PROCEEDINGS OF THE TWELFTH ANNUAL MEETING OF THE ASSOCIATION OF SOUTHEASTERN BIOLOGISTS

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The Twelfth Annual Meeting of the Association of Southeastern Biologists was held at the University of Alabama, Tuscaloosa, Alabama, on April 20-21, 1951. Meeting with the Association were the Southeastern Section of the Botanical Society of America and the Southern Appalachian Botanical Club. One hundred and ninety members, visitors, and friends registered for the meeting. A total of fifty-five papers dealing with biological research in the southeast appeared on the program. Twenty-nine papers were botanical subjects and twenty-six were zoological subjects. Sixteen institutions were represented by the papers presented. These institutions represented eight states. The distribution of papers by states was as follows: Florida, 15; Georgia, 12; Tennessee, 10; North Carolina, 7; Louisiana, 6; Alabama, 3; Mississippi, 1; and Virginia 1. Sixty-five applicants were elected to membership in the Association. One application for membership was received after the final business meeting. The combined membership list is four hundred and thirty-six. Two hundred and sixty members have paid dues for 1951. Forty-eight members have not paid their dues for 1950. Fourteen members have not paid dues for two years and will be dropped for non-payment of dues.

A total of one hundred and forty persons attended the annual banquet of the Association, served at the Tuscaloosa High School Cafeteria. Dr. H. M. Phillips, past president of the Association, presided. Following the address of welcome and the acceptance, the guests and officers of the Association were presented. Dr. Walter S. Flory, Jr., Chairman of the Committee on Research and Awards, announced the recipients of A. S. B. awards. The 1950 Phipps and Bird Research Fellowship of $200.00 for study at the Mountain Lake Biological Station was awarded and accepted by Mr. John E. Davis, Jr., of Washington and Lee University for "Taxonomic and Distributional Study of the Myxosporidia Infecting the Fish of the Mountain Lake Region." The 1951 Phipps and Bird Research Fellowship was awarded to Dr. Hiden T. Cox of Virginia Polytechnic Institute to continue a study on the cytology and anatomy of the Rhododendron-Azalea complex of species and to make collections of soil algae in the Mountain Lake area. The A. S. B. Research Prize of $100.00 for 1951, sponsored by the Carolina Biological Supply Company, was awarded to Nyra Harrington and Robert Koza of the Oak Ridge National Laboratory and the University of Tennessee for their paper, "Effect of X-Radiation on the Desoxyribonucleic Acid and on the Size of Grasshopper Embryonic Nuclei." Dr. Frederick T. Wolf, Vanderbilt University, received Honorable Men-

tion for his paper, "The Production of Indole Acetic Acid by *Ustelago zeae* and Its Possible Significance in Tumor Formation." The main address of the meeting was given by Dr. Elon E. Byrd, retiring president of the Association. He spoke on "Educating American Men of Science."

The Executive Committee held two scheduled meetings: one on April 19 from 7:30 P.M. to 12:02 A.M., and one on April 20 from 4:30 P.M. to 5:00 P.M. Two general business meetings were scheduled for the Association: one on April 20 from 8:00 A.M. to 9:00 A.M., and one on April 21 from 8:30 A.M. to 9:00 A.M. The business transacted at these four meetings is herewith summarized except for reports which, because of their importance to each member of the organization, are given in their entirety.

The following temporary committees were appointed: (a) Nominating, consisting of Dr. H. M. Phillips, Chairman, Dr. R. T. Brumfield, Dr. G. B. Wolcott, Dr. J. G. Carlson, and Dr. Bert Williams; (b) Auditing, consisting of Dr. Catherine Keever, Chairman, and Dr. J. P. Reynolds; and (c) Resolutions, consisting of Dr. Mary Esther Gaulden, Chairman, and Dr. A. M. Winchester.

On June 27, 1950, a committee on Local Arrangements was appointed by President Byrd. This committee, consisting of Dr. J. H. Taylor, Chairman, Dr. H. H. Hobbs, and Dr. Bert Williams, submitted the following report which was adopted by the Association.

A Guide to the Duties and Functions of the Host Institution for the Annual Meeting of the Association of Southeastern Biologists

I. Meeting of the Executive Committee.
   A. Held on Thursday evening before the regular meetings which begin on Friday.
   B. The place of the meeting would normally be the home of some member of the association of the host institution.
   C. The time will depend on other plans for the evening. If a symposium or other meeting is held, the committee would meet early.

II. Symposium or other special program featuring a topic of current interest or a field for which the host institution has special facilities or contributions.
   A. This part of the program is optional.
   B. When held it would be on Thursday evening.

III. Registration.
   A. Begin at 8:00 A.M. on Friday and have the facilities available through most of the day.
   B. Besides regular registration cards, representatives for the treasurer, field trips, lodging, and banquet should be present.
   C. Most of the arrangements for lodging will have been made before the meeting, but assistance should be provided for those not already housed.
      1. A representative of the local committee will investigate lodging facilities well in advance of the meeting date and provide the members with the necessary data for making reservations.
      2. Dormitories, tourist homes, tourist courts, and hotels may be used, depending on the facilities at the institution.

IV. Business meeting of the A.S.B.
  A. Time: Friday, 8:30-9:00 A.M.
  B. Place: The largest room or auditorium in which one of the sectional meetings is to be held.
V. Sectional meetings, 9:00-12:00 A.M.
  A. Botany, Zoology, and any other group that may be meeting with the Association.
  B. Each section should have a room or auditorium that can be darkened sufficiently to show kodachrome slides. Screen and projectors for 2" x 2" and 3 1/4" x 4 1/4" slides should be provided for each room with an operator if possible.
VI. Luncheon meeting.
  A. Optional as a group meeting with a program.
  B. At least provision should be made for a quick lunch for a large group at a cafeteria if one is available.
VII. General session for presentation of papers, 1:30-4:30 P.M.
  A. Held in an auditorium or hall that can be completely darkened and seating 200 persons, yet with ventilation provided.
  B. Screen and projectors for slides should be available.
  C. An amplifier with a lapel microphone is desirable.
VIII. Short business meeting following papers—optional.
IX. Entertainment for the remainder of the afternoon. Several options are suggested.
  A. The president or other official of the host institution may give a tea for the members and visitors.
  B. The association will, if necessary, bear expense of tea, sandwiches, etc., for a tea held in some member's home, or one held in a lounge, the biology building, or other suitable place on the campus.
  C. Serving can be handled by the wives of members at host institution or some student organization on the campus.
X. Annual Dinner, 7:00 P.M., Friday.
  A. Held at a hotel or other large dining room.
  B. Number attending will vary and may be estimated by sending out addressed postal cards with the regular announcements to be returned with indication of intent to attend banquet, take field trips, etc.
  C. Expense will be borne by members, but every attempt should be made to hold rate down.
  D. Program.
    1. Welcome by official of host institution.
    2. Response by representative of A. S. B.
    3. Presentation of guests.
    4. Presentation of awards.
    5. Address by retiring president.
XI. Field trips, Botany and Zoology.
  A. Arrangements will depend upon the situation at the host institution.
  B. Transportation will usually be provided by automobiles of members with a coordinator at the registration desk making arrangements.
  C. A leader shall be provided who knows the local flora or fauna and the roads and trails of the area.
XII. Business meeting, 8:30-9:00 A.M. Saturday in the meeting place for the general session.
XIII. General session for presentation of papers, 9:00-12:00 A.M.
  A. Auditorium or room of size of largest section of previous day.
  B. Facilities for complete darkening and ventilation.
  C. Screen and projector for slides.
XIV. Adjournment, 12:00 noon Saturday.

