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A CO_2 chamber for anesthetizing *Drosophila*.

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Carbon dioxide can be used to anesthetize *Drosophila*. It has many advantages over ether because it is safer to use (less dangerous) and is also much less toxic, both for the researcher and for the flies.

To facilitate the use of CO_2, we developed a transparent chamber that can be placed on a stereomicroscope stage, is easy to handle, and maintains the flies anesthetized during the time that they are being examined and handled.

A descriptive diagram of the chamber, with the dimensions, is shown in Figures 1 and 2. It's made of 0.5 cm thick Plexiglas and has an (open) upper compartment (Figure 1 and 2 - A) where a glass plate can be placed with the already anesthetized flies. This plate should be 2 cm smaller, both in length and width, than the upper compartment, to facilitate handling. The lateral walls of the upper compartment have holes (Figure 1 and 2 - B), through which the CO_2 flows from the lower chamber.

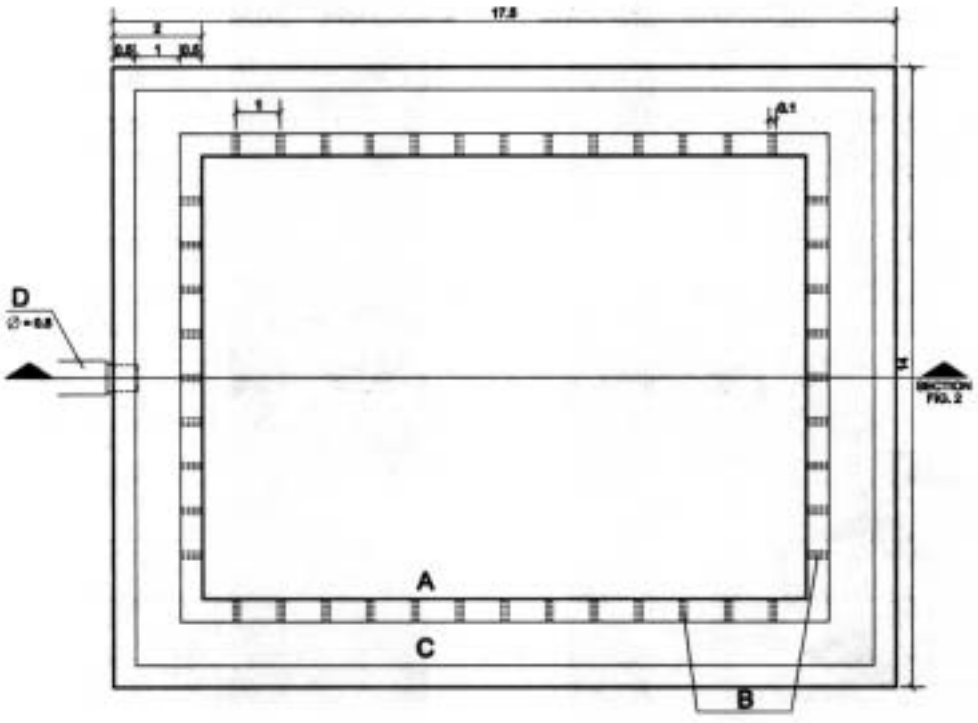

Figure1. Upper view of the CO_2 chamber. The measurements are given in centimeters. The "section" line shows where the vertical cross section was made, giving the view shown in Figure 2. A = upper compartment; B = holes; C = lower compartment; D = insertion of the CO_2 tube.

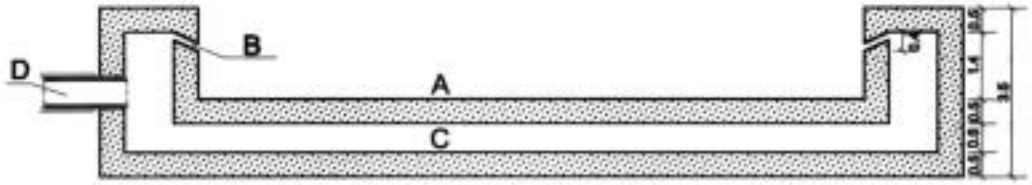

Figure 2. Cross section at line indicated in Figure 1. Measurements are given in centimeters. A = upper compartment; B = holes; C = lower compartment; D = insertion of the CO_2 tube.

The lower compartment (Figure 1 and 2 - C) is closed, with an opening for the CO_2 tube (Figure 1 and 2 - D). The CO_2 penetrates into the lower compartment and then flows into the upper compartment through small holes (Figure 1 and 2 - B) in the internal walls of the upper compartment. An important detail is that these holes are inclined downward, so that the gas is directed down, towards the bottom of the upper compartment. Since CO_2 is heavier than air, the upper compartment becomes filled with this gas.

The quantity of CO_2 that flows through the chamber is controlled by the valve on the gas cylinder. If a more concentrated dose of CO_2 is required, the upper compartment can be covered with a glass plate, totally covering the apparatus.

In order to anesthetize the flies before placing them on the glass plate a simple hollow needle, normally used for filling balls (basketballs, volleyballs, etc.), can be hooked up to the hose from the CO_2 bottle and introduced into the *Drosophila* culture vial, between the glass wall and the stopper.

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