We can, then, confirm the results of Bayliss, Hurwitz and Rous and Wilson with chloride infusion; our experience supplements these in showing that, in so far as the bromide, nitrate and thiocyanate of sodium are concerned, the use of them in infusions after severe hemorrhage would probably be of little permanent value in maintaining normal blood volume. Furthermore, it is probable that employment of sodium sulfate, even in combination with colloidal substances, will prove little more efficacious than Ringer's solution.

ARTHUR H. SMITH

YALE UNIVERSITY

THE IOWA ACADEMY OF SCIENCE

THE Iowa Academy of Science held its thirty-second annual session at the Iowa State College at Ames, beginning at 1:30 P.M. on Friday, April 26. After the general program in the Assembly Room sectional meetings were held for the reading of papers of special interest and these were resumed on Saturday morning. The general business meeting was held on Saturday morning at 11 o'clock. Dean E. A. Birge, of the University of Wisconsin, gave the annual address at 8 P.M. Friday, on "The warming of an inland lake." The Iowa Section of the Mathematical Association of America and the Ames and Iowa Sections of the American Chemical Society held their meetings in connection with the sessions of the Academy. President Ross delivered his presidential address on "The history of the teaching of science" at the general meeting on Friday afternoon.

At the business meeting on Saturday morning the following officers were chosen for the coming year:

President—S. W. Beyer, State College, Ames.

First Vice-president—T. C. Stephens, Morningside College, Sioux City.

Second Vice-president—R. Monroe McKenzie, Parsons College, Fairfield.

Secretary—James H. Lees, Iowa Geological Survey.

Treasurer—A. O. Thomas, State University, Iowa City.

Resolutions were passed endorsing the national administration, also calling for the selection of scientifically trained men to the position of fish and game warden and on the Board of Conservation.

TITLES OF PAPERS

Physics and Psychology

Temperature-time relations in canned foods during sterilization: GEORGE E. THOMPSON. Certain well-known mathematical formulæ are applied to heat penetration into foods packed in cylindrical cans. It is found that if the diffusivity of the food be known the temperature-time curves may be constructed with a fair degree of accuracy for cans of any size and for any practical temperature range. A number of experimental and theoretical curves are shown for squash and corn.

(a) Some structural features of selenium deposited by condensation from the vapor state above the melting point. (b) The sublimation curve for selenium crystals of the hexagonal system: L. E. DODD.

Stroboscopic velocities in the tonoscope: H. R. FOSSLER AND L. E. DODD.

The eclipse expedition to Matheson, Colorado, June 8, 1918: D. W. MOREHOUSE.

The X-ray spectrum of tungsten: O. B. OVERN.

A new principle in the design of rheostats of large capacity: H. L. DODGE.

On the coefficient of absorption of photoelectrons in silver and platinum: OTTO STUHLMANN, JR.

On the production of opaque and the color of transparent and semitransparent metallic films: OTTO STUHLMANN, JR.

Hall effects in thin silver films: G. R. WAIT.

The effect of pressure upon the conductivity of selenium: E. O. DIETERICH.

The measurement of basic capacities in motor ability: CARL E. SEASHORE. The speaker reported having devised and standardized a series of seven tests for the measurement of the basic forms of motor capacity. These are (1) motor ability, (2) timed action, (3) a simple response to a simple signal, (4) a simple response to a complex signal, (5) a complex response to a complex signal, (6) precision in action—direction, time, distance and force, and (7) strength and endurance.

He also reported having devised simplified forms of instruments for these measurements. The time measurements are all made by means of small attachments, used on a phonograph. The complex reaction to a complex stimulus (chain reaction) is made by means of a carrier contact to a typewriter; and the strength and endurance test is made by means of a new form of ergograph, taxing the muscles of the forearm.

Zoological and Allied Subjects

(*a*) *Bird records of the past winter (1917–1918) in the upper Missouri valley.* (*b*) *A note on molluscan behavior.* (*c*) *Birds of Union county, South Dakota:* T. C. STEPHENS.

