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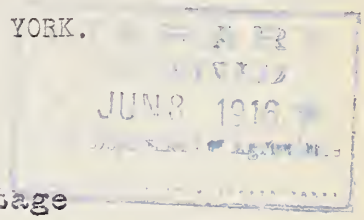
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UNITED STATES DEPARTMENT OF AGRICULTURE,  
BUREAU OF ENTOMOLOGY,  
WASHINGTON, D. C.

FOREST ENTOMOLOGY.

June 1, 1916.

Brief III. THE DYING HICKORY TREES ON LONG ISLAND, NEW YORK.  
CAUSED BY THE HICKORY BARKBEETLE.



Habits of the Beetle and The Percentage  
Principle Of Control.

When there are only a limited number of the hickory barkbeetles in a community, or they are not in sufficient force to attack and kill healthy trees, they must depend upon weakened, dying or recently felled trees for their breeding places. Under such conditions trees weakened in vitality from any cause are more liable to attack and such trees may be the means of contributing to the rapid multiplication of the individuals to a point where they are no longer dependent upon weakened trees. Then the healthy trees will be attacked and the tops and larger branches killed, or if the beetles occur in great numbers, the trunks are also attacked and the entire tree dies.

The thousands of beetles that breed in a single, large, thickly infested tree are sufficient to kill fifty or more other trees, and those that breed in the tens of thousands of trees of all sizes on Long Island every year, if they all lived, would be sufficient to kill all of the hickories on the Island in a single year, but there are many reasons why this has not occurred in the past and will not in the future.

As stated in Brief II, the adult beetles and the eggs and larvae have many natural enemies in the predatory insects, parasites, diseases, birds, etc., so that the number of individuals of the overwintered broods are greatly reduced before the adult beetles mature and emerge from the trees. After the beetles develop and emerge, many of them scatter about and fail to join in the general attack on the living trees. Others perish from various causes including those captured by the natural enemies of the adult beetle and others go to weakened, dying or felled trees so that under average conditions the number of individual beetles that concentrate their attack on the healthy trees in one season is about the same as in the preceding season, consequently about the same number of trees within a given large area is killed each year, which shows that, under natural influences, there is a tendency towards a balance between the various opposing forces, including the vital resistance of the trees.

If from any cause the conditions during one or more years in special areas or communities are favorable for the multiplication of the beetles, the balance will be turned in their favor and consequently a larger percentage of trees will be killed.

If on the other hand unfavorable conditions should prevail, either as the result of natural causes or artificial control measures, the balance will be turned against the beetles and in favor of the trees. Therefore the principle for the owners of trees to keep in mind is to dispose of enough of the total infestation within a given area or community to turn the balance against the beetles.

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