

again, which lessens the efficiency of the process.

This is accomplished, in the first of the new methods, by admitting the vapors to a chamber through which is falling finely divided magnesium powder. Each particle acts as a cool nucleus on which the vapor can condense. The mixture of powder and gas is blown through a cooling column, around which cold water circulates.

Then it enters the top of the chamber from which the magnesium powder fell in the first place. The gases are carried away through an exhaust pipe, but the powders are whirled, by the force of the air, around the outer part. Heavier particles drop into a chute which takes them out, but smaller ones fall into a central hopper, ready for another chance to enter the condensation chamber.

The second patent covers a method by which a stream of gas such as helium, hydrogen, or hydrocarbon vapors, is cooled below the freezing point of magnesium (1200 degrees F.), and mixed with the vapors, to cause condensation. In the third and fourth patents the magnesium vapor is condensed by passing it through a bath of another metal which vaporizes at a temperature higher than that at which the magnesium condenses.

The patents are numbered from 2,238,907 to 2,238,910. All four are assigned to the Dow Chemical Company.

Science News Letter, May 10, 1941

MEDICINE

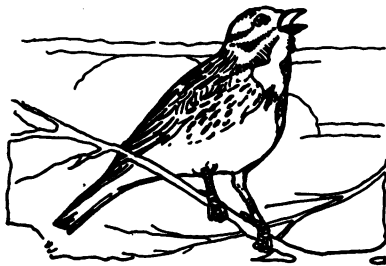
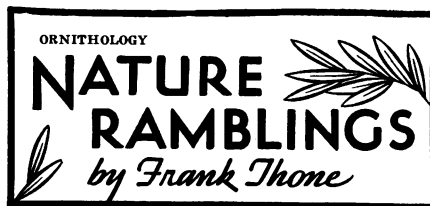
Fat Is Life-and-Death Issue in Diabetes

NEW knowledge of diabetes, showing that in this disease of faulty utilization of sugar, the paramount, life-and-death issue is fat, won for Dr. William C. Stadie, of the University of Pennsylvania, the John Phillips Memorial Medal for 1940-1941 of the American College of Physicians.

The diabetic, without insulin, is unable to use sugars and so he must fall back on fats for his energy requirements, Dr. Stadie pointed out. He gets part of the energy he needs by burning fat in the muscles themselves. But from one-third to one-half of the energy from fat is obtained by a preliminary burning of fats in the liver, during which substances called ketone bodies are formed.

Regulation of this part of the fat mobilization for energy, however, is limited, so that more ketone bodies may be formed from fat than can be used. If this continues unchecked the dangerous acidosis and coma of diabetes follow.

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How Many Birds?

BIRDS are nesting in every tree—or at least so it seems to the drowsy suburbanite who wants to sleep until half-past seven when the robin outside his window gets other ideas on the subject about half-past four. With three pairs of songbirds nesting anywhere in the same block your dawn-awakened citizen will swear grumblingly that every feathered alarm clock in the country has joined a conspiracy against his slumbers.

How many birds are there in the United States? There are many perfectly serious reasons for wanting to find out, and Roger T. Peterson, of the National Audubon Society, has attempted to make an estimate. After checking over a considerable number of sample counts made during the nesting season, in a few representative habitats, he hazards a guess that "eventually we will find not less than five billion breeding birds in the United States, and probably closer to six billion."

That would average out to about 40 or 50 birds for every human inhabitant—a figure that at first seems astonishingly large, until one visualizes the noisy concentrations of blackbirds that will gather later in the season, or the great "rafts" of ducks that are happily again beginning to be in evidence on some of the new wildfowl refuges.

However, Mr. Peterson declines to call his figure more than a guess. The sample counts are not large enough, or numerous enough, and they leave too many habitat types out of the picture entirely, simply because nobody has ever gone to the trouble of making close counts of the birds in such places as the short-grass plains and mountain heights in the West and the pine barrens and salt marshes of the East.

Bird censuses that have been made with reasonable care show plainly that there is great variation in population density in American bird populations, just as there is in the human population.

The flat, intensively cultivated farmlands of Kansas, for example, show a relatively low bird population—as little as one bird to five acres. Yet in the woodlots and plantings around the farmhouse there are as many as 20 birds to the acre. Eastern woodlands harbor four or five birds to the acre, while neglected farmlands in the same region support only about half that population density.

Bird "cities," like human cities, seem to grow up where there is water. Mr. Peterson estimates that the average bird count on wet lands in the East is not far from nine per acre, and that the concentration in many favorable watery areas is double that figure.

Overclean cultivation of farms and ill-advised drainage of swamps and shallow lakes, in Mr. Peterson's opinion, are the greatest causes of devastation in the bird world. Beside them, the small boy with his BB gun (who'll probably miss anyway) is as nothing. He would have farmers keep plows away from weedy, brushy fencerows, and local authorities think long and earnestly before they permit a land speculator to begin the draining of a swamp.

Science News Letter, May 10, 1941

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