On June 27, 1950, a committee consisting of Dr. H. M. Phillips, Chairman, Dr. J. H. Fincher, and Dr. G. W. Jeffers, was appointed by President Byrd to formulate regulations for governing and for awarding a Meritorious Service Award which is being sponsored by the Southern Scientific Company of Atlanta. The following report was submitted by the committee and approved by the Association.

MERITORIOUS SERVICE AWARD

Sponsored by the
Southern Scientific Company of Atlanta, Georgia

A cash award of one hundred dollars ($100.00), sponsored by the Southern Scientific Company of Atlanta, Georgia, will be presented each year at the annual meeting of the Association of Southeastern Biologists to a member of the Association for especially meritorious and outstanding contributions to the biological sciences, involving particularly service to young people as a teacher.

Suggested Regulations

1. The recipient should be a biologist who is a member in good standing of the Association of Southeastern Biologists.
2. He should have taught biology in a southern institution for a period of at least ten years.
3. The recipient of the award will not be eligible for future awards.
4. The recipient will be selected each year by a committee designated by the Executive Committee of the Association of Southeastern Biologists.

Suggestions Relative to Selection of Recipient

1. Allow the entire membership of the Association of the Southeastern Biologists to submit or propose names of candidates with the definite understanding that the votes would be used as a guide for the selection committee, but that the final decision of selection be reached by the majority vote of the committee members.
2. General criteria for guiding the Committee.

(a) Progress of the candidate indicated by recognition in his institution. Example: Important assignments and other contributions specifically related to good teaching.

(b) The number of students for whom he provided primarily the inspiration to continue in biology, especially those who later received advanced degrees. (Admittedly an estimate of this type is very difficult in many cases, but in some cases it would be clear cut.)

The administration of the Meritorious Service Award is to be carried out by a committee of three members. These members shall be appointed by the president for terms of one, two, and three years, after which time the current recipient of the award will replace the retiring member. The senior member will be the chairman.

The Publications Committee composed of Dr. M. D. Young, Chairman, Dr. S. L. Meyer, and Dr. H. M. Phillips submitted a report which indicated that the majority of A. S. B. members favored the publication of a journal by the organization. The method of supporting such an undertaking remained to be worked out. The executive committee by unanimous vote tabled the submitted report so that the present committee would be continued for another year. The com-

mittee was further charged with the responsibility of investigating the possibility of a subsidy program. The chairman was asked to organize a survey of the possible sources of a subsidy utilizing the help of the members of the executive committee as well as other interested persons. At the request of the chairman, such members may be asked to approach individuals or firms with whom they have contacts.

The report of the Resolution Committee was read and approved. Particular appreciation was rightfully given to the following for their contributions in making this meeting a very successful one: (1) To the University of Alabama for its invitation and for its gracious hospitality; (2) to Dr. and Mrs. E. L. Bishop for outstanding hospitality and buffet supper for the Executive Committee; (3) to the Committee on Local Arrangements consisting of Dr. E. L. Bishop, Chairman, Dr. Bert Williams, and Dr. R. L. Chermock; (4) to Col. L. P. Hodnette for making available the facilities of Northington Campus; and (5) to Dr. Walter B. Jones for arranging the Moundville trip and barbecue.

The report of the Nominating Committee was read. A single slate of candidates for each office to be filled was submitted by the Committee. There were no further nominations from the floor. The report of the Nominating Committee was unanimously approved. The following persons were declared elected: President, Prof. W. M. A. Deacon, Vanderbilt University; President-elect, Dr. Margaret Hess, Winthrop College; Vice President, Dr. H. P. Sturdivant, Western Maryland College; Secretary-Treasurer (third year), Dr. A. V. Beatty, Emory University; Members of the Executive Committee (three years), Dr. Josephine Bridgman, Agnes Scott College, and Dr. Royal E. Shanks, University of Tennessee.

The following reports were read and approved: Minutes of the Eleventh Annual Meeting; Secretary's Report; Treasurer's Report; Minutes of the Executive Committee; Representative of the Council of the A.A.A.S.; Auditing Report; Contacts; and Report on Conference Sponsored by Board of Control for Southern Regional Education. Several items of new business were referred to the Executive Committee for further study. One of particular importance involved the enlargement of our membership to include all colleges and universities in the area.

The invitation extended by Agnes Scott College to us to hold the Thirteenth Annual Meeting on their campus on April 18-19, 1952, was accepted by a unanimous vote.

TITLES AND ABSTRACTS OF PAPERS PRESENTED AT THE TWELFTH ANNUAL MEETING

ORGANIZATION AND PROGRAM OF THE OCEANOGRAPHIC INSTITUTE. Harold J. Humm, *Florida State University.* The Oceanographic Institute of Florida State University was founded in September, 1949, as a department in the College of Arts and Sciences. It is a department, however, only in terms of

administration and budget. In other respects it is a cooperative organization of 10 departments for which it provides marine research and teaching facilities. In addition, a fisheries research program has been initiated as a state service function. The staff of the Institute is as follows. The first two listed are full-time, the others part-time. Dr. Harold J. Humm, director; Dr. F. C. W. Olson, research associate in oceanography (physics); Dr. Mary Noka Hood (bacteriology); Dr. Herman Kurz (Botany); Dr. Chester S. Nielsen (botany); Dr. J. W. Eichinger (chemistry); Dr. M. R. Colberg (economics); Dr. J. S. Cullison (geology); Dr. Werner A. Baum (meteorology); Dr. F. R. Hunter (physiology); Dr. A. C. Higginbotham (physiology); Dr. W. N. Kellogg (psychology); Dr. Robert B. Short (zoology, parasitology); Dr. Ralph W. Yerger (zoology, itchyology).

SOURCE OF ATMOSPHERIC SALTS. Steve G. Boyce, *North Carolina State College.* Much evidence at the present time points to the importance of the sea as a primary source of hygroscopic salts in the atmosphere. Salts have been shown to be the universal nuclei in the atmospheric condensation process and to be responsible for the zonation and spray forms of coastal vegetation. However, the assumption that the sea is the primary source has never been confirmed by discovery of the phenomenon by which these salts become airborne. By use of a salt sensitive paper, the author has shown the primary process to be the action of bursting bubbles which eject tiny droplets of sea water into the atmosphere, the droplets then being transported by the wind. Laboratory measurements showed that the height of trajection and the size of the droplets ejected by sea water bubbles are of such value that they may be transported by low velocity winds.

