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turing variety, drouth seriously interfered with yield; and on this variety, tribasic copper sulphate was the only treatment that resulted in a significant increase in yield.

10. Some Blue-Green Algae of North Carolina.

Elton C. Cocke; *Wake Forest College*.

Very little systematic work has been attempted on the Cyanophyceae of North Carolina until recently. During the past two years extensive collections have been made in the Wake Forest vicinity and in Haywood County. As a result of this study some 34 species have been added to the Cyanophycean flora of North Carolina. One of these is believed to be new to science.

ZOOLOGY DIVISION

SATURDAY, MAY 9—9:00 A. M.

1. A Check-List of the Chordates of Virginia.

John W. Bailey; *University of Richmond*.

The list of Chordates recorded as having been found within the borders of the Commonwealth of Virginia includes 897 species and varieties. Others occur in the general region in which Virginia is situated, and will probably be included in the printed list, which is expected to appear at a later date.

The number of species listed under each classification, along with the adopted nomenclature of each group is as follows:

<i>Fishes,</i>	310;	Check List of the Fish and Fishlike Vertebrates of North and Middle America by Jordon, Evermann and Clark, 1930.
<i>Amphibians,</i>	58;	Check List of North American Amphibians and Reptiles by Steineger and Barbour, 1939.
<i>Reptiles,</i>	48;	Check List of North American Amphibians and Reptiles by Steineger and Barbour, 1939.
<i>Birds,</i>	376;	A. O. U. Check List of North American Birds, 1931.
<i>Mammals,</i>	110;	List of North American Recent Mammals, Miller, 1923.

The author expects to publish within the next year: "The Mammals of Virginia"; "The Amphibians of Virginia," and "The Reptiles of Virginia." The manuscripts are now ready. Printing will get under way just as soon as a "backer" is found. If possible illustration will be used.

2. A Preliminary Report on the Reproductive System of the Ribbed-Mussel, *Volsella demissus* Dillwyn.

Roy P. Ash; *Virginia Fisheries Laboratory, College of William and Mary*.

3. Notes on the Turbellarian Fauna of the Rochester, (N. Y.) Area. I. Anatomy of *Macrostomum ontarioensis* n. sp.

Frederick F. Ferguson; *Norfolk College of William and Mary-Virginia Polytechnic Institute*.

Notes on the Turbellarian fauna of Monroe County, N. Y., with special reference to the ecology, morphology and taxonomy of *Macrostomum ontarioensis* n. sp.

4. Breeding Habits of the Gray Squirrel in Virginia.
Abnormal Pelage of the Gray Squirrel.
Richard H. Cross, Jr.; *Virginia Polytechnic Institute.*

5. A Taxonomic Distinction Between *Cyllene robiniae* (Forst) and *Cyllene carvæ* Gahan.
Edward W. King; *Virginia Polytechnic Institute.*

Observations were made upon wings of a series of 11 and 28 individuals *Cyllene carvæ* Gahan and *Cyllene robiniae* (Forst.), respectively. It was found that the two species could be distinguished by means of the relative density of color in certain regions of the wing; particularly in the discal cell and in the vennis. The wing of *C. robiniae* shows considerable pigmentation in these areas, contrasting markedly with the wing of *C. carvæ*, which exhibits little or no pigmentation in the vannus and the discal cell.

An examination of wing venation, pubescence, and chaetotaxy yielded no distinction between the two species.

6. A Study of the Incidence and Pathogenicity of *Chabertia ovina* in Sheep.
W. L. Threlkeld; *Virginia Agricultural Experiment Station, Blacksburg.*

There has been considerable conflict of opinion in the United States as to the pathogenic importance of *Chabertia ovina*, the large-mouth bowel worm of sheep. Wetzel, R., 1931, indicated that the macroscopic lesions involved were relatively slight and, microscopically, that while glandular epithelium of the large bowel was destroyed there was not sufficient evidence at hand to characterize the parasite as a blood sucker.