An unusual example of incisor growth in the western fox squirrel: DAYTON STONER.

Pharyngeal derivatives of Amblystoma: FRANCIS MARSH BALDWIN. This paper deals with the morphogenesis of the thyreoid and thymus glands, the postbranchial and epithelial bodies of *Amblystoma*, beginning with larvæ 5 mm. long, and including stages in metamorphosis and adult. The thyreoid gland arises as a solid outgrowth from the pharyngeal floor and breaks up into scattered cells, which, by mitotic division, give rise to the thyreoid follicles, in which colloid appears in late larvæ. There is no evidence of the formation of accessory thyreoids. The thymus gland arises from five pairs of anlagen, derived from the dorsal margins of the corresponding gill pouches. The anterior two degenerate, the other three form the definitive organ. There are no ectodermal contributions to the gland. The postbranchial body arises from a thickening of the pharyngeal floor, behind the last gill-pouch. In all cases, with one exception, it was asymmetrical. At the time of metamorphosis two pairs of epithelial bodies arise from the ventral parts of the last two gill pouches. They are the homologues of the parathyreoids of the mammals.

Economic entomology and food conservation: R. L. WEBSTER.

A list of the birds found in Marshall county, Iowa: IRA N. GABRIELSON.

Notes on a wood borer: H. E. JAQUES.

The influence of floods upon animals: D. M. BRUMFIEL. This paper is an analysis of the ways in which floods may affect animal life based upon observations made along Whitewater river in Fayette county, Indiana. Floods affect animal associations in two general ways, viz.: (1) by changing the habitats topographically, and (2) by changing the composition of the association without affecting the physical habitat.

Topographical changes may be brought about as follows: (1) the course of the stream may be directly altered, (2) the local character of the stream may be altered, (3) changes may be brought about in the flood plain.

Floods influence associations directly by: (1) destroying or removing forms already established and (2) providing a means of dispersal.

The life and behavior of the house spider: H. E. EWING. Although the common house spider, *Theridion tepidariorum* K., is one of the most common arthropods observed about our houses no one in the past appears to have made a systematic and thorough study of its life and behavior.

The complete life history is given, and observations extending over a period of several years are here reported. Scores of individuals were observed daily for many months both in captivity and in their natural environment. The cocooning process is described and illustrated by figures. Notes on courtship, cannibalism, food habits, emotions, instincts and intelligence are given.

A preliminary list of the Acarina of Iowa: ALBERT HARTZELL. But few lists of *Acarina* have been made in this country. In 1886, Professor Osborn and Professor Underwood published a preliminary list of the *Acarina* of North America. This list included 99 species and 28 genera. In the Iowa list here given 75 species and 55 genera are included.

The mite fauna of Iowa is in general very similar to that of Illinois, yet it is interesting to note that in the vicinity of Ames we find several of the northern forms. No records of sheep scab or human scabs have been noted in recent years. Sheep scab at one time occurred in this state, but due to the efficient work of the United States Bureau of Animal Industry it apparently has been eradicated.

Notes on the food of the yellow perch in Cayuga Lake: W. A. HOFFMAN. This paper consists of preliminary work relating to the food of the yellow perch, *Perca flavescens* Mitchill, which was done in the limnological laboratory of the department of entomology at Cornell University.

Twenty-one fish were seined on two days, June 25 and July 14. An examination of the stomach contents of these perch was then made. Crustacea, fish and fish eggs were found in the greatest numbers and volume. Of the Crustacea, Decapods represented by *Cambarus* were present in eight stomachs, while Amphipods which consisted mostly of *Gammarus* and *Hyalella* were in ten. Chironomids, Trichoptera and Odonata made up most of the insect food. Only two Ephemerida were found, whereas these insects often are the only food to be found in the perch. The remainder consisted of Gastropoda, Hydrachnida and Entomostraca.

