

CLEANING MUSEUM SPECIMENS OF SPIDERS

AND MYRIAPODS WITH ULTRASONICS

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Specimens preserved in fluids often accumulate sediment from the preservative. This is especially the case if distilled water is not used to dilute alcohol. Sometimes there are cork particles, cotton, and fungal hyphae. Some spiders (Sicarius, Cryptothele) are naturally encrusted with dust or fine dirt particles. In female spiders, details of the epigynum are often obscured by plugs of secretions that form after mating. Among millipedes many species of small tropical polydesmids (1-7 mm long) are usually collected encrusted with dirt. To remove the dirt from inside a complex spider palpus or epigynum or millipede gonopod has been difficult; fine needles may break off setae or delicate structures.

The problem of getting spider palpi and whole specimens clean has been solved by using a small ultrasonic cleaner.¹ The machines are manufactured for cleaning jewelry, dentures, etc. When the specimen, or a part of it in alcohol in a vial, is immersed in fluid through which ultrasonic waves are passing, the dirt can be seen to fly off the specimen in clouds. A few minutes' immersion will remove all such sediments leaving structures perfectly clean. Specialized hairs not previously observed were found in millipedes after the dirt had been removed ultrasonically.

The first apparatus used was a DiSon System Ultrasonic Generator (Ultrasonic Ind., Engineer Hill, N.Y.) owned by the Museum of Comparative Zoology Entomology Department. The machine in use in our Department is model LP-2, 90,000 cycles per second (E/MC Corporation, Copiague, N.Y.). The machine is about 15 x 10 x 10 cm in size and generates 90kH_z with a variable power control. It costs about \$40.00.

A pyrex dish on stilts or a stainless steel dish (supplied with the machine) is placed in a shallow depression on the top surface of the machine. The dish is filled with water containing a surface tension reducing agent (detergent). Into this fluid the vial containing the dirty spider or millipede in alcohol is immersed for 2-3 minutes while the machine is turned on. The manufacturer indicates that a well ventilated location should be used because the removal of dissolved gases from the alcohol increases the chance of the alcohol catching fire.

Other uses of this apparatus might be to remove digested tissue after maceration in trypsin or sodium hydroxide. However, damaged specimens, with legs "hanging on a thread" may lose them. Also the scape of the epigynum, which normally breaks off in mating, may break. The machine unclogs stuck Rapidograph pens, cleans paint brushes and can disperse substances which have gone out of solution.

¹ We were first made aware of the use of this machine for cleaning beetles by Dr. John F. Lawrence, who in turn had learned about it from Mr. Henry Dybas of the Field Museum of Natural History.

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