

## NOTES ON THE EXTERNAL CHARACTERS OF THE SAN JOSE SCALE, CHERRY SCALE, AND PUTNAM'S SCALE.

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March 14th, 1898.—During the last two or three weeks, I have received inquiries from Georgia, Iowa, Kansas, and Canada, regarding the structural external characters of the San José scale (*Aspidiotus perniciosus*), Cherry scale (*A. Forbesi*), and Putnam's scale (*A. ancylus*). I present, therefore, a few notes on these species, which I hope may be of some use to my fellow workers.

It is not a very difficult matter at this time of the year to separate these species at a glance. As is well known, *perniciosus* winters as a partially matured insect, and when the insects are perfectly normal, they are almost always uniformly blackish, with the exuvie or nipple-like prominences, very conspicuously surrounded by a circle, of the same general colour, as a rule, as the rest of the scale. Of course, on trees badly infested with this insect, there are always many scales of the old males, females, and young, which were not sufficiently covered to protect them at the time cold weather set in; but where a sufficient number of young in good condition can be found, the above character does not vary much, and rarely, if ever, are the pupæ of the males to be found at this time of the year.

*Forbesi* also winters in a partially matured condition, but male pupæ are conspicuously present at this season, or even very much earlier. The colour of the scales varies considerably, but usually conforms somewhat to the colour of the bark. The nipple-like prominence is very conspicuous and is of an orange, brick-red or purplish tinge. The exuvie are usually covered with a delicate film or membrane of rather light colour, but are ruptured in most cases, exposing the bright coloured centres. The scales of the males and females are not uniform in colour, being much lighter around the border of the young female and at the caudal end of the male scale. The conspicuousness of the exuvie and the presence of the pupæ at this time of the year are characters which almost always distinguish this species from *perniciosus*.

The female of *ancylus*, in this location at this season, is much more developed than either of the foregoing species. The young females are usually not so convex as *perniciosus* or *Forbesi*. The exuvie are lighter than *perniciosus*, and not nearly so bright as in *Forbesi*, varying in