BOTANY

NATURE RAMBLINGS

by Frank Thone

Poisons Without Purpose

WE ARE used to the employment of poisons by animals as means of defense. The bite of a snake, the sting of a wasp, the venom from a toad's head-glands are understandable to us. To use a phraseology now considered somewhat old-fashioned, they have definite purposes; they discourage aggressors, and in some cases at least, they help the animal to secure its food by killing or paralyzing the prey.

But of what avail to the plants that form them are the toxic secretions of poisonous mushrooms, of poison hemlock, of wormwood, henbane, nightshade, jimsonweed? Most of them do not take effect for several hours, and in any case they have to be eaten before they can do any harm. An Olympian observer might see some retributive justice in this; but what good is this post-mortem revenge in terms of survival of individual or species?

A few plants can poison on contact only. Nettles are perhaps the most notable; the tiny envenomed daggers they wield undoubtedly do drive off many intruders that might otherwise trample or devour them.

But again, perhaps the worst of these contact poisoners, poison ivy and poison sumac, do not begin to exact their penalties until after several hours have elapsed. Moreover, they poison by contact only; hoofed animals have been observed eating the foliage without any apparent ill after-effects, and birds use their fruits as staple articles of winter diet.

Sometimes poisons give a bitter taste to the plants, like the alkaloids of the nightshade family (including tomato and potato leaves); sometimes a poisonous plant is ill-smelling, like skunk cabbage; occasionally bad taste and rank odor are combined, as in jimsonweed. But there are also plants that are repellently bitter without being poisonous, and some of the most poisonous plants are neither bitter nor ill-scented. The deadliest of all the poisonous mushrooms are quite agreeable to eat; that is one reason why they have built such a Borgian record.

There is a tendency on the part of some botanists to regard plant poisons as waste products of the plants' life processes. Plants do not have the same facilities as animals for getting rid of certain types of wastes, so the next best thing is to store them in leaves and perishable parts of the stem, which will eventually be sloughed off.

However, such suggestions are at best conjectural. Plant poisons still remain pretty much of a mystery.

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● Earth Trembles

Information collected by Science Service from seismological observatories resulted in the location by the U. S. Coast and Geodetic Survey of the following preliminary epicenter:

Wednesday, July 19, 9:23.0 p.m., EST

In the South Pacific about 600 miles southwest of Samoa. Latitude, 21 degrees south. Longitude, 179 degrees west.

For stations cooperating with Science Service, the Coast and Geodetic Survey, and the Jesuit Seismological Association in reporting earthquakes recorded on their seismographs, see SNL, June 17.

METALLURGY

Weakness of Stainless Steel, Seawater Corrosion, Overcome

Tiny Traces of Silver Will Cut Down This Type of Corrosion More Than 80 Per Cent With Better Polish

THE ACHILLES heel of stainless steel —its inability to resist the corrosive action of seawater—may be protected by the addition of tiny traces of silver, it has been discovered by scientists at Massachusetts Institute of Technology.

The new discovery, which should have great importance in marine and naval construction, arose from observations that a salt of silver, silver chloride, is insoluble in seawater. Out of this knowledge Prof. R. S. Williams and his associates at M. I. T. have found that as little as 0.42 per cent of silver will cut down stainless steel's salt water corrosion more than 80 per cent.

Not only is corrosion resistance improved but the heat conductivity of stainless steel—another weak point—is increased 26 per cent by the addition of only .14 per cent silver, according to an Arthur D. Little, Inc., report.

Other advantages claimed for silver-steel is a greater ease of machining and an improved polish. A very uniform and highly polished surface in itself inhibits corrosion.

Stainless steel's corrosion in seawater comes from tiny electrical batteries created on the surface of the steel plate by differences in oxygen concentration. A barnacle, on a ship's bottom, for example, might be the cause of this oxygen difference.

In the myriad of tiny batteries created by this or a similar process the formation of chloride compounds of the metals in the alloy is favored. These chlorides are soluble and wash away, leaving a pitted surface. As the pits deepen the difference in concentration of oxygen increases and the corrosion goes faster and faster until the entire plate of stainless steel becomes honeycombed. To the eye its surface may look unmarred but at the danger point it may suddenly collapse.

The function of the silver in the alloy is to make insoluble chlorides under the action of seawater which form a thin, guardian layer.

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The cow tree of Venezuela yields a sweet milk-like latex that can be drunk or used to caulk canoes.