

1- ITEM TULLGREN AND BEARMANN APPARATUS.

2- PURPOSE Collection of Soil Organisms.

3- INFORMATION SUBMITTED BY
Kyoto Municipal Science Center for Youth, Kyoto 612, Japan.

4- LINE DRAWING OF PROTOTYPE

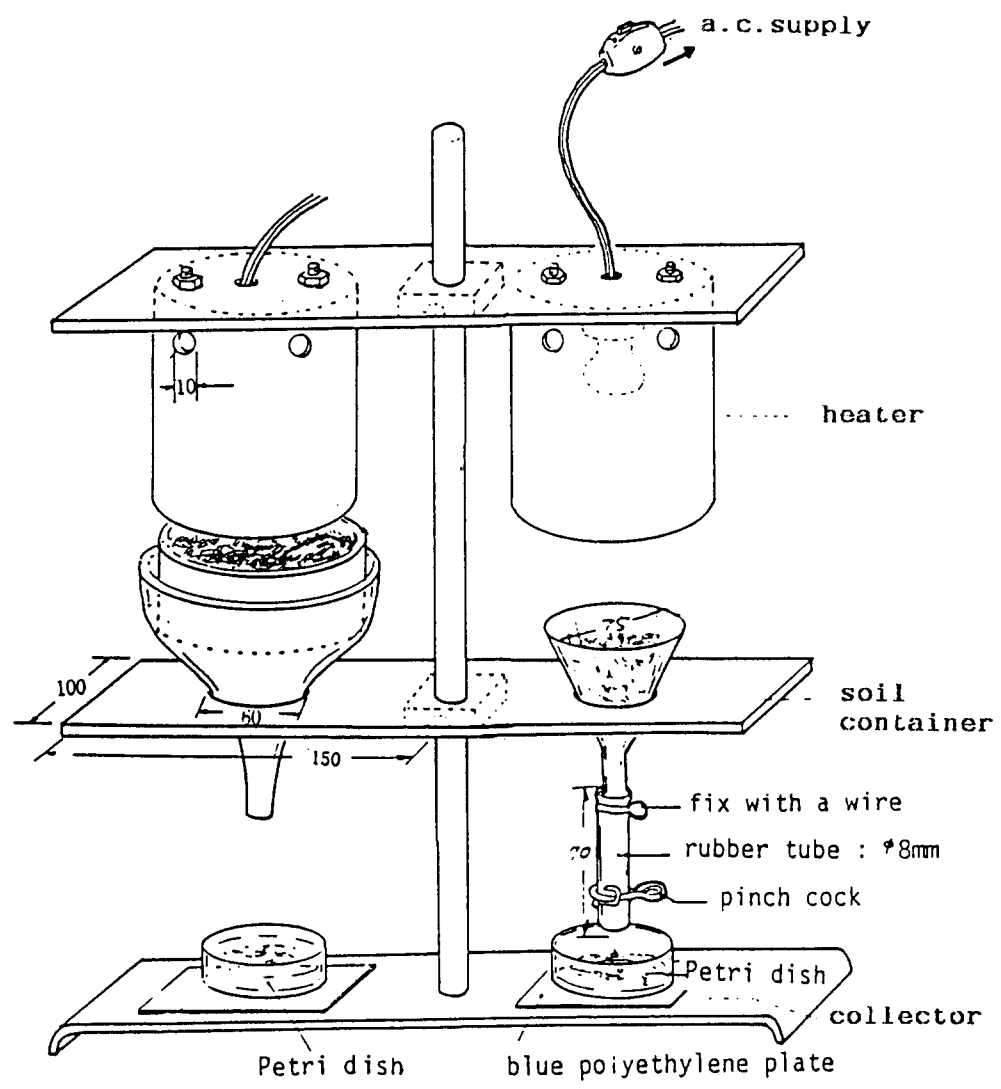


FIG. A.

5- TOOLS AND MATERIALS

(TOOLS)

Saw for cutting plastic.
Cutting knife.
Drill and drill bit (dia. 10mm)
Screw thread tap set.
Pliers.

