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DEVOTED TO THE ECONOMY AND LIFE-HABITS OF INSECTS, ESPECIALLY IN THEIR RELATIONS TO AGRICULTURE.

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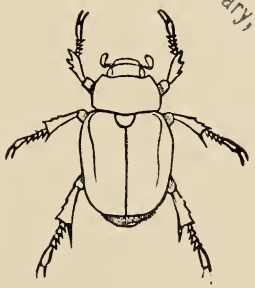

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SPECIAL NOTES.

Forest and Shade Tree Enemies in West Virginia.—Bulletins 31 and 32 of the West Virginia Agricultural Experiment Station, by Mr. A. D. Hopkins, published in April and May, 1893, respectively, contain much matter of interest to the student of forest insects. Bulletin 31 is a catalogue of West Virginia Scolytidæ and their enemies, but it is also something more than a catalogue. It gives rearing records and brief tabular accounts of the habits of 80 species of Scolytidæ and of 88 species of the natural enemies of these destructive beetles. In considering parasites Mr. Hopkins has carefully distinguished between those found simply associated with the supposed host; those which he considers to be primary, and those which he considers to be secondary. Although the records would have been of more value had the reasons for these conclusions been given, the list nevertheless marks an advance in this direction. It is interesting to note that Mr. Hopkins has reared 8 distinct parasites of *Scolytus rugulosus*, and a further remarkable observation is recorded in the fact that a Chalcidid of the subfamily Pteromalinæ was reared from the adult of *Pityophthorus minutissimus*, an observation which is without parallel in the whole family Chalcididæ.

Bulletin 32, which comprises a catalogue of the West Virginia forest and shade-tree insects, is naturally more extensive, and covers some 75 pages, giving rearing records of no less than 494 species. The bulletins are well printed upon good quality of paper, but are somewhat marred by the results of inexpert proof-reading.

Orange Insects in Louisiana.—The Louisiana Agricultural Experiment Station at Baton Rouge, La., has published a special bulletin on the subjects of the Orange and other Citrus fruits from seed to market, with insects beneficial and injurious, with remedies for the latter, by Prof. W. C. Stubbs, Director of the Station, and Prof. H. A. Morgan, Entomologist. The bulletin fills a great want, since we have no modern work in English on the cultivation of the Orange. Prof. Morgan's contribution to the bulletin is partly a repetition of our publications on the scale insects affecting Citrus trees in Florida and California, but is of great interest as indicating the particular insect fauna of the plants

NOTES ON TASMANIAN COCCINELLIDÆ.

By E. H. Thompson, *Tasmania.*

Your many kindnesses in sending the very valuable publications of your Department make me venture to address a few lines to you on the subject of our Coccinellidæ, the more so as some attention was drawn to them by Prof. Webster in Insect Life, vol. II, p. 287. Although I do not for a moment pretend that all our Tasmanian species have been discovered (more than half of the island is still a *terra ignota*, and covered with impenetrable scrub), still I think that as far as the inhabited portions of the Colony are concerned there are not likely to be many more Coccinellids at work, as I have traveled through the length and breadth of it during the last eighteen months and have specially kept my eyes open for Lady-birds and other friendly insects. I place *Leis* (or, according to Masters's Catalogue of Australian Coleoptera, *Coccinella*) *conformis* Boisd., as first in the list. Not only is this beetle the most numerous, but certainly the most useful. I have found it preying on the *Icerya purchasi* (which it completely kept down or cleared out entirely), on the Mussel Scale (*Mytilaspis pomorum*), *Schizoneura lanigera*, *Aphis brassicæ*, *Aphis rosæ*, *Rhopalosiphum* sp., and also on the different scales attacking our Peppermint and ordinary Eucalyptus. The larvæ are large in proportion to the size of the imagines, and are black with two yellowish orange bands at second and third molt, finally attaining two more colored bands. When first hatched they are quite black.

I have reasons for believing that the larvæ of Leis and of the small black Scymnus are both subject to parasitic attacks, but so far I have not been able to secure the culprit. The next Lady-bird as regards usefulness and activity is *Cleodora mellyi* Mulsant, so named for me by Mr. George Masters, of the Macleay Museum, Sydney, New South Wales. This is a comparatively unknown Coccinellid in Australia, as it was not recognized by several experts to whom I showed it. I just discovered it last year at Devonport, on the northwest coast of Tasmania; since that I have found it in the South. I can always secure many more larvæ and eggs than I can of the perfect beetle. It is very active and flies at the least disturbance. It so far seems to be confined to small Eucalypts, which are covered with *Eriococcus eucalypti* Cr., and other similar scales. The larvæ are much broader than those of Leis, and instead of having continuous bands of yellow, have a series of pale yellow dots on eight segments arranged somewhat regularly. The imago is a very large Lady-bird, and the elytra are very much pointed. Commencing from the two "comma"-shaped markings, there is a distinct carination which extends along the anterior margin to the next series of markings. From its size and rapacity this Lady-bird must do a vast amount of good, but I have never yet found it working on economic plants or trees. The fourth insect is much smaller than *Leis*

conformis, and is, I believe, undoubtedly *Coccinella repanda* Thunberg, though I do not find it catalogued under that name by Mr. Masters. This Lady-bird is generally associated with Leis in its attacks on *Mytilaspis pomorum*, and in one or two places in the south of the island, they have, unaided, completely stamped out the scale. They make a small round hole in the top of the scale and devour the eggs. This last year (1892) I found the gardens about Brighton, in the midlands, perfectly alive with the larvæ of these two Lady-birds, but I could discover but little for them to feed upon except the Rose Aphis. Perhaps I visited the district too late, and their work was done. The third Lady-bird I have only found in one part of the island, Scottsdale. It is described by the Rev. Mr. Blackburn, of South Australia, as *Verania frenata* Erich. (*Alesia frenata* Erich., according to Masters's Catalogue) I found this Lady-bird only in its perfect form: I hunted well about for larvæ, but I could not discover them. It was feeding ravenously on the Woolly Blight (*Schizoneura lanigera*). The fifth Coccinellid puzzles me. On examining the specimens in the Sydney Museums I find that there is a very marked difference in the appearance of the Australian and Tasmanian specimens. Here they are, with the exception of the six orange spots, of a uniform lustrous blue-black metallic color, while the Australian specimens show gradations of shade and color as shown in Fig. 1, Pl. IX, p. 67, vol. II, part 2, of the New South Wales Agricultural Gazette, 1891. I do not pretend to say without further information, but I am inclined to think they must be different. Two black Scymni are extremely common in places under the loose bark of Eucalypts. I seldom found them on economic plants. Owing to the elongated compressed shape of the first of these I was at first almost inclined to think that I must be mistaken and that it was a phytophagous insect, a Paropes, for instance, but on examination I find that it is undoubtedly a Coccinellid. It is only sparsely pubescent, while the other one is largely so. The last four or five segments of the abdomen are of a distinctly yellowish brown or fulvous color. It is hemispherical and at times very small indeed, though possibly there may be different species. I shall be glad to send you specimens of any or all of these insects if they would prove interesting to you.

EXPERIMENTS WITH THE HOP LOUSE IN OREGON AND WASHINGTON.

(Report of an investigation made under instructions from the Entomologist.)

By Albert Koebele.

I arrived at Portland, Oregon, April 19 and visited Prof. F. L. Washburn at the Experiment Station at Corvallis, Oregon, who has had this insect under observation for some time and who has published valuable