

## ON SOME ACARINA FROM AUSTRALIA AND SOUTH AFRICA.

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During September, 1930, the writer spent some weeks in Cape Province, South Africa, to study the occurrence there of the pest known in Western Australia as the Red-legged Earth Mite, and which was the same as Black Sand Mite or "aardvloei" of the Cape. In the district within about 30 miles of Cape Town this mite is a serious pest on the market garden crops, but as the country is not given over to large pastures as in Australia the distribution and abundance is not so large. As the mite had first been described from Cape Province several years before it was noticed in Western Australia and not from elsewhere, it had been concluded that South Africa was its home. The possibility, therefore, that in Cape Province, if anywhere, might be found some natural control, led to the writer's visit under the auspices of the Commonwealth Council for Scientific and Industrial Research.

The correct nomenclature of this species of mite, and also a closely related form, has hitherto been somewhat uncertain to entomologists, and the aim of this paper is mainly to clear this up. In addition, the opportunity is taken to record several other species of Acarina occurring in South Africa and Australia.

Family PENTHALEIDAE Oudemans, 1931.

This family, as defined by Dr. A. C. Oudemans, contains only two genera, *Halotydeus*, in which the anal opening is situated terminally, and *Penthaleus* with a dorsal anus.

Genus HALOTYDEUS Berlese, 1903.

Syn. *Penthaleus* Koch, 1838 (in part).

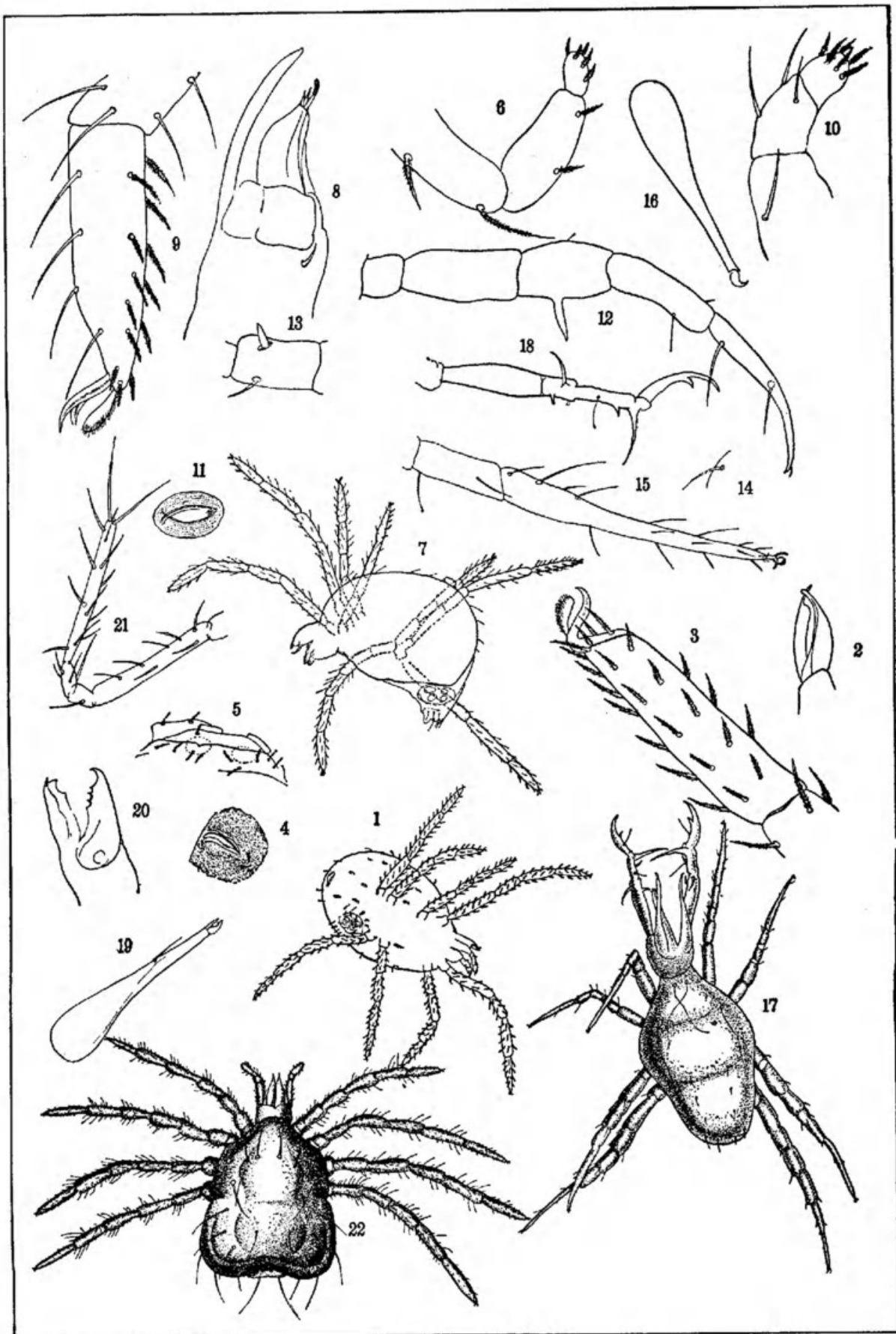
HALOTYDEUS DESTRUCTOR (Jack), 1908.