The work of Australian workers in 1933-1936, notably Ross, I. C., Kausal, G., Gordon, H. Mcl, and Graham, N., indicates that *Chabertia ovina* is of considerable pathogenic importance. These workers, however, were unable to establish massive infestation in experimental animals nor to determine the role of the adult worm in affecting the pathogenicity in the host.

The study here reported deals with the seasonal prevalence of this parasite in Augusta County, Virginia. An attempt also will be made to obtain more information on the biology of *Chabertia ovina* and to determine the effects produced by the adult worm on parasite-free lambs.

7. Notes on the Masculature of the Male Genitalia of *Haemonchus contortus*.
W. L. Threlkeld and M. E. Henderson; *Virginia Agricultural Experiment Station.*

A study of longitudinal and cross sections through the posterior region of the male nematode, *H. contortus*, shows: That the gubernaculum is supported and slightly activated by longitudinal and transverse muscles and that the location of these muscles implies that slight movement is possible in three directions.

Other muscles are described and their functions are explained on the basis of their origins, insertions, and locations: (a) Muscles 1 and 3, each named *Retractor spicularis lateralis*, function—to retract the spicule. (b) Muscle 2, *Retractor spicularis contralis*, function—to extrude the spicule and assist in contraction of the bursa. (d) Muscle 5, *Dilator cloacæ*, function—to dilate the cloaca. (e) Muscle 6, *Bursa expansa*, function—to expand the bursa.

Spermatozoa contained in gelatinous capsules are found in the grooves formed by the longitudinal spicular ridges.

Rectal glands are shown proximal to the intestine.

Transverse sections in series from the rectal gland to the cloaca show the relationship of the accessory reproductive organs, intestine and cloaca.

8. Identification of the Larval Stages of the Blue Crab, *Callinectes sapidus* Rathbun.

Sewell H. Hopkins and John H. Lochhead; *Texas A. and M. College* and *Virginia Fisheries Laboratory, College of William and Mary.*

The first two instars of the blue crab "zoea" are described and figured in detail from specimens hatched and reared in the laboratory. In external morphology they show close agreement with the published descriptions of the zoeae of certain other portunid crabs. It cannot yet be said how easily the zoeae of *Callinectes sapidus* can be distinguished from the zoeae of the five other species of Portunidae found in and near the waters of the lower Chesapeake Bay, since none of the latter larvae have been described. A study of Chesapeake Bay plankton suggests that the blue crab zoea may pass through as many as six instars, but confirmation of this fact by rearing experiments is desired.

9. Hatching the Larvae of the Blue Crab, *Callinectes sapidus* Rathbun.

Margaret S. Lochhead and Curtis L. Newcombe; *Virginia Fisheries Laboratory and Biology Department, College of William and Mary.*

10. Observations on the Catfish Fishery of the James River Area.

R. W. Menzel; *Virginia Fisheries Laboratory and Biology Department, College of William and Mary.*

An investigation was begun, at the request of several commercial fishermen, on the commercial catfishery of the state. The primary purpose was to determine means of conservation of the fishery.

Observations were made on the importance, distribution, reproduction, migration, food habits, growth, methods of capture, methods of handling, and means of repletion.

It was found that there is a need for better statistics not only for the catfish but for all of the fisheries of the state. Although, according to the statistical reports, the catch has remained fairly constant for the last ten years, the fishing intensity was found to have almost doubled. The average size of the fish has decreased by half and unless measures are taken to improve the situation the fishery may not be profitable longer than another five years. Also it was found that the fishery is much richer on the James River than the statistical reports tend to indicate. Where it is found the catfish is the most important fish of the James River.

The following recommendations were made:

1. Limit the minimum size of the white bullhead cat to be taken to 8 inches and the willow cat to 10 inches.

2. Have a closed season of one month from June 15th to July 15th during the spawning season.

3. Require the fishermen to cull the small fish from the boats immediately while they are still alive.

4. Secure better statistics so that the trend of the fishery may be followed more closely.

5. Encourage the fishermen to cooperate with one another in securing better prices and to advertize their fish outside of the state. It is believed that if the fishermen could grade and advertize their fish as an unit from the James River, they could through cooperative bargaining get better prices.