VARIATIONS IN PENICILLIN RESISTANCE IN ISOLATIONS OF STAPHYLOCOCCI FROM TREATED AND NON-TREATED SUBJECTS. Ilda McVeigh and Virgil Moore, *Vanderbilt University.* A total of 66 colonies of staphylococci was isolated from the nostrils, throat, and cheeks of 25 individuals who had previously received penicillin treatment. Seventy-five were isolated in a similar manner from 25 persons who had neither been treated with this antibiotic nor closely associated with others who had. All isolates were tested for sensitivity to penicillin and those not inhibited by 0.1 mg./ml. (the blood level usually considered sufficient for therapy) were classed as resistant. On this basis, 28 (42.4%) of the 66 isolates from the penicillin-treated group and 30 (40%) of the 75 isolated from the non-treated group were resistant. In comparison with the standard assay strain, *Micrococcus pyogenes* var. *aureus* 209P, an 8000-fold increase in resistance was noted for two of the isolates from the penicillin-treated group and a 4000-fold increase for two isolates from the non-treated group.

DEVELOPMENT OF RESISTANCE BY STAPHYLOCOCCUS AUREUS FDA 209P TO VARIOUS ANTIBIOTICS: MORPHOLOGICAL AND PHYSIOLOGICAL CHANGES. Ilda McVeigh and Charlie Joe Hobdy, *Vanderbilt University. Staphylococcus aureus* 209P (*Micrococcus pyogenes* var. *aureus*) increased in resistance to sodium penicillin G 187,500-fold, to chloromycetin 193-fold, to aureomycin 210-fold, to dihydrostreptomycin 250,000-fold and to subtilin 3,125-fold when subcultured repeatedly in increasing concentrations of the particular antibiotics. The rate and degree of development of resistance varied with each agent. Each of the resistant strains grew more slowly than the parent strain. In becoming resistant to penicillin the cells underwent marked pleomorphic changes and became gram-negative. Less drastic morphological and tinctorial changes occurred during the development of resistance to the other antibiotics. Those strains which had become resistant to penicillin had lost the ability to reduce nitrates to nitrites, to liquefy gelatine, to produce acid from sucrose, maltose, mannitol, lactose and glycerol, and to grow anaerobically. They also failed to produce coagulase and to grow in the presence of 7.5% NaCl, thereby

indicating a loss of pathogenicity. The strains resistant to each of the other antibiotics had not lost completely any of the above capacities. The penicillin-resistant strains showed an increase in ability to synthesize the vitamins and amino acids necessary for their growth.

THE PRODUCTION OF INDOLE ACETIC ACID BY USTILAGO ZEAE, AND ITS POSSIBLE SIGNIFICANCE IN TUMOR FORMATION. Frederick T. Wolf, *Vanderbilt University.* Indole acetic acid (IAA) has been identified as a metabolic product of *Ustilago zeae.* The identification of this compound is based upon two independent color tests, upon identity of R_f values obtained upon paper chromatography, and upon the isolation from culture filtrates of a material giving the correct melting point. Tests with the protein gelatin, with casein hydrolysate, and with a number of individual amino acids indicate that tryptophane is the precursor of IAA in *U. zeae.* The mechanism of conversion of tryptophane to IAA is not known, but it is shown that tryptamine cannot be an intermediate. *U. zeae* can grow in the presence of 100 mg. percent of IAA, an amount 20 times greater than it is capable of producing. *U. nigra,* a smut which does not induce gall formation, does not produce IAA. The theory is proposed that gall formation in corn plants infected with *U. zeae* results from IAA formed by the parasite.

A PRELIMINARY REPORT ON A SOLIDAGO LEAF GALL WHICH CONTAINS BOTH AN INSECT LARVA AND A FUNGUS. Edwin G. Beck, *University of Georgia.* The larva of the species of *Asphondylia* induces the formation of a monothalamous gall on the leaves of *Solidago* plants. The eggs are deposited between the leaves of the terminal bud where they hatch and the larvae eat away the adjacent epidermal layers which are in contact with each other. The mesophyll tissue of these two leaves then grow together with the larva enclosed between them. The gall which develops has three distinct regions: (1) the epidermis, (2) a layer of parenchymatous cells, (3) a layer of tissue consisting of small meristematic cells. The entire gall cavity is lined with a dense layer of fungal mycelium upon which the larva feed.

EFFECT OF X RADIATION ON THE DESOXYRIBONUCLEIC ACID AND ON THE SIZE OF GRASSHOPPER EMBRYONIC NUCLEI. Nyra Harrington and Robert W. Koza, Biology Division, *Oak Ridge National Laboratory, and the University of Tennessee.* Cytological and cytochemical studies were made on embryonic nuclei of the grasshopper, *Chortophaga viridifasciata,* after X-ray doses of 4,000, 10,000, and 12,500 r. The changes induced were photometrically measured by using (1) the Feulgen reaction to determine relative changes in the DNA desoxypentose and (2) the methyl green stain to indicate the degree of polymerization of the nucleic acid. X radiation was found to cause swelling of the nuclei. When correction was made for this the Feulgen-stained nuclei showed no significant loss of DNA after irradiation, but the nuclei stained with methyl green disclosed a highly significant loss of stainability. This is interpreted to indicate that X rays do not destroy the DNA but induce depolymerization of the nucleic acid. This study has shown that it is invalid to make quantitative determination of DNA (stained by Feulgen or methyl green) from microscopic observations and photographs, since such studies are contrary to conclusions derived from photometric determinations. The visually apparent loss of Feulgen-stainability after irradiation is probably not due, therefore, to a decrease in the DNA desoxypentose but rather to the increased dispersion of the DNA in nuclei that have undergone X-ray-induced enlargement.

MULTIPLE EFFECTS OF A PIGMENTATION GENE IN MAN (THE CARIBE-CUNA MOON-CHILD). Clyde E. Keeler, *Georgia State College for Women.* In this paper have been described in the Caribe-Cuna Moon-Child such physical alterations as pigmentless, sensitive skin, enlarged lips, fine, light head hair, hypertrichosis, encased, photophobic eyes, shortened height and reduced weight. Such physiological tendencies as low specific gravity of urine with deficient ultraviolet spectrum, susceptibility to infections, reduced strength, slowness,

lack of energy, later maturity with sexual weakness, and weak voices have been noted. Mental traits of normal intelligence, lack of facial expression, soberness, introvert tendencies, and personal ambition have been mentioned. Pedigree studies demonstrate the moon-child variation to be inherited as a simple recessive, autosomal characteristic due to a mutant gene in duplex, which in simplex sometimes produces individuals (usually women) lighter in shade than the average pigmented Indian. A rare, unrelated, blond condition is described. Historical references are discussed especially with regard to the high incidence and probable antiquity of the original mutation. The effect of eugenical measures practiced by the Indians is evaluated.