Figs 1-6.

This mite was first recorded as the Black Sand Mite from Cape Province, South Africa, by Jack in 1908 under the name of *Penthaleus destructor*. Not until 1925, however, was it described in detail, when R. E. Tucker published his memoir. In 1923 it was recorded from Western Australia by L. J. Newman as *Notophallus bicolor* Froggatt, a name given two years earlier to an allied species occurring in New South Wales. Shortly after the publication of Tucker's paper the leaflet of the Western Australian Department of Agriculture was revised, the name being changed to *Penthaleus destructor*.

As recorded by Jack and by Tucker, this mite is very abundant and a serious pest in South Africa on market garden crops such as lettuce. In Western Australia it is widely distributed in almost unbelievable numbers on Subterranean Clover, Cape Weed and many other plants. It also occurs similarly in South Australia, and the writer has had specimens for identification from Victoria, New South Wales, Tasmania and Federal Territory.

In South Africa, in seeking a possible natural control, the writer paid particular attention to two localities. At the Marsh Memorial Homes, Rondebosch, suspicions were directed to a predacious mite belonging to the Bdellidae (*Odontoscirus virgulatus* Can.) which was present in considerable numbers along with the Sand Mite. In the field, observations failed to show any cases of the Bdellid



attacking the Sand Mite, although various small Collembola and Psocids were often attacked. In captivity no evidence could be obtained.

It is the writer's considered opinion that as both this and the next species to be discussed occur together in both countries, and that as one of them may possibly be synonymous with a European species, they are probably introductions to both continents. The European species, which may be the same as the next one to be discussed, has been recorded occasionally to reach pest numbers in France, and it would seem that France and the Southern Mediterranean Region may be their native home and furnish some controlling agency.

The figures given in the plate illustrate the microscopic characters by which this species can be distinguished from its ally. In the field it is not so globose and does not have the dorsal red spot characteristic of the next form. It is entirely black with red legs, which just after an ecdysis are whitish. Occasionally a form is found in which the dorsum is uniformly brown and sharply marked off from the black venter. No morphological differences could be found between this form and the normal.

Genus *PENTHALEUS* Koch, 1838.

Syn. *Notophallus* R. M. Can., 1886.

*PENTHALEUS BICOLOR* Froggatt, 1921.

Syn. ? *Penthaleus major* (A. Duges, 1834).

? *Penthaleus haematopus* Koch, 1835.

? *Penthaleus insulanus* Thorell, 1872.

Figs. 7-11.

This species was first described in a very insufficient manner by Froggatt in 1921 as the Blue Oat Mite (*Notophallus bicolor*) from New South Wales. The writer first met with it in South Africa, where it was previously unknown, in all localities where the previous species was to be found. In Western Australia it is similarly to be found, although not in such immense numbers. In certain parts of South Australia it can be considered a minor pest, and in New South Wales has been regarded as serious. It has also been received from Victoria and Federal Territory.

Although no recent detailed descriptions of the European *Penthaleus major* or *haematopus* have been published, it does appear to the writer that there is a possibility that our Australian form may be the same.

*Description*.—Size to 1.0 mm. rather larger than the preceding species. Colour black with a red dorsal patch surrounding the anus. Legs red, brighter than in preceding. Venter and sometimes the back of the cephalothorax reddish. The palpi are short, three segmented, and the segments relatively shorter and broader than in *H. destructor*. The mandibles are short with the movable finger of practically uniform width, whereas in the previous species it is truncate just before the apex and ends in a fine point. Only the apical segment of the palpi has serrated or feathered setae. The body is more globular than in *Halotydeus* and has the anus situated dorsally. The genital organ on the venter has the usual two pairs of suckers. The first and fourth pairs of legs are the longer and the tarsi end in a pair of strong claws and median pulvillus. The setae on the body and the legs are all strong and simple, except on the under-surface of the tarsi where they are serrated. In *H. destructor* all the setae on the tarsi are serrated.

