

An easily constructed holding device for the examination of live spiders

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In studies on the ecology and genetics of spiders it is often desirable to examine closely and perhaps measure individuals while they are still alive. Subsequently they can be returned to the population from which they came or, in breeding experiments, allowed to develop further in the laboratory.

In 1970, Seligy described an apparatus he had used during an investigation of the post-embryonic development of the spider *Enoplognatha ovata* (Clerck) (Theridiidae). This consisted of a glass tube, closed at one end with a coverslip, into which the individual was introduced. The spider was lightly pressed against the coverslip by a piston moving inside the tube and adjusted with a screw thread device. The whole apparatus was mounted on a stand which could be arranged under a binocular microscope. Measurements and other observations could be made on the immobilised spider through the coverslip. Seligy's apparatus requires the complete unscrewing of the piston before new individuals can be introduced and demands workshop facilities for its construction. These drawbacks have led to the development of a similar, but very cheap, device which can be made in minutes out of readily available materials. It also has the advantage that individual spiders can be introduced and removed very rapidly.

The apparatus is depicted in Fig. 1. It consists of the barrel of a 5 ml plastic disposable syringe cut off about 1.5 cm from the non-pointed end. The plunger is cut off about 2 cm from the base of the rubber piston, which must be of the flat-topped type. A shallow notch is filed across the top of one side of the barrel between the finger lugs to allow the entry and exit of air during use. A 1.6 cm diameter coverslip is glued across the end of the barrel with epoxy resin, and the plunger inserted into the barrel so that the flat rubber piston faces the coverslip. The ease of

movement of the piston should be adjusted by uniformly abrading the sides of the piston with emery paper until the plunger can be moved easily, without jerks, up and down the barrel. Finally, a support for the apparatus is constructed by taking a circle of perspex, wood or card and cutting a hole through the middle of a diameter slightly larger than the diameter of the syringe barrel. This support is used in place of the glass disc on the stage of a binocular microscope. In use the apparatus sits in the hole supported by the finger lugs of the barrel.

The holding device is used as follows. The plunger is removed, a spider is introduced into the barrel and the plunger replaced. If the barrel is held coverslip up while the plunger is moved in the spider will orientate so that the dorsal surface can be examined. If the ventral surface is of interest the barrel is held the other way up during the final adjustment of the plunger. The plunger is moved in using the thumb and index finger in a ratchet-like movement against the side of the barrel until the spider is lightly held between piston and coverslip. With practice this can

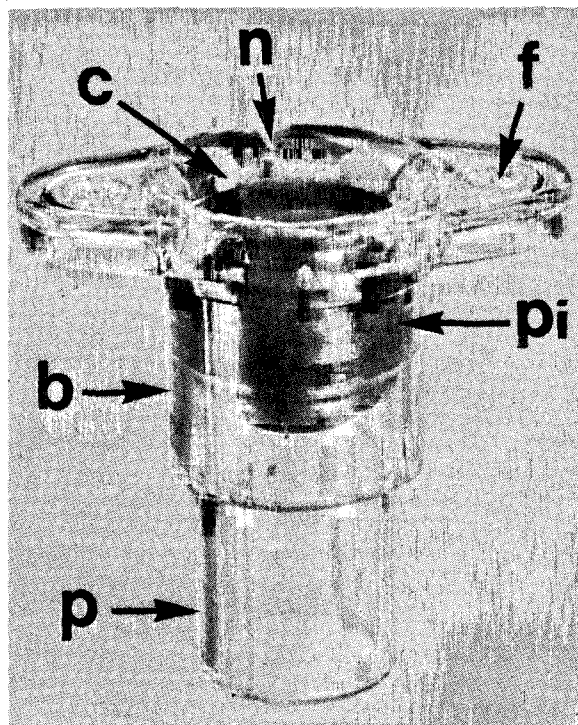


Fig. 1: The spider holding device. b = barrel; c = coverslip; f = finger lugs; n = notch; p = plunger; pi = piston.

be achieved very rapidly. Immobilised in this way measurements of e.g. carapace width, can easily be made with a calibrated graticule eyepiece.

This holding apparatus has been used successfully in a long-term study on the ecological genetics of *Enoplognatha ovata* and only one individual out of many hundreds has been crushed by undue pressure of the piston. The cheapness, simplicity and speed of use of this device may commend it to others interested in the microscopical examination of living spiders and, indeed, other small arthropods.

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Reference

- SELIGY, V. L. 1970: A method for studying spiders at various stages of development. *Can.J.Zool.* **48**: 406-407.
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