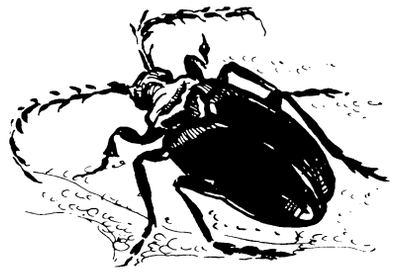
ENTOMOLOGY

Nature Ramblings

By FRANK THONE



Tree-Killers

IN YOUR autumn ramblings you may idly kick at a dead tree trunk lying on the ground, and break off a piece; or, perchance, more actively curious, you may tear off a slab of its bark. You will be almost certain to evict from their snug homes one or two little beetles, which on closer examination may be seen to have antennae, or "feelers" quite as long as themselves, and most gracefully ornamented with little bristles or barbs at each joint.

These are members of the numerous clan of beetles known as the Longicornes, or long-horns. They are attractive to look at, as beetles go, but they are as wild and wicked as their name implies. For the long-horns are among the most destructive of all insect pests that attack our trees. There is no grove or forest where their evil work is not known. They prey on growing timber in all corners of the world.

They are evil in their shiny, long-legged adulthood, and in the fat, blunt-headed infancy that precedes it they are more evil still. They chew their way into the wood of the tree, boring long tunnels through and through it and effectually ruining it for lumber. Or, with a taste for juicier fare, they may confine their attention to the living cambium layer, between bark and wood, which gives the tree its growth in girth. Around and around this they go, finally girdling the tree with their remorseless little jaws as effectually as though with an ax; and the tree has nothing left to do but die.

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In a study of physical posture, the U. S. Public Health Service gave physical examinations to 2,200 boys and men, and found that the most striking discovery was the great variability of posture, even in the same individual.

CHEMISTRY

Breakdown of Rubber Found To Be a Process of Oxidation

OXYGEN causes the breakdown of rubber being milled in the course of manufacture. This was brought out in a report by W. F. Busse, Akron, Ohio, before the annual meeting of the American Chemical Society held at Buffalo, N. Y., the week beginning August 31. The action of oxygen on the long molecules of rubber breaks them up into shorter ones and causes the rubber to soften. With the use of a photographic plate the presence of peroxides, the breakdown products of the process, was detected.

The process of oxidation takes place rapidly, especially in cold milling. The rollers have the effect of twisting the minute rubber molecules and making them easier victims of attack by the oxygen. As a check on this oxidation theory, milling was performed in the absence of oxygen. Little, if any, breakdown was said to occur.

At the meeting evidence obtained from the use of the X-ray was presented in regard to the nature of rubber. A report by M. F. Acken, and W. P. Davey, of Pennsylvania State College, called attention to the fact that normal rubber acts like formless matter toward X-rays. When stretched, however, it causes a bending of X-rays as would material composed of fibers, or thread-like cells.

The investigators found that this reaction to X-rays did not take place as soon as the rubber was stretched, but only after a short time interval in which the so-called fiber structure could be built up. The conclusion was reached that rubber is both a liquid and a solid: fibers with liquid rubber in the spaces between them. This view explained the delay in reaction. Time is required for the liquid to be squeezed out of the spaces, before the molecules of stretched rubber are able to assume the position of true fibers.

Among the reports presented was that of C. R. Park, Charleston, W. Va., and R. B. Maxwell concerning the role of temperature in the vulcanization of rubber. It was pointed out that the temperature of the inside of a rubber article being vulcanized is much lower than that of the outside because rubber compounds do not conduct heat easily. Factors were determined to show accurately how temperature affects vulcanization when certain substances take part in the process.

J. W. Ayers, of Easton, Pa., reported that traces of free ferric sulphate in oxide of iron have shown by experiment to hasten the aging of rubber. Effects of various compounds which speed up the curing of rubber or delay its deterioration were recounted by J. H. Ingmanson, C. W. Scharf, and R. L. Taylor, all of New York City.

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