

Strange Phenomenon on Fir Tree

Yields finest of white sugar in the dry-belt of British Columbia, Canada

Written for The Western Home Monthly by Francis Dickie

THE most remarkable botanical discovery in recent years and one of greater interest to the average man than most botanical findings by reason of its uniqueness has been the just recently made one that Douglas fir trees in a certain region of British Columbia, Canada, yield a sugar of a very peculiar variety, one containing a rare trisaccharide in greater quantities than any other plant as yet known to man. This trisaccharide was formerly obtained from a shrub in Turkestan and Persia. But the sugar from the Douglas fir yields a great deal more. In fact fifty per cent of its makeup is trisaccharide.

Still stranger is the fact that though this rare sugar has been produced on the trees for centuries, and that the Indians have gathered it for a great many years, and the bears, too, knew of it and broke down branches to get it, it is just recently that the white man discovered it. How all the early explorers, missionaries, and later surveyors came to miss noting this phenomenon, one of so unusual a nature, is passing strange. Yet evidently they did, as the writer has been unable to find any mention made of it in the early chronicles of the province, and, certainly, had it been known, they would surely have written of it, by reason of its very oddness.

Through the research of Professor John Davidson, F.L.S., F.B.S.E., Botanist, in charge of the University of British Columbia, Vancouver, Canada, the cause of the phenomenon is now known, as well as the habitat of the

the coastal regions. The explanation of the sugar's appearance proved to be a phenomenon resulting from certain atmospheric conditions effect upon the trees. The trees on the northern and eastern slopes were fairly well apart, so that a great portion of their leaves received sun. There was also a better air circulation than trees get in heavily forested areas. Here, too, the ground was warmer. Trees exposed to a good supply of sunlight gather upon their leaves carbohydrates. Ordinarily these are taken into the plant at night to supply tissues and storage cells. In the

dry-belt, however, an abnormal amount of carbohydrates accumulated on the fir. At the same time the soil, warmed by the sun, increased the root activity so much that the roots worked on into the night in this region where the nights are hot, dry and short. As a result of the increased root activity the root pressure was immensely increased. This and the cessation of transpiration caused the leaves to become gorged with water. This water presently was forced to exude out of the leaf tips into the hot dry night, which rapidly evaporated. The water was heavily impregnated with sugar from the leaf cells, which remained clinging when the water evaporated. These drops either hung, or fell on the branches below to form larger masses as shown in the photograph.

But the sugar by reason of its so largely depending on certain atmospheric conditions for its production is not a crop that can be relied on.

Analysis made at both the chemistry laboratories at Ottawa, Canada, and Washington, D.C., show the sugar to have a high degree of constancy of composition. The fact that it yields a pure and rare trisaccharide may make it very valuable in chemistry and the mixing of medicines. Its supply is too small and too uncertain to make it ever a possibility for food for men in great numbers. Its value in chemistry and medicine now remains to be brought out by the investigators in the laboratories, as the botanical part of its life history has been made known by the work of Professor Davidson in the field, as told above.



Sugar on fir tree

sugar-producing fir trees. In the following lines is told for the first time the result of his findings:

The sugar-producing fir grows in the hottest part of the dry belt of British Columbia, between latitudes 50 to 51 and longitude 121 to 122, and also is reported in the eastern portion of the state of Washington. As seen in the accompanying photograph of the fir branch placed beside a foot rule to give some idea of dimensions, the sugar forms in irregular masses from a quarter of an inch to two inches in diameter, and also in white flakes. The sugar is white just like the refined article of commerce, and is very sweet to the taste. On first being taken into the mouth it goes into a sticky paste, which quickly, however, becomes entirely dissolved.

The investigator after much research and covering a good deal of country in the dry belt found that the tree growing on northern and eastern slopes were the chief bearers of sugar. Trees on the other exposure did not generally yield. Nor did trees in heavy dense forests of



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