

12-1929

## Title - Masthead

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### Recommended Citation

(1929) "Title - Masthead," *Science Bulletin*: Vol. 2: No. 4, Article 2.

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# SCIENCE BULLETIN

A Service Bulletin for Teachers of High School Science. Published Monthly by the Extension Division and Edited by the Departments of Natural and Physical Science.

IOWA STATE TEACHERS COLLEGE

Editor-in-Chief: Dr. C. W. Lantz. Advisory Board: Dr. L. Begeman, Head, Department of Physical Science; Dr. E. J. Cable, Head Department of Natural Science.

VOLUME II

DECEMBER, 1929

NUMBER 4.

## LIVING MATERIAL IN THE LABORATORY

### Biology

Living plants and animals serve as valuable aids in stimulating interest in the biology course and, during that part of the year when field trips are impossible, provide material for the study of habits and the relation of organisms to their environment. Laboratory conditions are of course artificial but they should be made as nearly natural as it is possible to make them.

Fresh-water algae can be kept for some time in a good vegetative condition by placing the material in a large aquarium jar filled with pond water. Some algae are very sensitive to metal salts and do not do well in tap water. Some of the forms with which we have been most successful are *Oscillatoria*, *Nostoc*, *Spirogyra*, *Rhizoclonium*, *Hydrodictyon*, and *Chara*. In the sediment at the bottom we nearly always can find *Pediastrum*, *Scenedesmus*, *Closterium* and other desmids, several kinds of diatoms, and many other unicellular forms. *Vaucheria* and *Oscillatoria* are best kept in shallow dishes or pans of soil with only enough water to cover. As a rule no reproductive structures will be produced under these conditions although our culture of *Chara* has been fruiting quite regularly for a period of over two years. Zoospore formation can be induced in *Vaucheria* by placing a small amount of material in a 2 or 4 per cent solution of cane sugar in the dark. Sex organs have been found when the material was transferred to bright sunshine.

Duckweeds, which grow commonly on the surface of ponds, as well as *Elodea*, *Ceratophyllum*, and

*Utricularia*, which grow submerged, will do well under laboratory conditions. Lichens, mosses, and liverworts can be transplanted to boxes or pots of soil and, if covered with glass plates, will keep in good condition for a considerable time. In connection with a study of plant propagation cuttings of geranium, begonia, coleus, *Bryophyllum*, willow, wandering Jew or other available plants can be readily started in sand or sandy loam. Bulbs, corms, and tubers as reproductive organs can be illustrated by means of a number of common house or garden plants. In some cases it will be advisable to force growth by the hot-water or ether methods.

In the pond water with the algae and other aquatic plants will be found a number of interesting animals such as fairy shrimps and other small crustaceans, the nymphs of the dragon-fly, damsel-fly, and may-fly, and pond snails of several kinds. From the surface of the water whilgig beetles, water boatmen, back-swimmers, and waterstriders can be secured and can be kept in the laboratory for several weeks during the fall. A crayfish, a small turtle, and a frog or toad can be found in the vicinity of the pond and used to stock the terrarium described below. In late March or early April it is usually possible to find in the pond the grayish egg-masses of the frog. These, if brought into the laboratory, will soon hatch into tadpoles and provide material for a study of the development of a most interesting animal. A small percentage of the tadpoles will survive and probably none will complete their development under these conditions.

It is possible by means of the terrarium to reproduce fairly accurately the habitat conditions for