The Parachor and Molecular Refraction constants increase with temperature in many liquids. This has been interpreted in most of the cases examined as being due to association. It is probable that the PR constant will not have this temperature effect due to the factor

$$\frac{n^2 - 1}{n^2 + 2}$$

, which decreases with increase of temperature. Thus the PR constant is the Parachor corrected by the above compensating factor so as to obtain a physical constant that does not depend upon temperature. At temperatures at which the vapor pressure of the liquid reaches an appreciable value the density of the liquid may be corrected by substituting (D — d) for D, in which d is the density of the vapor.

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FEMALE WASP FIXES SEX OF HATCH FROM HER EGGS

Female insects of at least one group can regulate the sex of their offspring. Entomologists of the United States Department of Agriculture find that a parasitic wasp brought here from the Orient 15 years ago to help control the Japanese beetle varies the treatment of her eggs according to the size of the host on which she lays them. She withholds the sperms that insure a female hatch from eggs deposited on the relatively small worms—beetle larvae—that have moulted only once to enter the stage known as the second instar. Nearly all the young wasps from these eggs are males. The hatch from eggs laid on the larger, third-instar larvae, however, is preponderantly female.

To prove that the female wasp (*Tiphia popilliavora*) fixes the sex of her progeny when she deposits her eggs, the entomologists transferred eggs laid on second-instar larvae to third-instar larvae and those laid on third-instar larvae to second-instar larvae. Mostly males hatched out on the third-instar hosts and mostly females on the second-instar hosts.

These imported wasps will not deposit eggs on first-instar hosts—the small worms that have not yet moulted. They will lay them on second-instar larvae, but prefer third-instar larvae. Variations in numbers of second or third-instar larvae available to the wasp during its brief adult life cause it to fluctuate in numbers from year to year. This, the entomologists say, may be partly responsible for the failure of the wasp to become consistently numerous enough to fight the Japanese beetle as successfully in the United States as in the Far East, the native home of both.

VALUE OF BEES TO OTHERS GREATER THAN TO OWNERS

The beekeeper is not able to collect the cash value of the work his bees do—outside of the honey they produce—Dr. C. A. Browne of the United States Department of Agriculture said recently at a meeting of beekeepers. This byproduct labor of the bees, 3 to 10 times the value of the honey and beeswax, is the pollination of growing crops—particularly fruits.

In Germany during the war, said Doctor Browne, bees were much neglected, and a serious drop in fruit crops because of poor pollination resulted. Many other insects are pollen carriers, but early spring when most of the fruit trees are in bloom is too early in the season for most insects other than bees.

Doctor Browne emphasized the need to develop industrial uses for honey to maintain a market so that beekeeping will continue profitable enough to support the byproduct work of the bees. Honeys vary considerably in chemical composition and more chemical research is needed to determine the suitability of each type for specific industrial uses.

RUBBER TREES WITHSTAND SOUTH FLORIDA WINTERS

Rubber trees of both the Hevea, the Brazilian tree cultivated in the East Indies, where 95 per cent of the world's rubber is produced, and the Castilla of Central America, have withstood several winters in south Florida, where scientists of the United States Department of Agriculture are experimenting to see if wastelands of the peninsula State may be made into a rubber reserve for times of economic or military stress. They have withstood temperatures as low as 30° as far north as Palm Beach. Second generation trees are expected to be better adapted.

Florida cannot compete with the cheap labor of the East Indies in producing rubber, but if Florida wastelands were in rubber trees and rubber rose above a dollar a pound, as it did when restriction measures were applied in the East Indies shortly after the World War, home production might become practicable.

The Castilla and Hevea rubber trees belong to unrelated families, and different methods of tapping are required. The Hevea has a continuous network of microscopic tubes in the inner bark, which seep the creamy latex to a single cut. Tapping is repeated by paring the rim of the cut, the latex becoming more liquid and the flow increasing on successive days, the socalled wound response. This method of wound renewal led to commercial planting in 1896, 20 years after the seeds were taken east from Brazil.

Tapping by the Hevea method cannot be used on the Castilla tree, because the latex tubes are not connected, but the latex is more abundant and was much easier to collect by native methods—tapping with many cuts—which, however, soon killed the trees. The Department is investigating mechanical methods of extracting the rubber from the bark, leaving the wood available for paper pulp and other byproducts.