The cranial nerves of the dogfish: SALLY P. HUGHES.

Spiders of the family Attidæ collected in the vicinity of Ames: I. L. RESSLER.

Botany

The white waterlily of McGregor, Iowa: Henry S. Conard.

The classification of plants: Henry S. Conard.

(*a*) *An unusual black walnut.* (*b*) *An annual sweet clover.* (*c*) *Notes on the perennial mycelium of a few parasitic fungi:* L. H. Pammel. Calls attention to the perennial mycelium of *Ustilago striæformis, Plasmopara Viticola, Urocystis Agropyri.*

An ecological study of the weeds of some Iowa fields: R. S. Kirby. The relation of weight and number of weeds to soil moisture and rate of growth of crops with their weight.

The germination of some native Iowa and exotic tree seeds: L. H. Pammel and Charlotte M. King. A continuation of the studies presented last year on the germination and juvenile conditions of some Iowa oaks. This study considers the germination and morphology of *Juglans, Carya, Fraxinus, Tilia, Acer* and *Pyrus.*

The vegetative organs of some perennial grasses: Florence Willey. It is often difficult to recognize grasses when they are in their vegetative condition. This study considers the rhizomes and early leaf and culm characters of such grasses as *Spartina cynosuroides, Muhlenbergia mexicana, Phragmites communis, Poa compressa, Agrostis alba, Bromus inermis, Agropyron repens, Agropyron Smithii* and *Sporobolus cryptandrus.*

Some anatomical notes on the plants of a prairie province: Ada Hayden. The study includes a discussion of the comparative anatomy of plants in dry situations like *Petalostemon violaceus, Liatris, Aster lævis, Gentiana puberula* and in moist situations and swamps of such plants as *Scirpus fluviatilis, S. validus, Sagittaria* and *Phragmites.*

Some phenological records of spring flowering plants of Henry county: H. E. Jaques.

The fern flora of northeastern Iowa: T. J. Fitzpatrick. This paper gives an enumeration of thirty-three species of ferns and fern allies occurring in a region of Iowa which is of great botanical interest. Each species listed is accompanied by notes on occurrence, habitat, frequency, distribution, etc.

The pollen and pistil in relation to the germination of the pollen in five varieties of apples: John N. Martin. This report deals with the conditions that control the germination of pollen, the structure and function of the stigma as related to the germination of the pollen, and the external factors that may hinder the efficiency of pollination.

The structure of the seed coat and its relation to the germination of the seeds of the two common sweet clovers: John N. Martin. This reports the results of investigation on the structure of the seed coat with the aim of determining the difference between the structures of the seed coats of hard seeds and soft seeds and just what structure prevents the entrance of water in case of hard seeds.

Cytological study of the abortion of the pollen in the Winesap: John N. Martin. This variety of apple in Iowa often fails to produce good pollen. The abortion of pollen in plants is considered indicative of hybridism. The aim of this work on the Winesap was to trace cytologically the steps in the abortion of pollen from the mother-cell stage until the flowers were mature.

The endosperm of Utricularia: Robert B. Wylie and Alice Yocom.

A miniature Vallisneria: Robert B. Wylie.

Notes on an introduced woodland flora: R. I. Cratty. An artificial grove planted in Emmett county in early days was left in such condition that an interesting woodland flora was introduced.

A study in cereal roots: R. O. Westley and A. L. Bakke.

Pioneer plants on a new levee IV: Frank E. A. Thone.

Eradication of the Barberry in the spring wheat sections of the United States with special reference to Iowa: I. E. Melhus.

Plants of southeastern Alaska: J. P. Anderson. This gives a systematic list with notes of about 425 species of plants collected in southeastern Alaska, mostly in the vicinities of Sitka and Juneau, during the years 1914 to 1917 inclusive.

(*To be concluded*)

James H. Lees,
Secretary

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