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A SIMPLE METHOD OF MANUFACTURING DRY PREPARATIONS OF ENGORGED ADULT FEMALES OF IXODID TICKS FOR COLLECTIONS.

ПРОСТОЙ СПОСОБ ИЗГОТОВЛЕНИЯ СУХИХ КОЛЛЕКЦИОННЫХ ПРЕПАРАТОВ НАСОСАВШИХСЯ САМОК ИКСОДОВЫХ КЛЕЩЕЙ.

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KEY WORDS: Ixodid ticks, dry preparations, collections.
КЛЮЧЕВЫЕ СЛОВА: иксодовые клещи, сухие препараты, коллекции.

ABSTRACT

Dry preparations of engorged females of Ixodid ticks similar in appearance, color, and size to living specimens immediately after engorgement can be manufactured by prompt heating (at 150-180°C) of adult females after they completed oviposition. This results in the inflation of shriveled ticks and in smoothing and hardening of their integument.

РЕЗЮМЕ

Сухие препараты насосавшихся самок иксодовых клещей, сходные по внешнему виду, окраске и размерам с живыми экземплярами клещей сразу после насыщения, могут быть изготовлены при быстром нагревании (при 150-

180°C) самок, закончивших откладку яиц. В результате нагревания происходит вздутие сморщенных клещей с расправлением и затвердением их покровов.

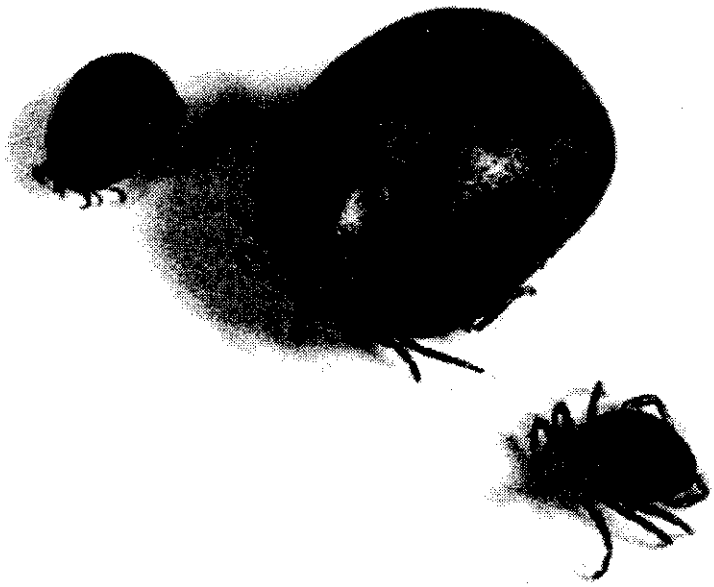
Similarly to other zoological disciplines, scientific investigations in acarology are impossible without good and well-preserved collections. Samples of mites and ticks in systematic and faunistic collections are preserved usually in 70% ethyl alcohol which is the most popular and reliable agent for the conservation of minute arthropods. The alcohol is used also for educational and museum preparations of arthropods of middle and large size.

However, in entomology both scientific and educational collections are normally prepared from dry insect specimens since they have sclerotized integument. The same method of preparing dry collections of ixodid ticks is recommended by some parasitologists [Zumpt, 1940; Eichler, 1952].

Unfed specimens of Ixodid ticks present no special problems as for their fixation and preservation in collections of any type. But engorged specimens (especially engorged adult females) do cause some difficulty: after the usual drying they always shrivel, with change of body size and shape, whereas upon alcohol fixation they change their coloration for the unnatural dark-brown (due to haemoglobin and haematin in their gut). All this makes such specimens hardly suitable or even unfit for collections, especially if intended for demonstration. Entomologists face similar problems in preparing collections of fatty insects with soft, non-sclerotized integuments (particularly with caterpillars), which are solved by means of a simple method of squeezing internal organs from insects and then inflating and drying their skin [Pavlovich, 1938; Plavil'shikov, Kuznetcov, 1952; Peterson, 1955; Oldroyd, 1958]. Rapid drying is ensured by heating larval skin inside a bulb glass or metal box heated by flame (see the above-mentioned references) or over an infra-red reflector lamp of 250 wt [Harvey, 1957].

Dry preparations of engorged ticks for collections

Quite satisfactory dry preparations of engorged adult tick females have been manufactured by the author using a technique which is similar to drying inflated caterpillars, but with some important modifications (without squeezing internal organs and without any artificial inflating of the skin). For making these preparations we used adult females that were completing or had completed oviposition, with their body having become diminished and shriveled. After clearing their integument from differ-



Dry preparations of two engorged adult females of Ixodid ticks, *Amblyomma hebraeum* (center) and *Ixodes persulcatus* (left), and of an unfed adult female of *A.hebraeum* (right).
Сухие препараты двух насосавшихся самок иксодовых клещей (*Amblyomma hebraeum* - в центре, *Ixodes persulcatus* - слева) и голодной самки *A.hebraeum* (справа).
Photo by Yu.V. De-Millo. Фото Ю.В. Де-Милло.

ent contaminations (including sticked eggs), the ticks were put into the drying box (thermostat) regulated for 150-180°C. Water vapors produced promtly inside the tick body during its rapid heating cause the inflation of its skin and the recovery of tick body to the size and shape which are characteristic of a freshly engorged specimen, the further preservation of which is ensured by rapid drying and hardening of the integument. The natural coloration of engorged ticks is also maintained in dry preparations (if any overheating is prevented).

We have managed to make dry preparations of engorged adult females of both ticks common in Russia (*Ixodes ricinus, I.persulcatus, Haemaphysalis longicornis*) and exotic tropical ticks (*Amblyomma hebraeum*). Such preparations made using the technique described above provide an invaluable material for scientific, museum, and educational collections. They reproduce the appearance, coloration, and shape of engorged females much better than alcohol preparations. It is valuable that they are manufactured from tick specimens of no further use (because tick females die after they have finished oviposition). The only defect of such dry preparations is their fragility, which it is necessary to bear in mind. But in other respects our method of manufacturing dry preparations of engorged tick females is very simple, useful, and reliable.

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