

Oak Ridge: Reeder, John Albert 18; (Hazel Gillentine) Oak Ridge H. S.

Rutledge: *Clark, Thomas H. 15; (Crilla C. Wolf) Rutledge H. S.

Twenty-two names were on the "Honors List for '54." All of these are now attending college, in eight states. Sixteen of them obtained freshman scholarships, and others have by this time obtained remunerative employment at their institution.

W. Stanley Marshall, who received a scholarship award at Washington as one of forty "winners" in the national competition, reported a project of extracting the medicinal components of twenty-four crude drugs. He received recognition at the Nashville Science Fair last spring, and was a finalist in the National Science Fair. His work has been in a home laboratory of his own construction. He is a student at Isaac Litton High School, Nashville, and received the advice and encouragement of Mrs. Burt Francis as teacher. He is an Eagle Scout, president of the newly organized Nashville Academy of Science, and has been active in the Junior Academy of Science for several years. He belongs to the Science, Conservation, and Latin Clubs of his school, plays football, and is on the rifle team. His parents are Mr. and Mrs. Winston N. Marshall of 1403 Hemlock Avenue, Nashville.

A STUDY OF SAPROLEGNIALES (WATER MOLDS) OF KNOX COUNTY¹

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Due to the fact that there has been no serious study of water molds in Knox County, I became interested in studying them as a project to present to the Tennessee Junior Academy of Science.

Water molds are tiny, simple plants which belong to the Phycomycetes division of the fungus group of plants. They live on decaying matter usually in a moist condition.

The mold develops from a tiny particle called the spore. The spores of *Saprolegnia* are known as biciliate spores. When the spore settles on a substance in a satisfactory condition, it swells and begins to grow by producing many tiny threads called mycelia. The mycelia produce both sexual and asexual reproductive bodies. As the plant body of the mold matures, many of the upright mycelia produce spore cases which contain thousands of spores. Each spore case is called a sporangium. When the

¹This paper was presented before the last meeting of the Tennessee Junior Academy of Science in Nashville. It was awarded first place by the judges. It was sponsored by J. T. Johnson, Chairman of Science Department of Young High School.

sporangia mature and break open, the spores are set free to be carried away by a current of water or air. Under some conditions sexual reproduction occurs and the mycelia produce oogonia (female sex organ) and antheridia (male sex organ). When these spores settle in a satisfactory condition new molds develop. If the condition is not satisfactory for development, the spore may form a cyst and become dormant as long as several years until the condition becomes satisfactory.

My first task was to collect a large number of samples of dirt from widely scattered areas of Knox County. The dirt was crumbled and put in petri dishes. I filled the dishes with tap water and put in six to eight sterilized flax seeds. The spores will grow on pieces of decayed animal matter and decayed vegetable matter such as apples, rose seed pods and many other kinds of seeds. However, I found flax seed to be very satisfactory. It took about four days for the mold to begin to show on the seeds. When the mold showed I put two or three of the flax seeds on which it was growing in clean dishes with fresh water and seeds. By continuing this process I was able to get a single mold growing in each petri dish.

The next task was identifying the molds and deciding if the growth there was a water mold. I used the keys in the book, *Saprolegniales*, by Coker and Couch of the University of North Carolina. I also used Strasburger's *Textbook of Botany*, *The Fungi* by Wolf and Wolf, Volumes 1 and 2, and Henrici's *Molds, Yeasts and Actinomycetes*.

Out of the forty samples I studied I found four genera, *Pythium*, *Achyla*, *Saprolegnia*, and *Allomyces*. The first three genera are abundant in practically all soil types. The last genus *Allomyces* so far as I have been able to determine has never been reported in Tennessee. I found it abundantly in soil samples from Knox County and one sample from Jefferson County. This genus has recently been monographed by Emerson and contains five species. So far as I can determine my *allomyces* culture is *Allomyces arbuscula* Butler.

I plan to continue this study this year and next for the Westinghouse Science Research Talent Contest. I plan to grow the molds on different kinds of agar plates and under different conditions to study some of the factors in their environment. I would also like to find out if the genus *Allomyces* will injure fish as the genus *Saprolegnia* does.

In all my study I am developing my own micro-technique of handling the fungi cultures and slides. All in all this study has been very interesting and quite a bit of fun. I feel that I will enjoy continuing it very much for next year's project.