CHEMISTRY

Competition for the Bee

➤ A DESERT shrub and the giant Douglas fir may soon be real competitors of the busy little bee in the wax-making business.

In a converted war alcohol plant at Springfield, Oreg., wax is already being extracted from the bark of Douglas fir. The operation is a milestone. Until this spring the bee had a complete monopoly on large-scale production of true wax in this country. Douglas fir bark was being burned as waste.

Chiefly responsible for the chemical process which made Douglas fir wax a reality is a research scientist at the Oregon Forest Products Laboratory, Dr. E. F. Kurth. Using home-made 50-gallon percolating tanks and household water heaters, he proved that the bark could be made to yield a true vegetable wax. The Kurth process is now being used by the Oregon Wood Chemical Co. at Springfield, which hopes to boost production to as much as eight tons of wax daily.

Douglas fir wax was found to be harder than beeswax but not so hard as carnauba, the hardest wax known. Ranging from light tan to deep red in a semi-refined state, it has the pleasant odor of balsam.

It is extracted from the bark by hot benzene. The solvent and wax are then pumped into a second tank where the benzene is distilled off by high-temperature steam.

Very similar to Douglas fir wax is the unusual oil of a little-known desert bush called Simmondsia. Potentially an extremely valuable new American crop, this plant has grown wild in Arizona, southern California and Mexico for centuries. Its nut-like seeds were used by Indians as food and a medicinal oil. The plant itself is nutritious fare for cattle, goats, sheep and deer.

In 1933 two chemists discovered that Simmondsia oil differs radically from all other known seed oils. It was more like sperm oil from whales. Chemically it was not a fatty oil at all, but a liquid wax.

Treated in the same way that modern shortening is made from cottonseed oil, Simmondsia oil becomes a very hard white wax, nearly as hard as carnauba. Untreated, it has qualities which give it great commercial promise. It does not become rancid as do ordinary vegetable oils. It can be used under high temperatures as a lubricant for high-speed machinery.

"Present market possibilities for Simmondsia oil would seem unlimited," N. T. Mirov, scientist at the California Forest and Range Experiment Station, writes in the journal CHEMURGIC DIGEST.

The oil can be used in the manufacture of rubber, chewing gum and linoleum, he says. The hydrogenated wax makes a good polishing wax, and can be used wherever wax is employed in modern industry.

The future of Simmondsia lies in taming it, the chemist points out. It is extremely difficult to collect the seeds from the wild bushes. But they can be cultivated successfully. A plantation of Simmondsia near Riverside, Calif., has flourished during the past six years, giving bigger seeds and more of them than do the bushes growing wild.

Science News Letter, July 22, 1950

MILITARY SCIENCE

No Worthwhile Target For A-Bomb in North Korea

➤ THE A-bomb almost certainly will not be used on North Korea. There is no target in the Communist-dominated territory large enough to warrant use of such an expensive and devastating weapon.

The "crude" A-bombs used at Hiroshima and Nagasaki obliterated areas of about 10 square miles. Largest city in North Korea is its capital, Pyongyang and, according to the South Korean Embassy in Washington, D. C., Pyongyang is a city of five square miles containing 600,000 people.

Second largest city in North Korea is Heamhung, up near the Russian border, with 300,000 inhabitants and four square miles of territory.

The next two largest cities, the Korean embassy spokesman says, are Haeju, on the western side of the peninsula near the 38th parallel, and Wonsan, a port city across the peninsula, also just north of the vital parallel. Both have between 100,000 and 125,000 populations and between three and four square miles of territory.

It is not necessary to devastate an entire city and scorch some of the surrounding countryside—as an A-bomb would do in any North Korean city—to render it useless militarily. Pyongyang and Heamhung both have been developed industrially and both are railroad centers. But old-fashioned bombs, used properly, could take care of the factories and the railroad yards.

Science News Letter, July 22, 1950

GENERAL SCIENCE

Eight Million Men Of Draft Age

➤ OVER 8,000,000 young men are in the age groups affected by the draft order issued recently.

According to latest Census Bureau estimates as of 1950 there are 8,189,000 males in the ages of 19 through 25. Those in the upper part of this age bracket number somewhat more than those of the earlier ages. That is because the death rate of such young men is insignificant as compared with fluctuations in birth rate. The birth rate 19 years ago was lower than it was 25 years ago.

Here are the figures for each age: 19: 1,121,000; 20: 1,350,000; 21: 1,158,000; 22: 1,183,000; 23: 1,197,000; 24: 1,195,000; 25: 1,200,000.

A fairly large proportion of men drafted would be taken from their studies in school and college. In the age group 20 to 24, 827,000 are enrolled in school or college and of these 300,000 are not veterans. In the older age groups 25 to 29, a larger proportion of those in college are veterans since few men of that age are still in college unless their studies were interrupted by the last war. In this age group the enrollment is 23,000 non-veterans and 363,000 veterans.

In the age group 18 to 19 (the Census Bureau does not have estimates for the nineteen-year-olds alone) 593,000 are enrolled in school or college and of these 589,000 are non-veterans, only 4,000 veterans. These figures are as of October, 1949.

The drafting of men 19 to 25 will have a considerable effect on those employed in production, including professional and semi-professional workers.

A year ago there was a total of 6,525,000 men in the ages 19 to 25 and of these 2,376,000 were non-veterans. Of the non-veterans, 2.9% were professional or semi-professional workers.

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BOTANY

Membrane of Tiny Plant Cells Found to be Porous

➤ TINY plant cells are equipped with an even tinier network that carries materials between their nuclei and the surrounding cytoplasm.

This network might be compared to a railroad system which carries freight from a large city to and from the surrounding countryside.

Dr. Flora Murray Scott, professor of botany at the University of California at Los Angeles, reported the existence of the system to the International Botanical Congress in Stockholm.

Prior to her discovery, the membrane which encloses the nucleus was not known to be permeable. Scientists were puzzled over the manner of exchange between the nucleus and the cytoplasm. Her research is the first demonstration as to how the exchange may take place.

The plant cell network is made up of "fibrillae" or slender strands which traverse the membrane of the nucleus. In many plant cells, this network is barely visible under highest-powered microscopes.

In her research, however, the U.C.L.A. botanist used the giant nuclei of wild cucumbers, in which the strands are easily seen under the microscope.

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