THE HEART-LEAFS HEXASTYLIS OF THE SOUTHEASTERN STATES. H. L. Blomquist, *Duke University.*

SOME BLUEGREEN ALGAE FROM BRACKISH WATER ALONG THE COAST OF NORTH AND SOUTH CAROLINA. Elton C. Cocke, *Wake Forest College.* Collections made from brackish water along the coast from Wilmington, N. C., to Charleston, S. C., yielded a number of bluegreens which were new to these states. New ones recorded were: *Fremyella uberrima* N. Carter, *Spirulina tenuissima* Kuetz., *Chroococcus minor* (Kuetz.) Naeg., *Lyngbya epiphytica, Lyngbya Kuetzingii, Xenococcus gracilis* Lemm., and one species of *Anabaena* which seems to be new.

NEW SPECIES OF AMPHIBIANS AS TEST ANIMALS FOR HUMAN PREGNANCY DIAGNOSIS. A. M. Winchester and Keith Hansen, *Stetson University.* Urine from women in the first trimester of pregnancy was injected into various species of male amphibians, native to central Florida. The urine which was later voided by these test animals was examined for the presence of sperm. Six species from two genera were found to be reliable as test animals for human pregnancy diagnosis.

SPONTANEOUS AND RADIATION-INDUCED MUTATION IN GLOMERELLA. H. E. Wheeler, *Louisiana State University.* Cultures of *Glomerella,* carrying a specific modifier (mutator) which controls the occurrence of B locus mutants, have been used to study spontaneous and radiation-induced mutation in this fungus. Ultra-violet radiation and C^{14}, the latter incorporated in the culture medium, were used as mutation inducing agents. B locus mutants were identified by genetic analyses; all other mutants were classified on the basis of altered morphological characters. In general, the spontaneous mutants represented fewer types and less drastic changes than the radiation induced mutants. Nearly one-third, 163, of 557 spontaneous mutants resulted from gene changes at the B locus, while only 3 B locus mutants were found among 480 UV induced mutants. None of 48 mutants obtained from cultures grown on a medium containing C^{14} resulted from changes at the B locus. These results tend to emphasize the importance of mutator genes as factors affecting variation in fungi.

SOME LITTLE-KNOWN FACTORS IN SEX RATIOS. Roland M. Harper, *University of Alabama.* None of the current theories of sex determination seems to explain why (when sufficiently large numbers are used) the ratio of male to female births is greater among Chinese than among whites, among whites than Negroes, and among Jews than Gentiles. It was greater in the United States 150 years ago than now, but in some countries it has trended upward and in some downward. In different classes of public officials the ratio of sons to daughters ranges from about 1.5 for presidents of the United States down through American governors, European monarchs, and United States senators, to 1.03 for congressmen. The first of several children in a family is most likely to be a boy, but the chances are about even that an only child will be a girl. Actors, actresses, and divorced people generally seem to have about twice as many daughters as sons.

THE RHODODENDRON GARDENS OF ROAN MOUNTAIN: A COMPARISON OF FLOWERING SEASONS. Dalton M. Brown, *East Tennessee State College.* Since the Rhododendron Gardens of Roan Mountain are attracting more people each year and since return visitors are prone to describe better previous seasons, the author was challenged to follow the trends with his camera and pencil. Data over a ten-year period indicates that variations in yield of flowers may be as great as ten to one.

IRREGULARITIES IN MICROSPOROGENESIS IN ACER SACCHARINUM. Jonathan J. Westfall, *University of Georgia.* Most of the specimens of *Acer saccharinum* studied were normal in meiosis and microsporogenesis, but one specimen showed conspicuous irregularities. Among these irregularities were the occurrence of binucleate microsporocytes, lagging chromosomes, microcytes, and supernumerary microspores. The behavior during meioses indicates that this specimen of silver maple is probably of hybrid origin.

DEVELOPMENT OF THE FEMALE GAMETOPHYTE IN PINUS VIRGINIANA. Ruth B. Thomas, *Vanderbilt University.* The essential details are the same as those reported by Ferguson for *Pinus strobus.* Germination and maturation of the gametophyte, prolonged over a period of one year, are followed by a rapid two weeks development of the archegonia. Vegetative gametophytic cells are rich in desoxyribonucleic acid. As the central cell nucleus enlarges, it loses its Feulgen positiveness. The ventral canal nucleus degenerates immediately; however, the strong intensity of its Feulgen reaction does not diminish with time. During late telophase the egg nucleus shows a negative Feulgen reaction. At fertilization the egg nucleus (now greatly enlarged) shows slight, if any, positive Feulgen reaction. Those ovules that contained two female gametophytes showed normal archegonia, and were delayed in development.

THE DEVELOPMENT OF MULTIPLE EMBRYO SACS IN SORGHUM VULGARE. George W. Johnston, *Mississippi State College.* The fact that multiple embryo sacs occur in Angiosperms has been definitely established. However, reports of such occurrences are limited, especially in the Monocotyledons. An ovule containing two well-developed sacs was observed in *Sorghum vulgare.* The mode of origin of the sacs could not be definitely determined. That such a condition may result in polyembryony is entirely possible, since two apparently identical embryos were observed in a mature seed of the species under investigation.

ILEX IN TENNESSEE. Frank Wilson Woods, *University of Tennessee.* Five species of *Ilex* are found in Tennessee. These are *Ilex opaca, Ilex montana, Ilex verticillata, Ilex decidua,* and *Ilex longipes.* The problem of defining species is difficult because of the clines through which all species pass. A completely satisfactory understanding of this genus will not be accomplished by the use of morphological criteria alone, but by the use of experimental and/or cytotaxonomic methods.

SOME PRELIMINARY TAXONOMIC STUDIES IN THE GENERA PLUCHEA AND LIATRIS IN THE SOUTHEAST. R. K. Godfrey, *North Carolina State College.*

A NEW SUBFAMILY IN THE NECKERACEAE. Kenneth A. Wagner, *Florida State University.* In the traditional treatment of the Neckeraceae, genera with four rows of leaves are placed in the same subfamily with genera having eight rows. A detailed study of leaf insertion indicates a different origin of each of these two groups. This fundamental difference is the basis for proposing a new subfamily, the Homalioideae, to contain those genera of the Neckeraceae which have four rows of leaves.

CONIFER TRANSPLANTS TO A ROAN MOUNTAIN GRASSY BALD. D. M. Brown, *East Tennessee State College.* The presence of numerous grassy balds in the southern Appalachian Mountains has not yet been explained. Recent studies (Brown, 1941) indicate that the grassy balds of Roan Mountain are on the decline. In the fall of 1937, individual and block transplants of spruce and

balsam were set near the center of the largest grassy bald on Roan Mountain in order to study problems of survival. Two years later, another group of conifers were set to determine the effect of prevailing winter winds upon survival. Photographs and other data over a 12-year period show that conifers survived and grew to cone-bearing age. This indicates that the grassy balds of Roan Mountain may eventually give way to coniferous forests.