(MATERIALS)

Acrylic sheet (300mm x 100mm x 5mm).....	2.
Acrylic sheet (50mm x 50mm x 10mm).....	2.
Vinyl pipe (tube),(i. dia. 75mm x 36mm).....	1.
Wire Gauge (Brass, 2mm mesh).....	1.
Burette stand.....	1.
Aluminium Funnel (medium).....	1.
Glass funnel (dia. 75mm.).....	1.
Polyethylene Bottle (500ml).....	1.
Petri dish.....	2.
Blue tile.....	2.
Heater (40W reflector lamp).....	2.
Lamp holder.....	2.
Cable, switch and plug.....	2.
Rubber tube (dia. 8mm x 70mm).....	1.
Pinch cock.....	1.
Epoxy resin adhesive	
1.2 dichloroethylene	
Iron wire.	

6- CONSTRUCTION DETAILS

See page 3.

6- CONSTRUCTION DETAILS (Continued)

(OUTLINE)

Each of the two pieces of equipment are composed of four parts: heater, soil container, collector, and stand. (See Fig. 1.)

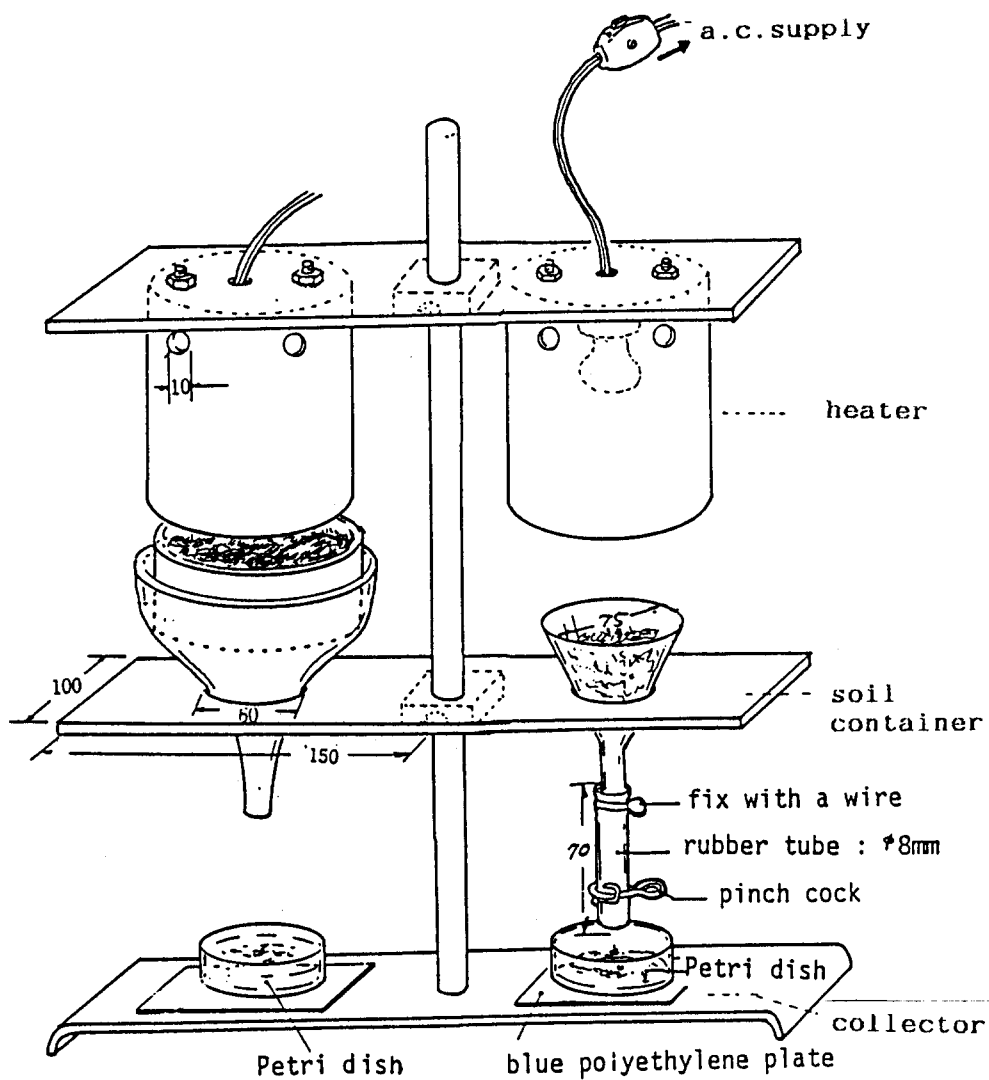


Fig. 1.

