

TECHNIQUE OF HANDLING PLANARIA IN THE LABORATORY.

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Flat worms of the genus *Planaria* are distributed quite generally through the Middle and Eastern States and are admirably adapted for illustrating many principles of physiology and anatomy, yet withal, are easily kept in the laboratory. In short, they present a rare combination of scientific worth and ease of handling, and therefore are valuable to every teacher of Zoology. However, knowledge of the laboratory technique used with planarians is not widely known among those not specialists in Turbellaria. The methods described in this paper apply especially to *Planaria dorotocephala* Woodworth, but will apply in general to other species also.

Planarians live in fresh, well aerated water such as outlets from springs which discharge the year around and which are not disturbed by farm animals. In an ideal situation, there is a continuous movement of the water, but scarcely any current. They are most numerous among the leaves and other organic material at the bottom of the stream and near the edge, where they can be found usually at any time of the year. However, after heavy rains their number may be depleted greatly by being washed down stream, or if the water should become stagnant, they will die. Their food is obtained by sucking the body fluids from isopods and amphipods to which they attach themselves by their probosces.

For working with planarians, one needs a large dishpan or other similar container, a cover for it, (a circular piece of sheet metal two inches greater in diameter than the top of the pan makes a good cover) a glass tube about ten inches in length with a large rubber bulb on the end, a pair of forceps about ten inches long and several medicine droppers with slightly larger openings than usual.

For gathering these animals, the collector provides himself with a glass fruit jar, the large forceps mentioned above and a pound of fresh lean beef, cut into pieces about one half inch thick and two inches square. The forceps are used to handle the pieces of beef which are dropped into the water where the worms live. In about 15 minutes, the collector returns and examines the meat. If the worms are at all numerous, many of them will be seen clinging to the meat. The pieces of meat with the worms on it are lowered by means of the forceps into the fruit jar where the worms may be shaken off, after which the meat may be replaced to catch more planarians. In a good location one can gather a large number of planarians in a short time. The author has collected enough to cover the bottoms of three pint fruit jars to the depth of one-half inch in 15 minutes. When sufficient worms have been collected, all meat should be removed from the water, as decayed meat might kill many of the remaining worms and impoverish the supply in the stream.

The worms should be taken to the laboratory as soon as possible and placed in large pans. A half inch of them in the bottom of a pint jar are enough to put in one large dishpan. They should be covered with well aerated water to within an inch of the top of the pan and covered. Any dirt, leaves, pieces of meat or other foreign material should be removed from the pan by means of the bulb and tube.

If much chlorine or other chemical has been added to the tap water, it will kill the planarians. In such event, well water or water from the natural habitat must be used.

About three times per week the worms should be fed and given fresh water as follows. First pour off all but about one and one-half inches of water. If the worms stick to the sides of the pan, they may be washed down into the water by squirting water on them with the bulb and tube. Then place in the pan about six strips of fresh beef liver about one-half inch square and four inches long. The pan should then be covered and left about four hours which will be plenty of time for all to feed. The worms should then be shaken off, the meat removed and the water changed. Should the meat be left in the pan until next day, enough decay would take place to kill part or the entire stock. One should be careful to aerate the water and not to fill higher than one inch from the top, as the animals might get on the under side of the cover and be lost. Any small pieces of meat may be removed by the bulb and tube. Planarians may also be fed blood with slight change in technique.

The medicine droppers with large openings are used for picking out the worms and handling them when they are needed for demonstration or experimentation.

The following books give an idea of the uses that are being made of Planaria in research. The latter contains a bibliography.

Individuality in Organisms—Child. University of Chicago Press.

The Origin and Development of the Nervous System—Child. The University of Chicago Press.