues with more abstracts from various colleges and universities in both the eastern and western regions. The abstracts cover a wide range of topics from chemistry to biology, with a focus on experimental and observational research. The descriptions vary in length and detail, indicating the breadth of scientific inquiry being explored by these institutions.

The abstracts detail experimental setups, results, and conclusions drawn from scientific studies. They are written in a concise, academic tone typical of scientific literature, focusing on the methods, results, and implications of the research. The content reflects the diverse interests and areas of study within the scientific community, from the effects of environmental factors on animal behavior to the analysis of chemical reactions in laboratory settings.
tion of dimethylaminonaphthalene-5-sulphonyl (DNS) amino acids. Preliminary work was done with Whatman papers number 1 and 2. On cellulose acetate the samples moved as compact spots, allowing the use of smaller samples, and better separation was obtained than with paper. Three buffers were used: 0.8% pyridine, 0.4% acetic acid in H₂O (pH 4.4); 0.1 M Na₂PO₄-NaOH (pH 12.7); and 0.025 M Na₂CO₃ (pH 10.3) which proved most satisfactory. Using a cooled plate apparatus, the paper drew 20-35 mA at 500 volts DC whereas the cellulose acetate drew only 3-7 mA. Optimum sample sizes were 0.5 µl and 0.05 µl, respectively, for the paper and cellulose acetate. Good separation of glycine, alanine, valine, leucine, isoleucine, proline and methionine was obtained on cellulose acetate in one hour.

"Equilibration of Lithium in Dog Blood," Bernard E. Gant, Christian Brothers College. This experiment was done to determine the rate and amount of lithium that could be absorbed by the erythrocytes of dog blood, as well as determine the point at which the lithium concentration equilibrates in the blood. This was accomplished by extracting a measured amount of blood, 8-10 ml, and adding a certain concentration of lithium, approximately .13 milliequivalents per liter with the blood being maintained at 37°C in a water bath. Samples were taken at a set interval, 20 minutes after the addition of lithium and one sample every hour thereafter. At this concentration, an equilibration point could not be reached. However, when the concentration was doubled, to .26 meg per liter, it was found that an equilibration point was reached after 4 hours from time zero.

"The Experimental Determination of the Dufour Effect in Liquids," Marshall H. Crenshaw, Southwestern at Memphis. The Dufour effect is a so-called "cross-phenomenon," due to the interference of two simultaneously occurring irreversible processes. It is the flow of heat produced by a concentration gradient, and is said to be reciprocal to the diffusion produced by a temperature gradient.

An introduction to reciprocal phenomena will be followed by a brief development of phenomenological equations describing the Dufour effect. Measurements of Dufour coefficients carried out at Southwestern will be described. The results will be compared to thermal diffusion data, as a test of the Onsager reciprocal relations.

"Effects of Plasma Proteins on Red Blood Cell Morphology," Steven Nokes, Christian Brothers College. Human red blood cells exist normally in the biconcave disc shape. Discocytes will become crenated (echinoctyes) when ATP and plasma proteins are removed. The transformation is reversible and shows a great specificity for albumin. The reversion rate for echinoctyes receiving albumin coincides almost exactly with autologous echinoctyes receiving plasma, suggesting that albumin is the component of plasma responsible for modulating the morphology. IgG and plasma proteins lacking IgG and albumin were not effective in reversing the disc to echinoctye shift. Bovine albumin is more effective than human albumin in reversing echinoctyes to discocytes using human red blood cells.

"The Reactions of Metal Vapors with Cycloheptanone," Stephen G. Nagy and Dr. Lyle D. Wescott, Jr., Christian Brothers College. The reactions of metal vapors with cycloheptanone co-condensed at 77°C produced cycloheptene, cycloheptane, norcarane and the reductive coupling produced 1,1'-dihydroxy-dicycloheptyl in addition to some aldol condensation products. In every case except Ni, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, and Zn all produced the same products though in different ratios, and also a new product (m/e=96) having a mass spectrum strikingly similar to cycloheptene and norcarane was observed. This new product is believed to be bicyclo (3.2.0) heptane resulting from a 1-5 transannular C-H insertion of a proposed carbene intermediate. The reactions of Ni with cycloheptanone are unique and yield a group of compounds (m/e=98) believed to be heptanes.

"An Investigation into Glutathione Deficiency Anemia," Michael W. Thomas, Christian Brothers College. The reported cases of glutathione deficiency anemia were examined. A comparison of the hematological data and symptoms of these cases suggested the possibility of glutathione deficiency in the primary subject.

A new method was developed for the qualitative determination of blood glutathione utilizing the reaction of 4-chloro-7-nitrobenzo-2-oxa-1, 3-diazole (NBD-chloride) with sulphydryl groups, as an adaptation from other procedures.

The level of NBD-chloride reactive groups in the blood of the primary subject was the same as that of a healthy subject who had no history of anemia. It was concluded that the primary subject did not have an anemia attributable to glutathione deficiency.

"Diethanolamides as Surfactants in a Tertiary Oil Recovery Process," W. H. Wade, Tony Phillips, and Michael Hayes, Union University. The interfacial and surface tension behavior of several diethanolamides was investigated to determine whether or not they could be used as surfactants in a tertiary oil recovery process. The interfacial tensions of several mixtures involving the diethanolamides versus hydrocarbons were measured using the spinning drop technique. The influence of surfactant structure, molecular weight, and salinity on the low tension behavior was examined. The critical micelle concentration of several of the synthetic diethanolamides was determined. The effect of surfactant structure, hydrophobic character of the surfactant, and salinity on the critical micelle concentration is discussed.