Neither in this nor the preceding species have males yet been discovered, and both would appear to be largely parthenogenetic as suggested by Tucker for *H. destructor*.

Family BDELLIDAE Duges, 1834.

Genus BISCIRUS Sig. Thor, 1913.

Subgenus ODONTOSCIRUS Sig. Thor, 1913.

ODONTOSCIRUS VIRGULATUS Can. et Fanz.

This species was abundant along with *Halotydeus destructor* (Jack) in many market garden areas around Rondebosch and Stellenbosch, Cape Province, South Africa, in 1930. It is almost world-wide in its distribution, and has recently been recorded from Northern Africa and Australia.

Genus SCIRUS Herman, 1804.

*Scirus hessei*, n. sp.

Figs 19-21.

*Description*.—Length, 2.1 mm. Rostrum with 5 pairs of ventral hairs. Mandibles long, reaching tip of rostrum, 430  $\mu$ ., with a single hair 125  $\mu$ . from the tip and 65  $\mu$ . in length. Palpi 725  $\mu$ ., segments II. : III. : IV. : V. = 300  $\mu$ . : 50  $\mu$ . : 50  $\mu$ . : 310  $\mu$ .; apical setae of V. 110  $\mu$ . and 100  $\mu$ .; segment II. with 7-8 hairs, III. with 1, IV. with 4, and V. with 12 hairs. Jaws of mandibles dentate, fixed finger with 2 teeth, movable finger with a strong apical tooth and four smaller median teeth. Eyes, two on each side. Legs and body normally haired.

This species, which the writer has much pleasure in naming after his friend, Dr. Hesse, of the Cape Town Museum, was present in small numbers in a tube of *Collembola* collected by Dr. Hesse at Stellenbosch C.P., South Africa, August 28, 1927.

The species is very close to *Odontoscirus virgulatus*, but belongs definitely to *Scirus* in having only a single mandibular hair. In its dentate mandibles it occupies a similar position to typical species of *Scirus* that *O. virgulatus* does to typical *Biscirus*.

Family CUNAXIDAE Sig. Thor, 1902.

Genus CUNAXA v. Heyden, 1826.

CUNAXA SETIROSTRIS (Herman, 1804).

Figs. 12-16.

This is a very small scarlet mite found commonly under loose bark on fallen twigs in many parts of Western Australia, from Perth southwards. It occurs along with *Cyta latirostris* but is very much smaller and more brilliant in colour. It is easily distinguished by its shape and the extraordinary palpi. It is a well-known species in Europe, and Dr. Sig. Thor has kindly confirmed my identification of specimens from Perth. It also occurs in South Australia, in the Adelaide district.

CUNAXA TAURUS.

Figs. 17-18.

This species occurred with the preceding in the Perth area during 1931-2. It is also a European species, and can be distinguished by the palpal structure.

Family ANYSTIDAE Oudemans, 1902.

Genus ANYSTIS v. Heyden, 1826.

ANYSTIS BACCARUM (Linnè, 1758).

Fig. 22.

This is a reddish mite of a characteristic square or trapezoidal shape which often occurs in considerable numbers on low herbage. It is predacious in habit and has been observed feeding upon *Collembola*, Thrips and other soft-bodied



insects. Its movements consist of a series of circles. It occurs commonly in the country around Cape Town, South Africa, and the writer has identified it from most areas in Western Australia, south of Geraldton, and from Victoria, South Australia, and New South Wales. It is probably an introduction from Europe.

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## EXPLANATION OF FIGURE.

- Fig. 1. *Halotydeus destructor* (Jack). Entire mite, from below.
- " 2. " " " Mandible.
- " 3. " " " Tarsus.
- " 4. " " " Anus.
- " 5. " " " Genital opening.
- " 6. " " " Palp.
- " 7. *Penthaleus bicolor* (Froggatt). Entire mite.
- " 8. " " " Mandible
- " 9. " " " Tarsus.
- " 10. " " " Palp.
- " 11. " " " Anus.
- " 12. *Cunaxa setirostris* (Herman). Palp.
- " 13. " " " Segment of palp.
- " 14. " " " Dorsal seta.
- " 15. " " " Tibia and tarsus.
- " 16. " " " Mandible.
- " 17. " *taurus*. Entire mite.
- " 18. " " " Palp.
- " 19. *Scirus hessei*, n. sp. Mandible.
- " 20. " " " Jaws of mandible.
- " 21. " " " Palp.
- " 22. *Anystis baccharum* (Linné). Entire mite.



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