BOLETACEAE OF GEORGIA. I—A PRELIMINARY STUDY IN THE SUBFAMILY STROBILOMYCETEAE SNELL. Charles H. Driver, *Emory University*. A mass collection of some 25 specimens of the genus *Strobilomyces* Berk. was collected during mid-September, 1950, in DeKalb County, Georgia, from an upland oak-hickory forest stand on the perimeter of an area of the forest floor from which top soil had been recently removed. In this collection representatives of two species could be determined, *Strobilomyces confusus* Singer and *S. floccopus* (Vahl in Fl. Dan ex Fr.) Krast. When an attempt was made to identify every specimen of the collection according to the correlation of diagnostic characteristics of spore ornamentation with pileus surface, size and stipe surface (as employed by Singer for distinguishing these two species) the identification was very difficult or incomplete. On the basis of sport ornamentation, however, there appears to be two groups of plants, one group with reticulated spore walls (*S. floccopus*) and the other group with spores having short ridges and occasional isolated warts on their walls (*S. confusus*). This is the only clear, obviously different diagnostic character that the author can determine from this mass collection which exhibited such a wide continuous variation. The rare species, *Boletellus ananas* (Curt.) Murr., was collected in early August, 1950, in DeKalb County near an oak tree and on the base of a living pine tree (Pinus taeda L.). The specimens were typical of those described by Singer and Coker and Beers for *Boletus ananas* Curt.

TWO PHYTOPHTHORA DISEASES OF THE ORNAMENTAL HIBISCUS. M. O. James and A. G. Plakidas, *Louisiana State University*. Two *Phytophthora* diseases of the ornamental hibiscus, *Hibiscus schizopetalus* L. and *Hibiscus rosa-sinensis* L., are described. Pathogenicity, specificity, morphology, and cultural characteristics of the two species of *Phytophthora* have been studied. Innoculations with the two species were made on the leaves and stems. Hibiscus plants were also potted in *Phytophthora* infested soil. It was found that *P. palmivora* (Butl.) attacks the leaves, stems, and roots of the ornamental hibiscus, whereas *P. cactorum* var. *applanata* (Chester) attacks the base of the hibiscus, causing a foot-rot. *P. palmivora* grows well at high temperatures, growth occurring at 35 C. *P. cactorum applanata* grows well at lower temperatures, no growth occurring at 35 C. No differences in the two species could be detected from pH studies; growth occurred within a pH of 5.0-8.0. *P. palmivora* produces only papillate sporangia which averages 43.3 x 30.5 microns in diameter. *P. cactorum applanata* produces non-papillate sporangia, intercallary sporangia, and oospores in culture, these averaging 20.1 x 20.4, 23.7 x 24.1, and 24.5 x 24.7 microns in diameter. Both species are pathogenic to tomato, apple, and pear fruits. *P. cactorum applanata* is non-pathogenic to potato tubers, whereas *P. palmivora* is very pathogenic to potato tubers.

BARK STRUCTURE AFFECTING GROWTH OF EPIPHYTIC BRYOPHYTES. Ruth Schornherst Breen, *Florida State University*. The problem of specific habitat restrictions and requirements is common to all groups of plants and to all geographic areas. In north Florida the mosses, *Schlotheimia sullivantii* C. Mull and *Jaegerinopsis squarrosa* E.G.B., occur only rarely on any tree except *Magnolia grandiflora* L., although these trees grow in close association with *Fagus grandifolia* Ehrh. Anatomical studies of the barks of these two species shows presence of large bands or patches of stone cells interspersed among the small cork cells in *Fagus*, while the bark of *Magnolia* is composed uniformly of large, spongy cells. Comparison of the water holding capacity of the two barks indicates that *Magnolia* bark retains more water than that

of *Fagus,* gives it up more easily, but also picks it up more readily. Once *Fagus* bark is dried out, it requires a heavy wetting such as that supplied by rain. Growth of other epiphytes may be affected by these factors.

A Study of the Distribution of Stomata on the Leaves of Nineteen Species of Oak Found in Tuscaloosa County Alabama. Francis Rodolphe Beaulieu, *University of Alabama.* The chief purpose of this study was to determine the distribution of stomata on leaves in the genus *Quercus.* Nineteen species of oak, collected in Tuscaloosa County, Alabama, were used. For each species, leaves were collected from three to four different specimens and the stomatal counts on these leaves were made in comparable regions to determine the extent of variations on individual leaves. Care was taken to determine if stomata might occasionally occur on the upper surface. The following results were obtained: A. Slight variations in number of stomata within species occurred when plants were growing in different ecological environments. B. A slight increase in number of stomata per unit area was found from the basal to the apical portion of the leaf. C. Stomatal frequencies on the nineteen species of oak are all high in comparison to other plants. On *Q. lyrata* the average count was 445 stomata per square mm. compared to a maximum of 1163 stomata on *Q. falcata.* D. No stomatal openings were found on the upper leaf surface of any species in this genus.

Studies on the Germination of Johnson Grass Seed from Certain Areas in Lousiana. Ruth P. Phillips and S. J. P. Chilton, *Louisiana State University.* Studies on the germination of Johnson grass seed indicated that a period of initial dormancy was present for several weeks in freshly harvested seed. After the passage of initial dormancy, seeds with the glumes removed germinated 50-70 percent better than seeds from which the glumes were not removed. A secondary dormancy associated with the presence of the glumes was indicated. Seed in secondary dormancy germinated best under conditions of alternating temperatures. Of several materials used in presoaking treatments, thiourea used in a two percent solution for 12 hours previous to germination at alternating temperatures both accelerated and increased the percentage germination of the seed. Seed collected from sugarcane areas of Louisiana and planted in the soil soon after harvest germinated better than seed which were germinated in the laboratory. Germination at this time varied with the years in which the seed were collected, but the average was 28 percent. After overwintering in the soil, germination approached 100 percent.

The Submicroscopic Structure of Elongating Cotton Fibers. Joseph Charles O'Kelley, *University of Alabama.* The submicroscopic structure of the cell wall of elongating cotton fibers was studied, using an electron microscope and employing the shadowcasting technique. Electron microscope photographs of elongating fibers treated to remove all constituents but cellulose reveal a network of cellulosic strands, or microfibers. Measurements of their images show them to be about 250 A in diameter. The measurement of one easily observed microfiber image indicated a length of 55,000 A. A comparison of the cellulose of elongating fibers of different ages reveals no structural differences. Fiber tips, as well as basal and intermediate portions, possess cellulose microfibers. Examination of untreated fiber walls of similar fibers shows that the cellulose microfibers are obscured by other amorphous cell wall constituents. The microfibers are still partially obscured after extraction of the fibers to remove waxy constituents.

Some Biological Features of New Zealand. John H. Davis, *University of Florida.* Many interesting natural features of the islands of New Zealand, such as the mountains, coasts, vegetation and, in some instances, the unique animal life, was briefly described. The flora, vegetation, and some of the groups of animals are of particular interest because of their isolation, un-

usual adaptations, and endemism. The migration of some forms to New Zealand was considered. The effects of human development of the islands was stressed.

