ABSTRACTS OF PAPERS PRESENTED AT THE SPRING COLLEGIATE MEETINGS

EASTERN REGION
ROANE STATE COMMUNITY COLLEGE
HARRIMAN

"An Analysis of Hematological Factors Among Administration, Faculty, and Staff of Roane State Community College", Pamela A. Brown, Linda Culpepper, Marilyn Mason, and Myrian Works. Roane State Community College.

An analysis of hematological factors was conducted on volunteer members of Roane State Community College, Harriman, Tennessee. The study of 56 individuals was implemented by four members of Anatomy and Physiology 2320 class from March 5 through March 8, 1974. Two students, one a medical technologist and the other a practical nurse, extracted blood from each participant by the simple finger-prick method. The remaining two students assisted in the clerical work and examination of the data. A total of four blood tests was performed on each individual. These include blood glucose level (Dextrolab), blood pH (Nitrolab), and ABO-Rh typing (Landsteiner). In addition, blood pressure was also recorded. In an interview with each participant such factors as age, sex, height, weight, current prescribed medications, hereditary circulatory problems, temperament, and occupational specialty were noted.

Though the test methods were not of a high clinical certainty but rather those commonly used in the educational laboratory, a diversity of blood factors was noted among the individuals sampled and the testing provided invaluable experience for the student clinicians. Two accounts of a high blood glucose level were recorded, blood pH levels were all normal, and ABO-Rh types closely resembled the national scale. Four incidences of high blood pressure were suspected on evaluations of the recordings.

As a conclusion of the experiment students will prepare an evaluation with proper written explanation of the findings on each test performed and report the results to the participants. In the case of any abnormality, proper referral to local medical specialists will be advised. The college infirmary will receive a comprehensive report of the findings.


A study was made during June-August 1973 of several parameters (pH, temperature, hardness, alkalinity, and light transmission at depth) in Center Hill Reservoir and possible relationships to the heavy spring and summer rains in 1973 (40.83 inches from January-June). Data was compared to that amassed by Arnold Gnilda in 1966-7 (rainfall for the same period was 21.81 inches and 23.82 inches respectively).

The results of the study indicated little correlation between summer rainfall and the investigated parameters. No cause-effect relationship between the spring rains of two years and the resultant data was found. Comparisons with 1966-7 study of Arnold Gnilda showed the concentration of total hardness, calcium hardness, and total alkalinity to be higher in 1967 while the phenolphthalein alkalinity was of a higher concentration and the pH of a more alkaline range in 1973. Some unexplainable inconsistencies occurred between the turbidity and apparent color, and the light transmission at depth near the middle of August with the latter remaining high while the former rose. No unusual variations resulted from increased rainfall.

"Sensitivities of Tobacco to Chromium from Cooling Tower Debris", Patricia Dreyer. Tennessee Wesleyan College.

The practice of adding chromium, zinc, and phosphorous compounds to the recirculating water of cooling towers is widely used to inhibit corrosion and pitting. Elements from natural streams in make-up water and salts added for corrosion control are concentrated through evaporation. Quantities of these elements or compounds are lost to the atmosphere through drift and transferred to terrestrial ecosystems.

In my study, I used tobacco plants, which are sensitive to chromium, to assess the impact of chromium contamination of soil and water. Mainly chromium-contaminated potted plants were placed a 15, 30, 600, and 1400 (control) meters from the cooling towers. Four plants were harvested in a 1 week intervals for a total of 9 weeks and were examined for total plant biomass, leaf biomass, leaf area, and general vigor estimates. These parameters were correlated with concentrations of chromium to evaluate increased trace elements (in this case chromium) through airborne contamination to vegetation as the result of cooling tower operation.

"Oxidation of Polyethylene Microspheres", Lewis E. White and John M. Graves. Lincoln Memorial University. Heretofore, tests for oxidation in polyethylene have been an almost exclusive long term process, with testing times ranging from a few weeks to several years.

Through the use of microscopic samples, spherical, shape ranging from 100 to 500 microns in diameter, we have now done considerable studies on the effects of short term oxidation in polyethylene. Oxidation will add little to the overall sphere diameter. Our study would add considerably to the density of the microsphere. For this reason studies revolving around the use of density gradient columns, set up and calibrated under precise ASTM standards.

Further experiments are underway to determine if this holds true in a wide range of sphere sizes.

"Analysis of Gap Creek During a Flood Time", Jerry Gray. Lincoln Memorial University. Samples of water were taken from three points in Gap Creek over a ten-day period. The water was analyzed for pH, salinity, alkalinity, hardness, total solids, total phosphate, chemical oxygen demand, and conductivity.

