

of sprinkling it with water (an artificial shower), as the best means for its extermination. In the present instance, the bug obstinately persists in multiplying, contrary to all rule. The past year and the present have both been years of excessive rainfall in St. Lawrence county. Spring, summer and autumn have been exceptionally wet. In the spring, I am told that heavy and continued rains flooded meadows now showing the chinch-bug attack. At haying time, when the bugs were young, and, according to all the statements hitherto made, readily killed by wet, the rains were so frequent and severe, that the grass cut could only be secured with difficulty. Upon Mr. King's farm, much of it was drawn in, upon favourable days, by improving the opportunity of extending the labour into hours after nightfall. At the present time grass is lying in fields in stacks, which could not be gathered, owing to continued rain, and fields of oats are still unharvested."

This insect belongs to the order Hemiptera, which includes all true bugs. These are all furnished with a sharp proboscis or beak by which the substance they feed on is pierced and its juices extracted by suction. This piercer when the insect is at rest is bent beneath the body. The chinch-bug belongs to a sub-division of the hemiptera known as the half-wing bugs (Heteroptera), and to this same group the well-known bed pest belongs, and they both give off the same disagreeable odour when touched.

The accompanying figures will aid in making clear the life history of this species.

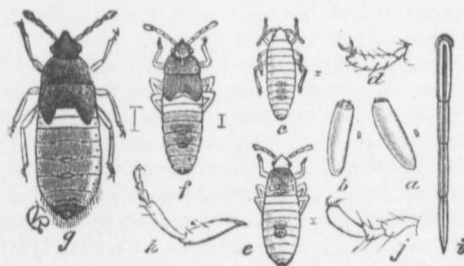


Fig. 30.

At *a* and *b* (Figure 30) the eggs are shown much magnified, the short lines at the side of all these figures indicate their natural size. These eggs are about one thirty-third of an inch long, of a long oval form with the top squarely cut off. When at first laid they are pale in colour and semi-transparent, but shortly they change to an amber shade and finally in part to red as they approach maturity. The newly hatched larva shown at *c* in the figure is pale yellow, with an orange-coloured patch on the abdomen; very soon the whole body becomes red, except the first

two joints of the abdomen which remain yellowish. With the growth of the insect the red colour becomes quite bright and contrasts strongly with the pale band as shown at *e* and in a more marked manner at *f*. As the insect approaches full growth the head and thorax become dusky in colour, and the abdomen of a duller shade of red. At *g* the pupa is represented, in which stage the insect loses none of its activity but gradually becomes duller and darker in colour. At *h* one of the legs of the insect is shown enlarged and at *j* the tip of the same still more highly magnified, while at *i* the jointed proboscis or beak is represented.

In figure 31 we have a view of the perfect insect, also magnified, the short line behind it showing its natural size. It is about one-tenth of an inch long and about one-third of its length broad. In colour it is black, and when examined with a magnifying lens the body is seen to be slightly hairy. The wing covers, which lie flat upon its back, are white with black veins and a black spot on each side about the middle and towards the outer margin. The feet and the outer swollen joints of the antennæ are yellow, the legs and the basal joints of the antennæ black.



Fig. 31.

Its size seems to be quite out of proportion to its destructive powers, and minute though it be it nevertheless inflicts an almost incredible amount of injury in certain years upon the grain and corn crops. Prof. Lintner states that "In 1864, its injuries in the State of Illinois to wheat and corn alone were computed at seventy-three millions of dollars. This was a year of unusual excess, but it is not of rare occurrence that a State should suffer a loss of from twelve to fifteen millions of dollars in a single year. When the