TECHNOLOGY

Oil Extracted From Fruit Skins by French Machine

➤ THEY'RE STRIKING oil in Morocco by a new process—oil from fruit skins. Tiny globules of oil are now burst out from citrus fruit skins with a new industrial extractor machine, described by Roger Schwob, chief of the division of technology of the Institut des Fruits et Agrumes Coloniaux, Paris.

The machine presses the skin and bursts open tiny glands to release this essential oil used in food seasoning and perfume. Fruit oil is usually extracted by hand or with a water solution that spoils the quality and wastes time, Mr. Schwob pointed out. With this new machine, the skin of an orange, grapefruit or lemon can be de-oiled in seven seconds and the fruit itself is left intact for further processing.

About 4,200 fruits per hour can be processed for oil. The machine adjusts automatically to all shapes, sizes and varieties.

Americans long have valued fruit juice and thrown away the skins, said Mr. Schwob. And Italians have concentrated on extracting only the essential oils. New economic conditions, however, make it difficult to be content with extracting only one product to the detriment of the rest.

With the industrial extractor machine now in use in Morocco, oil can be drawn out entirely at cold temperatures and without water, two conditions essential to get the highest quality of this fragile product.

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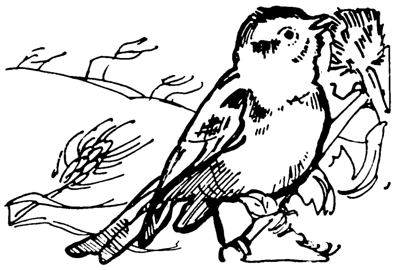
ORNITHOLOGY

NATURE RAMBLINGS



Tree Sparrow

➤ WE SHALL not have the tree sparrows with us much longer. They came down out of the north when winter arrived, and they will stay as long as snow is on the ground.

About the time the first robins come up from Dixie, however, and certainly when the first bluebird is seen, they will begin drifting northward again. For the tree sparrow is distinctly a Canadian, and only comes "down to the States" for the winter.

Where the tree sparrow got its name is one of the unanswered puzzles of popular nomenclature, for it does not ordinarily stay around trees very much, and is very rarely known to nest in trees. It is most distinctively a ground sparrow, sticking close to the floor of things, and foraging there for its rations.

He is one the few birds that can "look our winters in the face and sing." Not a loud song, to be sure, but sweet and sure though slight, and the more welcome for the frozen silence through which it often sounds. Only the severest of Januaries is able to quell the tree sparrow.

Very alert, bright, cheerful little birds these tree sparrows are. They flit in small flocks like brown leaves swirling over the snow, settling on weed stalks and making the chaff fly while they devour the seeds, singing in their low, clear trill or chattering in brief, tinkling chirps.

A quarter of an ounce of weed seed a day is set down by one naturalist as a fairly conservative estimate of the ration for a tree sparrow. He figures on this basis that in a large agricultural state like Iowa, this species alone removes 875 tons of weed seed every winter. No farmer will begrudge a full harvest of such gleaners.

To the careless observer, there is a great resemblance between the tree sparrow and that city gamin, the English sparrow, which an ornithologist named Job, with a most un-Job-like impatience, has characterized as "no sparrow at all, but a rat in feathers." However, in addition to a greater neatness and trimness, the tree sparrow bears a black mark on his breast which shows him as a member of a more decent clan than his disreputable cousin.

When the first warm days of spring come, the tree sparrows feel the call of their deep Northern woods, and disappear in the direction of their nesting grounds.

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AERONAUTICS

Friction Heat Problem

➤ NOW THAT airplanes have traveled faster than sound and broken the so-called sonic barrier, predicted unbreakable a few years ago, they are encountering another barrier only partially solved. This is a thermal barrier, which is due to the heat generated by air friction at high speeds.

This problem of a thermal barrier is discussed in a publication of the Royal Aeronautical Society, London, by Dr. W. F. Hilton, an engineer with the Armstrong Whitworth aircraft company. The heat developed by any flying body, bullet, aircraft or space rocket, rises roughly in proportion to the square of its speed, he states. This means that if the velocity of a speedy plane is doubled the aircraft's temperature will rise four times.

In actual practice, he adds, the effects of this square-of-the-speed law have to be qualified somewhat due to the change in temperature with height and to aerodynamic shape. It also takes time for the heat to soak into the plane. Again, the steady decrease of air density with height reduces the temperature rise until it becomes negligible at an altitude of some 70,000 feet.

With the development of jet-propelled airliners for commercial passenger transportation, the problem of the thermal barrier will be important, he indicates. Cabins can easily become uncomfortably hot, particularly when flying in the tropics.

These speedy airliners will require a cabin-cooling system somewhat similar to a type now in use in jet fighting planes. The cockpit-size refrigerator now used consists of a device that compresses hot air from the jet engine and then lets it expand rapidly to below the freezing point. This produces cool air to circulate in the cabin.

Any form of engine using mechanical compression of air is likely to be limited to a speed of less than three times that of sound and the use of a ram-jet engine will be limited to from four to five times the speed of sound. The rocket-powered aircraft alone may be able to fly at these very high speeds because it carries its own oxygen and the only thermal barrier problem is the heating up of the outside of the structure.

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