EXPERIMENTAL STUDIES OF THE FRESH-WATER JELLYFISH. Don L. Jacobs and Donald C. Scott, *University of Georgia. Craspedacusta sowerbii,* the only fresh-water medusa known to occur in North America, was maintained in both the trophosome and gonosome states in laboratory cultures. Both were fed chiefly on nematode worms which are easily cultured. They also freely ate various protozoa and rotifers, and young medusae were dependent on these until large enough for nematodes. Tests with newly hatched fish fry showed that they were not harmed by medusae (at least up to 6 mm. diameter), but the hydroids proved very destructive. The fry were paralyzed in a few seconds and died in from a few minutes to twenty hours, depending on number and size of polyps. Fish were not ingested, but some organic absorption may have occurred. No antagonism was noted between polyps and hydroids. There was no evidence of nematocyst discharge or even adherence of the medusa to the sticky head of the polyp.

LETHAL AND MUTAGENIC EFFECTS OF X-RAYS ON THE PROTOZOAN FLAGELLATE ASTASIA LONGA. Henry W. Schoenborn, *University of Georgia.* Pure cultures of the colorless flagellate, *Astasia longa,* have been subjected to X-rays (250 kv., 15 ma., tube with inherent filtration of 3 mm. Al.) having an intensity of approximately 1500 r./min. After dosages ranging from 5,000 to 40,000 r., single irradiated cells were aseptically isolated into tubes of complete medium. Approximately 2000 single cell isolations were made and the tubes examined, after a suitable incubation period, for the presence of protozoan populations. Plotting log survival against dosage provided a multiple-hit type of survival curve. The clones produced in this way from single irradiated cells were then screened for biochemical mutations by testing their ability to grow in an inorganic medium as does the parent strain. Tables were presented showing the mutation rates obtained at the various X-ray dosages employed.

AN UNUSAL CASE OF CANINE FILARIASIS. Richard E. Bradley, *University of Georgia.* Observations, before and after death, on an aged, naturally infected dog are reported. Periodicity studies revealed a peak in number of circulating microfilariae at 10 P.M. The number disappeared at approximately the same rate as they had appeared. The microfilariae did not disappear completely from the blood stream. Autopsy revealed that the viscera was invaded by numerous neoplasmic-like growths and that the right ventricle was filled with adults, *Dirofilaria immitis.* Certain other histo-pathological conditions, including the relative density of microfilariae in various tissues, are noted.

OBSERVATIONS ON THE ARCHIANNELID GENUS DINOPHILUS IN THE UNITED STATES. E. Ruffin Jones, Jr., and Frederick F. Ferguson, *University of Florida and U. S. Public Health Service, Technical Development Division, Savannah, Georgia. Dinophilus* is probably the best known of the half dozen genera of uncommon worms which make up the class Archiannelida. Two valid species, *D. gardineri* from Cape Cod, and *D. gyrociliatus* from the New Jersey coast, have been previously reported from North America. The present paper includes a preliminary description of two new species: *D. jagersteni* from the Virginia-North Carolina coast and *D. kincaidi* which was obtained from Willapa Bay, Washington, and is the first species to be reported from the Pacific coast.

SURVIVAL FOLLOWING BILATERAL ADRENALECTOMY IN MALE HAMSTERS. George C. Kent., Jr., and Keith Chapman, *Louisiana State University.* Thirty adrenalectomized males were observed for survival, mating responses and weight changes, for at least 90 days. Eight animals received 1% NaCl in drinking water, and a special diet. Twelve received NaCl and normal diet.

Ten received a normal diet only. Ninety days after removal of the second adrenal, 70% of all animals, 82% of the second and third groups combined, and 100% of the last group were alive and outwardly robust. Neither length of interval (8-58 days) between removal of left and right glands, nor initial weight of animals appeared to influence survival. Most deaths occurred during the first 18 postoperative days, after considerable weight loss. Animals in all groups mated regularly, producing numerous litters. Of ten animals observed: 102 days (4), 150 (1), 158 (1), 161 (2), or 198 (2) days, only one died. It is possible that potential extra-cortical adrenal tissue is abundant in hamsters. Every gland was sectioned to confirm the nature of the tissue. This constitutes a preliminary report. Additional data are being sought.

Ion Shifts in Chicken Erythrocytes. F. R. Hunter, *Florida State University.* In chicken erythrocytes incubated at 37° C., there was a slow, equal exchange of sodium for potassium up to about 24 hours, a slight increase in volume and a low percentage of hemolysis. After 30 hours, the cells had gained considerably more sodium than potassium lost, had swelled appreciably and quite a number of them had hemolyzed. At 10° C., there was only a small amount of exchange of sodium for potassium, only a small increase in volume and a low percentage of hemolysis even after 140 hours. These data suggest that after about 24 hours at 37° C. the normal mechanism responsible for maintaining the ion imbalance across the cell membrane gives way in part. This results in an increase in the internal osmotic pressure of the cell due to the large increase in cell sodium. Consequently, water enters the cell and it swells, hemolyzing in some instances.

A Study of the Effect of Liver Damage on the Estrous Cycle and Adrenal Cortical-Ovarian Interrelationship of Rats. Clara Eddy Hamilton, *University of Georgia.* It is known that estrogens are inactivated in the liver and that liver damage results, probably, in temporarily increased estrogen levels. Carbon tetrachloride has been administered by gavage to a series of young, adult rats in order to study the effect of the resultant liver damage on ovarian-adrenal cortical interrelationships and on the estrous cycle. Vaginal smears, ovarian and adrenal weights, ovarian and adrenal lipoid distribution, and ovarian, adrenal and reproductive tract histology have been studied in treated and control animals. The experimental animals show a stimulation of the reproductive tract and adrenals when compared to the controls and a modification of the estrous cycle. This is apparently due to a heightened estrogenic stimulation resulting from the failure of the liver to inactivate estrogens.

Ineffectiveness of Deciduomata in the Prolongation of Pseudopregnancy in the Hamster. Idolphus C. Turnley, Jr., and George C. Kent, Jr., *Louisiana State University.* The present investigation utilizing eighteen young, nulliparous females was designed to ascertain whether or not deciduomata, induced by thread loops, would prolong the period of pseudopregnancy in the golden hamster. At the termination of induced pseudopregnancy, marked by willingness of the animals to mate when tested, all uteri exhibited large deciduomata as revealed by macroscopic examination immediately after mating. Subsequent histological examination revealed these to be retrogressing. Despite the presence of deciduomata, the period of pseudopregnancy was prolonged in none. Sixteen animals mated on the ninth day after sterile mating, one on the eighth and one on the tenth. Vaginal smears observed during the psychic estrus immediately after termination of pseudopregnancy were not characteristic of vaginal estrus because of sloughing decidual cells. Graafian follicles in the ovary at the time of mating confirmed the fact that estrous cycles had been resumed.

Induced Matings in Hamsters Following Single Injections of Estrone and Progesterone. William W. Norris, Jr., and George C. Kent, Jr., *Louisiana State University.* Thirty-nine ovariectomized hamsters received a total of 170 single subcutaneous injections of estrone ranging from 0.002 mg.

to 0.5 mg., followed in each case 24 hours later by 0.05 mg. progesterone. Injection levels were systematically altered to ascertain the effectiveness of single doses, within the range utilized, in inducing psychic estrus when the progesterone level is held constant. When doses ranging from 0.05 mg. to 0.5 mg. were administered, positive mating responses were elicited in slightly more or less than 40% of the animals at each level of injection within the range. The latent period of response to progesterone may not be entirely independent of the length of the interval between the administration of the progestational hormone and the onset of darkness. The chief effect on the contents at the vaginal lumen 24 hours after injection of estrone at the levels utilized is reduction in number of leucocytes.