6- CONSTRUCTION DETAILS (Continued)

HEATER

The lamp shade is made from a wide-mouthed polyethylene bottle of 500ml by cutting its top off just below the shoulders. Drill six holes (dia. 1cm) around it to let the steam, vaporized from the soil sample, escape. As the heat source, a 40W reflector lamp is attached to the bottom of the bottle. (See Fig. 2).

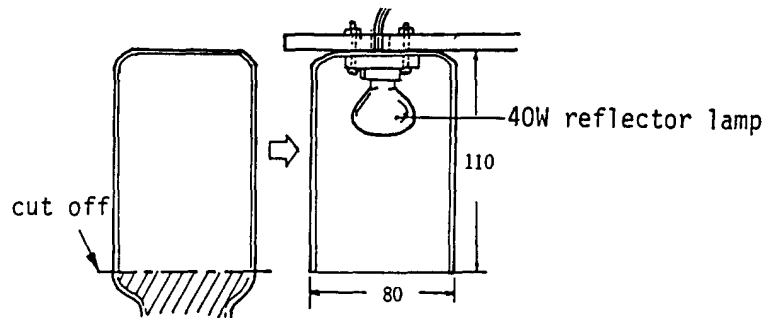


Fig. 2.

DETAILS OF SOIL CONTAINERS IN DRY CONDITIONS (Fig. 1. Left)

A soil container is made of hard vinyl pipe (7.5cm inner diameter) with brass wire gauze of 2mm mesh glued with epoxy adhesive on its bottom. (See Fig. 3).

The animals in the soil go through this gauze and fall down through an aluminium funnel into the collector.

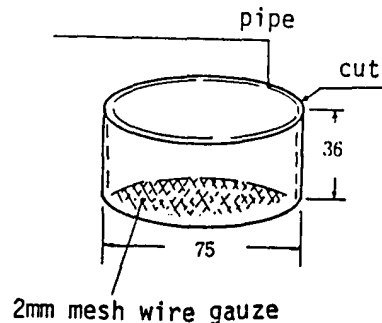


Fig. 3.

DETAILS OF SOIL CONTAINER IN WET CONDITIONS (Fig. 1. Right)

A glass funnel of about 7.5 cm diameter is filled with water by closing the rubber tube attached to its outlet with a pinchcock.

6- CONSTRUCTION DETAILS (Continued)

COLLECTOR

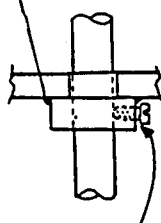
A Petri dish containing a small amount of water is used to catch the animals.

A blue polyethylene plate is put under it so that the floating animals on the water are clearly observed.

STAND

The above mentioned parts are placed on a stand. In this case, a burette stand was modified. The racks are made of two acrylic plates of 5mm thickness, one of the heaters, and the other for the soil containers. A small acrylic square of 10mm in thickness is glued to the center of each plate with 1,2-dichloroethane as the base for the bolt that fix the rack to the pole. (See Fig. 4.)

glue with 1,2-dichloroethane



adjust the
height and
screw it
tightly

Fig. 4.

A stand holding a pair of collecting equipment for dry and wet conditions is convenient as shown in Fig. 1.

7- METHOD OF USE

This equipment will be used after hand sorting of larger animals in the sample soil.

(a) Collector for dry conditions.

Put a half of the sample soil, about 50ml into the soil container, taking care not to press the soil.

Switch on the heater after all the preparations are done. Then observe and count the animals, falling from the soil to the collector, by the naked eye, during the heating for about 20 mins.

Shut off the heating current and observe and count them using a magnifier.

(b) Collector for wet conditions.

Wrap up the soil sample, of about 20ml in volume, in a piece of nylon cloth about 12cm square (from an old pair of stockings). Close with a rubber band. Put the parcel into the glass funnel, and cover it completely with water. Heat it for about 40min. Open the pinchcock of the funnel and run the water with the animals into the catching dish. Observe and count them.

