BIOLOGY

NATURE RAMBLINGS

By FRANK THONE

Beavers Again

Once more the beavers are coming out of winter quarters and giving their home ponds their spring going-over. Mischief done to the dam must be repaired first, of course, as well as any damages sustained by the series of little auxiliary dams.

Beaver cleverness at felling trees, and beaver intelligence in constructing hydraulic works, have been somewhat over-rated. It is not true, for instance, that a beaver always cuts a tree to fall just where he wants it. Beaver trees fall away from the stream as often as they fall toward it, and very frequently they lodge in the tops of neighboring trees where they cannot be of any use at all, though there may have been plenty of free space all around. Similarly, beavers often build canals clear through the woods and out into open wet meadows beyond them, where there is no wood to be floated to their ponds.

So different are the habits of the beaver from those of most of his relatives that it is with something of a start that we realize he is a rodent, close kin to the rabbit and the rat. But a glance at the build of his head tells the whole story. Its whole structure is centered around his powerful, chisel-like front teeth, about the most efficient gnawing equipment owned by anything that wears fur. And gnawing is the one performance that is most strongly characteristic of rodents.

The beaver played a large part in the development of America. It may even be said that the beaver hat played a large part in that development. Beaver hats were fashionable a little over a century ago, and beaver trappers pushed their operations far out into the newly acquired Louisiana Purchase, exploring every valley and pass in the West in their search for the elusive animals that bore this costly fur. Some of the most valuable members of the Lewis and Clarke expedition were of this tribe of Nimrods of the beaver.

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MEDICINE

Find Parent Of Vitamin D

The anti-rachitic vitamin over which dieticians, health authorities and the possessors of young offspring have been so deeply concerned for the last few years, is nearly tracked down to its original source. The younger generation will be interested to know that a preparation many times more potent than cod liver oil to prevent and cure rickets is ready to be tried out by physicians.

Scientists in America and Europe working in more or less collaboration on the problem, have come to the same conclusion, says Dr. Alfred F. Hess, of the College of Physicians and Surgeons at Columbia University, that the anti-rachitic vitamin D is formed when certain sterols, a group of substances similar to fats, widely distributed in the lower plants, are exposed to ultra-violet light. Both Dr. Hess and Drs. O. Rosenheim and T. A. Webster, of the National Institute for Medical Research in London, have collaborated with Prof. A. Windaus of Göttingen University in Germany, who has been engaged in research on the chemical problems involved in the isolation of the anti-rachitic vitamin, for several years.

About two years ago, Dr. Hess reported that cholesterol, occurring in all animal fats and oils, and its counterpart, phytosterol in vegetable foods, after irradiation with ultra-violet light, was the substance actually responsible for preventing rickets. Irradiated cholesterol in very much smaller doses would produce the same results as cod liver oil, only one millionth of a gram being necessary to protect a rat from rickets.

Now, however, another step in the pursuit of the vitamin, has been accomplished. The English workers, Dr. Hess, and Professor Windaus of Göttingen, all believe that it is only a small portion of the cholesterol which is activated by ultra-violet light. This is an allied substance called ergosterol. This compound is widely distributed in lower plant forms and only very minute quantities are needed to protect laboratory animals from rickets.

"It was found," says Dr. Hess, "to bring about a healing process of the bones when even as little as .0003 mg. per capita daily was given. In tests in which irradiated cholesterol is fed, it has been found that approximately 1 mg. is needed to initiate healing. Other experiments will be undertaken to ascertaian the relationship of ergosterol to cholesterol and the extent of its distribution in the animal body."

The practical value of the discovery of this concentrated form lies in the fact that it will be possible now to dispense with the malodorous and nauseating cod liver oil. Hitherto it has been the practice to resort to such general remedies as sunlight and a diet of foods known to contain anti-rachitic elements. A German authority has suggested that one of the consequences of this research will be to put oleomargarine products on an equal basis with butter and cream, for the irradiated oleo will have the same anti-rachitic constituents as real butter.

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PHARMACOLOGY

Insulin Action Duplicated

A synthetic drug that acts like insulin in remedying diabetic conditions, but which can be taken by mouth instead of necessitating troublesome daily injections with a hypodermic needle, is the discovery reported by Dr. E. Frank of the University of Breslau.

The new compound is a derivative of guanidin, a substance long well known to organic chemists, and has been named "synthalin" by its discoverer. It is not nearly so powerful as insulin in the crystalline form, first prepared by Dr. John J. Abel of the Johns Hopkins University, but its effects are indistinguishable from those of the natural drug produced from the pancreatic gland. Injected into the blood stream of laboratory animals afflicted with diabetes, it quickly reduces their blood sugar concentration to normal, and an overdose produces the convulsions that are a symptom of excessive insulin. These convulsions can be cured by injecting sugar solution, as they are in the case of those produced by the natural insulin.

Dr. Frank states that the new chemical will be of use chiefly in the treatment of mild and moderately severe cases of diabetes, and he cautions prospective users to be exceedingly careful in regulating the size of the dose. Synthalin alone, he says, will not avail against diabetes in its more advanced stages. In these the frequent injection of insulin is still the only effective treatment. But even here, he claims, synthalin will be useful as an auxiliary medicament, for by swallowing properly adjusted doses of it the patient can cut the number of insulin injections needed daily from three down to one.

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