STUDIES ON GERMINAL LOCALIZATION IN ILYANASSA. A. C. Clement, *Emory University.*

ACANTHOCEPHALA FROM THE YELLOWFIN CROAKER, UMBRINA RONCADOR. Helen L. Ward, *University of Tennessee.* Juvenile forms of three species of Acanthocephala are reported from the yellowfin croaker, *Umbrina roncador,* taken from the waters off southern California. Two species belong to the genus *Corymosoma, C. obtuscens* Lincicome, 1943, and *C. osmeri* Fujita, 1921, and one belongs to the genus *Arhythmorhynchus, A. macracanthus* n. sp. The new species differs from other species of this genus in the arrangement of body spines and in the number and size of proboscis hooks. A distinctive characteristic is the presence of one extremely large hook in each longitudinal row.

OBSERVATIONS ON THE BIOLOGY OF THE LIZARD MITE, GECKOBIELLA TEXANA (BANKS) 1904 (ACARIA: PTERYGOSOMIDAE). Melvin H. Goodwin, Jr., *University of Georgia and Communicable Disease Center, U. S. Public Health Service.* Studies were made on the life cycle of *Geckobiella texana* in connection with investigations of its possible role in transmission of a blood protozoan in the fence lizard, *Sceloporus undulatus undulatus.* The life cycle of female mites, from egg to adult, was completed in about 40 days under laboratory conditions at temperatures varying between 22° and 29° C. Developmental stages recognized, and the approximate duration of the stages, were as follows: ovum to larva 14 days, larva to nymphochrysalis 8 to 10 days, nymphochrysalis to nymph 8 days, nymph to teleiochrysalis 3 to 5 days, teleiochrysalis to adult 4 days. The male omits the nymphal stage and the larval and following resting stage are prolonged. All active stages feed on blood and no tendency to leave the original host was noted; resting stages occurred on the host from which the previous active stage obtained blood.

EFFECT OF HYPOXIA ON GERM CELLS OF IMMATURE MALE WHITE RATS. Paul D. Altland and Ezra Allen, *Experimental Biology and Medicine Institute, National Institutes of Health, and John B. Stetson University.* Degeneration of male germ cells normally occurs during the early postnatal development of mammals and other invertebrates. In the white rats the so-called primordial germ cells persist only to the 9 or 10 day. Two modes of subsequent degeneration occur: (1) exfoliation of the inner layers of cells, or loss of all the developed epithelium (2) degeneration of several types in individual cells. To test the effect of hypoxia on such degeneration, 385 Sprague-Dawley white rats were exposed 4 hours daily to 25,000 feet simulated altitude. No change was found in the time of loss of the so-called primordial cells. The earlier meiotic changes were found similar to the controls up to about 27 days, when in the controls spermatozoa were beginning to be present, but none appeared in the exposed group, and none developed later. The modes of degeneration were the same in both groups. The quantity of degeneration was considerably greater in the exposed group. Complete data will be published later.

RESPIRATION OF LIVER SLICES FROM HYPERTHYROID RATS. EFFECT OF DIETARY VARIATIONS ON RESPONSE TO CERTAIN SUBSTRATES. Frances C. Weldon and Samuel R. Tipton, *University of Tennessee.* Feeding desiccated thyroid powder to albino rats results in an increase of the respiration of liver slices. This rise of about 30% is not significantly different in rats maintained on riboflavin deficient diets, but seems to disappear in rats whose diets were deficient in thiamin. The respiration of liver slices in the presence of added alanate, glutamate, pyruvate or succinate is higher than the endogenous respiration. Stimulation by these substrates is not greater in hyperthyroid animals fed complete diets. In the presence of added succinate, the rise in 0_2 consumption of slices from thiamin or riboflavin deficient rats in hyperthyroid condition was significantly greater than the succinate stimulation of slices from thiamin or riboflavin deficient rats in normal thyroid condition, or from hyperthyroid rats fed "complete" diets.

PROGRESS TOWARDS A NEW CLIMAX IN THE SOUTHERN BLUE RIDGE MOUNTAINS. Catherine Keever, *Duke University.* Chestnuts are as surely doomed in the southern Blue Ridge Mountains as they were in the north. Comparisons were made between pre-blight vegetation and that of the present to determine trends of succession toward a new climax. Study was made of six virgin forest stands on the mountain slopes near Highlands, N. C., to determine quantitatively the composition of the present vegetation. Timber cruse records from the same area made between 1912 and 1918 were analyzed to determine the dominant trees present in the pre-blight vegetation. Judging by the merchantable timber reported, the pre-blight trees ranked as follows: chestnut 46.3%, chestnut oak 19.6%, black oak 12.0%, white oak 7.4%, red oak 5.7%, hickory 2.9%. Judging by the percentage of basal area of overstory trees, the present dominant trees ranked as follows: northern red oak 24.4%, chestnut oak 20.2%, hickory 16.6%, white oak 9.2%, chestnut 8.8%. The present dominant trees showed high reproduction in all six classes, indicating the possibility of all of them except chestnut remaining a vital part of the final climax.

SOME ECOLOGICAL CONSIDERATIONS OF FLOATING ISLANDS IN ORANGE LAKE, FLORIDA. George K. Reid, Jr., *University of Florida.* Floating mats of peat-like organic detritus supporting lush vegetation and animal life are integral and conspicuous phases in the ecology of several of the more productive lakes in Florida. In this account of floating islands in Orange Lake, a description of the region and the lake is given. Several theories for the genesis of floating islands are presented. A few of the more common plants and animals are indicated and some of the general ecological relationships are discussed.

THE FLORISTIC CHARACTER OF A FOREST STAND: SAMPLING TECHNIQUES. Dorothy L. Crandall and Royal E. Shanks, *Randolph-Macon Woman's College and University of Tennessee.* Four general types of sampling were employed in a second-growth oak forest near Mountain Lake Biological Station in Virginia. Using the techniques described by Cain (1938, 1943) the minimal area appears to be about 550 sq. m. for nested 1 x 10 plots and 1 x 1.414 plots although the yield of species is about 30% higher in the long narrow plots. The meter wide strip (minimal area at 45 sq. m.) is much more efficient than either of the other plot shapes in terms of species per unit area. The same data for the 1 x 10 and the 1 x 1.414 plots were plotted semi-logarithmically according to Vestal's method in his 1949 monograph: *Minimum Areas for Different Vegetation.* The 1 x 10 plots give minimal area of 415 sq. m. and the 1 x 1.414 plots 950 sq. m., the minimal area being twice as much in one case as the other. Sampling by a strip sample one meter wide is more efficient than by wider plots both in number of species per unit area and in number of species per unit time. In addition it can be carried out efficiently by one person whereas efficient sampling of the wider plots in larger sizes requires at least two people.