"A Preliminary Search for the Distinguishing Characteristics Among Academic, Restriction/Probation, Students", James Sterling Fitzgerald, Bryan College. The major objective of this study was to determine in what areas of performance and ability the low-achiever significantly differs from the student who experiences no difficulty. The subjects were 44 students in academic restriction/probation during the 1973-74 academic year compared with a randomly sampled control group from the student body at large. A statistical analysis of thirteen different areas of performance and ability was conducted. Statistical significant differences were found at the following significant levels in the following areas of performance: .001 (99.9%), American College Testing (ACT) program Social Science and Composite, Science Research Associates (SRA) test vocabulary, Otis Quick-Scoring Mental Ability test and High School Grade Point Average: .01 (.99%), ACT English, Math, and Natural Science, the Differential Aptitude Abstract Reasoning test, and SRA Total Reading: .05 (95%), SRA Comprehension. Not statistically difference were the SRA Reading Rate and Reading Skills scores. As a group, the academic low-achievers read at a more rapid rate than the control group.

The results show a probably mental impairment compounded by weak comprehension and vocabulary. In addition, the low-achievers, as a group, also appear to have a inability to manipulate abstract concepts and principles. The combination of ACT scores and High School GPA into a well-designed measuring instrument could prove to provide the best prediction of possible college success.
MIDDLE REGION
THE UNIVERSITY OF THE SOUTH

G. T. Walker. The University of the South. It is possible to do a great deal of work that requires the function of probability density for any one or two particle dynamical systems. In the specific case of atomic orbitals, there is an electron density of a hydrogen-like orbital. The quantum mechanical aspects are relatively simple, and most of the effort is directed toward understanding how these functions operate as the necessary mathematical manipulations. Graphs are most conveniently displayed in a two-dimensional plot. If these functions, however, employ three-dimensional spherical polar coordinates, and a transformation must be made. The wave functions themselves are derived from general generating formulas. Three independent functions, radial, azimuthal, and azimuthal, of one variable each are combined to yield the function shown on the graph. In addition, the wave functions are plotted on a three-dimensional surface.

The Extinction Curves of Taste Avoidance Learning in Rats, Rick Osgood. The University of the South. A procedure which appears to be effective in producing extinction in rats is one used by Thalmann to study the taste avoidance behavior through repeated presentations of the sucrose solution. In the present study, it was found that the learned avoidance of the taste of the sucrose solution was not due to the fact that the rats learned to avoid the taste of the sucrose solution, but due to the fact that the rats learned to avoid the taste of the sucrose solution.

"Similarity of Paradoxes," Dan Stancil, Tennessee Technological University. The concept of two polygons being similar, or at least two triangles being congruent, is usually defined in terms of angles and/or of sides of the geometric figures. Such a definition allows a triangle to be related to a triangle and a plane for example. Thus, a polygonal figure as defined by a series of points is a plane figure as defined by a series of points. Therefore, the definition of an arbitrary bounded planar set is intended in terms of the similarity of the polygons.

Corresponding points are also defined for two polygonal figures in a coordinate system. A point is considered the center of a polygon if its coordinates of a point on a parabola if the distance from the center of the polygon to the point is the same as the distance from the center of the polygon to any other point on the parabola. The distance between the corresponding points for the corresponding point is known.

"Effect of Sodium Chloride, Sodium Dodecyl Sulfate, and an Enzyme on the Production of Bovine Plasma Cytolytic Tumor Cell Death" by Hugh P. McCormick and J. M. Waskin. University of Tennessee at Knoxville. The study was conducted to determine the effect of sodium chloride, sodium dodecyl sulfate, and an enzyme on the production of tumor cell death. The results indicate that sodium chloride and sodium dodecyl sulfate did not significantly affect tumor cell death. The enzyme, however, significantly reduced tumor cell death.

"A Study of Precipitation of Absolute Gravity with Kaare's Reversible Pendulum." Dennis H. McManaway. The University of the South. The study was conducted to improve the accuracy of gravity measurements. The results indicate that the accuracy of the pendulum measurements was significantly improved.

"A Comparative Microbiological Assay of Bacterial Popula-

tions in Marketable Milk." Susan P. Schacter, Christian Brothers College. Milk is an excellent medium for bacterial growth, and the growth of bacteria can vary widely. The purpose of the experiment was to compare the growth of bacteria in milk from different sources and under different conditions. The results indicate that the growth of bacteria in milk is affected by the source of the milk and the conditions under which the milk is stored.

WESTERN REGION
CHRISTIAN BROTHERS COLLEGE
Effects of various growth factors on the production of trypsinase, a proteinase, by Bacillus subtilis. The study was conducted to investigate the effects of various growth factors on the production of trypsinase. The results indicate that the production of trypsinase is affected by the type of growth factor and the concentration of the growth factor.

"A Comparative Study of the Effect of Various Dyes on the Activity of the Enzyme." The study was conducted to investigate the effects of various dyes on the activity of the enzyme. The results indicate that the activity of the enzyme is inhibited by certain dyes.