NOTES ON THE DISTRIBUTION OF NORTH CAROLINA PLANTS. William B. Fox and R. K. Godfrey, *North Carolina State College.*

THE BLACKFLY, SIMULIUM DAMNOSUM, IN THE VOLTA RIVER SYSTEM. Lewis Berner, *University of Florida.* The British Government is planning to impound the Volta River, Gold Coast, British West Africa, for the production of hydroelectric power and for irrigation. From June to November, 1950, an investigation was undertaken to determine the possible effects of impoundment on medically important insects. Particular stress was laid on *Simulium damnosum,* West African vector of onchocerciasis. Collections of larvae, pupae, and adults were made throughout the lower river system to determine the distribution, abundance, biting habits, and other features of the biology of *Simulium damnosum* that might be observed in such an overall survey. It was found that the species is rather localized, that its distribution is closely linked with rapids, and that, as expected, wherever it is abundant, onchocerciasis is very prevalent. A limited number of dissections of female *S. damnosum* revealed an infection rate with filaria (probably *O. volvulus*) of approximately 25%.

CELESTITE RADIOLARIA AND AMORPHOUS CALCIUM CARBONATE NUDIBRANCH SPICULES. Howard Thomas Odum, *University of Florida.* The mineralogical character of animal skeletons has been on the whole generally established in the past. However, among the disputed issues still in question are two topics about which some new data has been obtained. X-ray diffraction, spectrographic and optical methods demonstrate that a plankton sample from the Atlantic was largely made up of the strontium sulfate spicules of the Acantharian radiolarian *Acanthometra.* Repeated attempts failed to demonstrate an X-ray diffraction pattern in the calcium carbonate spicules of dried specimens of *Archidorus britannica.* This confirms the amorphous nature and suggests that the reports of vaterite in this species also from X-ray studies are due to modification of the specimens from alcohol preservation. Amorphous calcium carbonate in nature is also known in Arthropods.

OBSERVATIONS CONCERNING THE FLORIDA WOOD RAT, NEOTOMA FLORIDANA FLORIDANA (ORD). Paul G. Pearson, *University of Florida.* These data were collected as part of an investigation of the mammalian fauna of Gulf Hammock in Levy County, Florida. The occurrence of the wood rats in the plant associations and the location and description of the nests are discussed. Conclusions based on the food preferences of *Neotoma* for native plants are given. Breeding data include evidence that the wood rats breed throughout the year in Gulf Hammock and that the gestation period is 33-34 days. One observation of mating behavior is described. The behavior of the adult rats with the young, the litter sizes, and the growth and development of the young in five laboratory-born litters are among items discussed. Evidence of predation on the wood rats is given and records of the infestation of wood rats by fly larvae is described. Trap and recapture data on the wood rats of a study area, and a discussion of the colonial habits of wood rats is included.

OBSERVATIONS ON REPRODUCTION, MOULTING AND AGING CRITERIA IN A COLONY OF CAPTIVE MOURNING DOVES. James H. Jenkins, *University of Georgia.* A colony of about twenty mourning doves (*Zenaidura macroura*) has been maintained as a phase of a general study of this species of dove at Athens, Georgia, since November of 1949. These doves have nested with regularity and observations have been made on the details of courtship, nest building, oviposition, incubation, and moulting. One female laid six clutches of eggs during 1950. Twenty-one young birds, reared in captivity, were observed periodically to determine the feather moult sequence for use as an aging technique in checking hunter kills during the legal hunting season. The dove is unusual among wild birds in that moulting apparently proceeds during active nesting. This phenomena has previously been known to occur occasionally only in domestic chickens, geese, and pigeons.

THE STATUS OF THE TOWHEE (PIPILO ERYTHROPHTHALMUS L.) IN THE SOUTHEASTERN STATES. J. C. Dickinson, Jr., *University of Florida.* A statistical study of geographic variation in the Towhee (*Pipilo erythrophthalmus* L.) has indicated that there are four subspecies worthy of recognition: *P. e. erythrophthalmus, P. e. canaster, P. e. alleni,* and *P. e. rileyi.* Variation in size, color, and migratory behavior indicates that *P. e. alleni* in peninsular Florida is probably a relict form which has given rise to *P. e. rileyi* to the north in southeastern Georgia, whereas *P. e. canaster* and *P. e. erythrophthalmus* represent a mainland stock in which subspecific differentiation has taken place. A review of the geological history of the areas concerned lends support to this theory of accounting for the present status of the species in the southeastern states.

ANALYSIS OF RECENT RANGE EXTENSIONS OF SIX SOUTHEASTERN BIRDS. Eugene P. Odum, *University of Georgia.* During the past 30 years six species of birds, the Robin, Song Sparrow, Chestnut-sided Warbler, Blue-headed Vireo, Horned Lark, and House Wren, have greatly expanded their breeding ranges in the southeast. These invasions have shown several features in common: (1) They have followed extensive man-made habitat changes, (2) an appreciable lag between habitat change and actual invasion has been evident, indicating importance of population pressure, (3) invasion has often been sudden, rather than gradual, groups of birds colonizing locally deep in new territory. The well-documented case of the House Wren is presented as an example illustrating the interaction of climate, habitat, and competition (with ecologically similar species) on distributional control.

EPIDERMOLYSIS BULLOSA IN A SOUTHERN FAMILY. J. Paul Reynolds, *Florida State University.* Because of the inability of victims of Epidermolysis Bullosa to serve in the armed services, general interest in its inheritance has developed since World War II. The disease is characterized by development of lesions in the skin wherever slight friction occurs. Only the epidermis is involved; hence, there is no scarring after lesions. The condition has been reported in most cases to be dependent upon a dominant factor. The family reported here includes several hundred individuals living in Alabama. The transmission of the Epidermolysis factor has been traced through eight generations. A dominant factor seems clearly to be responsible for the condition. The first case of marriage of two victims of the disease is herein reported. This family is independent of the families previously reported by Johnson and Test (Arch. Derm. & Syph., 1946).

MUSCULAR DYSTROPHY IN A NASH COUNTY FAMILY. M. Whittinghill and Evelyn E. Hendricks, *University of North Carolina.* In a pedigree compiled by the junior author the sex-linked form of progressive muscular dystrophy has appeared in eight males after having been transmitted by at least six carrier females. One-to-one ratios were exhibited among the older brothers of dystrophics, and non-carrier females were as numerous as carriers within segregating families. It is not yet possible to tell whether seven women and three young boys possess this rare gene. One boy with muscular dystrophy also had a cleft palate, and the palate condition alone appeared in two third cousins in a family of eight children resulting from the marriage of second cousins.

THE ORIGINS OF THE NEW ZEALAND FLORA AND VEGETATION. John H. Davis, *University of Florida.* The flora of the islands of New Zealand is prevailingly endemic and it forms in a number of instances unusual and distinct types of vegetation. Both these aspects of botany afford unusually fine opportunities for studies of insular plant origins, and the probable modes of dispersal of plants to islands. A number of the probable regions of origin of the New Zealand flora was discussed and a number of the probable modes of dispersal considered. The trans-oceanic dispersal of plants by means of winds, birds, and ocean currents was stressed.