

File Personal



BREAKTHROUGH IN DIABETES

by
Herbert Lampert



■ There is a brass plaque on the wall of the small laboratory on the second floor of the University of Toronto Medical Building. It reads:

IN MAY 1921 FREDERICK GRANT BANTING AND CHARLES HERBERT BEST, BOTH GRADUATES OF THE UNIVERSITY OF TORONTO, CONDUCTED IN THIS ROOM EXPERIMENTS WHICH CULMINATED IN THE DISCOVERY OF INSULIN.

The plaque records one of the most significant breakthroughs in medical research. The discovery of the hormone, insulin, gave new life to millions otherwise doomed literally to starvation and death.

Diabetes is a chronic condition in which the body somehow fails to convert sugar into energy.

It was given its name some 2000 years ago by a Greek physician who described it as a "disease in which the flesh melts away and is siphoned off in the urine." In Greek the word

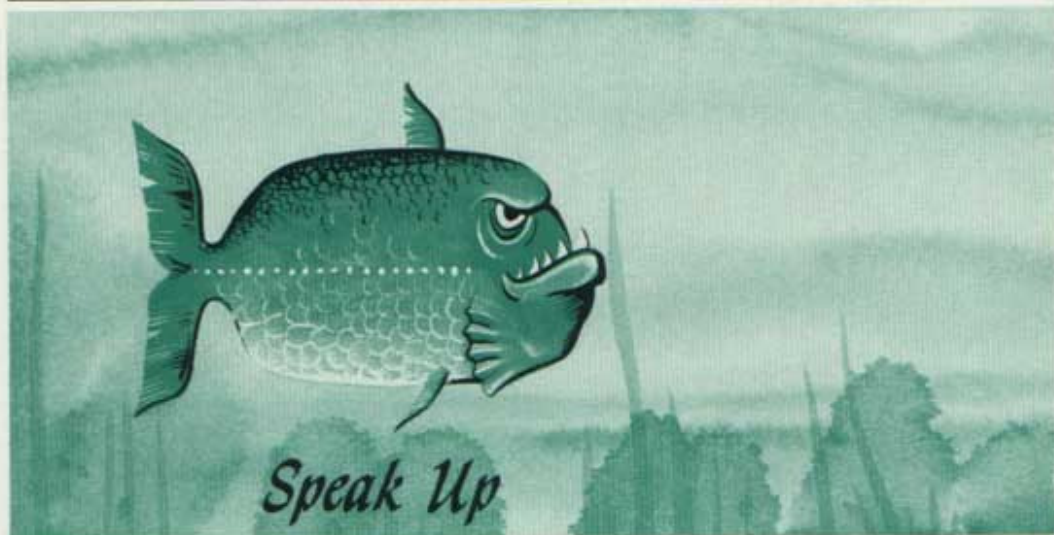
"diabetes" means "siphon". The Greeks didn't know why, but failure to metabolize sugar and starches properly caused the body to turn on itself, consuming stored fats and proteins so that the victim wasted away while being tortured by a ravenous appetite.

Then came Banting and Best's work which made the word insulin synonymous with diabetes. The hormone's mode of action is still unknown, but the prime function appears to be the transport of glucose (sugar) into the responsive body cell where this glucose can be transformed into energy. Investigators now believe that it also plays a secondary role in fatty tissue where it seems to favor manufacture and storage of fat.

The isolation and identification of insulin gave the doctor his first weapon, aside from rigid diet, against the dread sugar sickness.

Insulin is still an essential part of diabetic control, although recent research findings have prompted a new evaluation of this particular therapy, and have spurred on the continuing search for other therapies.

The second important milestone in the medical history of diabetes was the development of compounds that could be taken in tablet form, freeing a large group of diabetics



□ I'm one of those maps and highway are I always end Now I find that

So I Can Eat You

by Marc Landon

people totally confused by road signs. No matter how specific they up lost.

I'm even outmanoeuvred by a fish.

Tracking his quarry by airplane, a University of Miami scientist has found evidence indicating that sharks can use underwater sound waves to "home" in on a suspected food source — possibly including human beings — with remarkable speed and accuracy.

This follows an earlier discovery that a struggling fish or a thrashing swimmer generates a "dinner bell" sound wave himself — announcing his presence and location to the cruising shark.

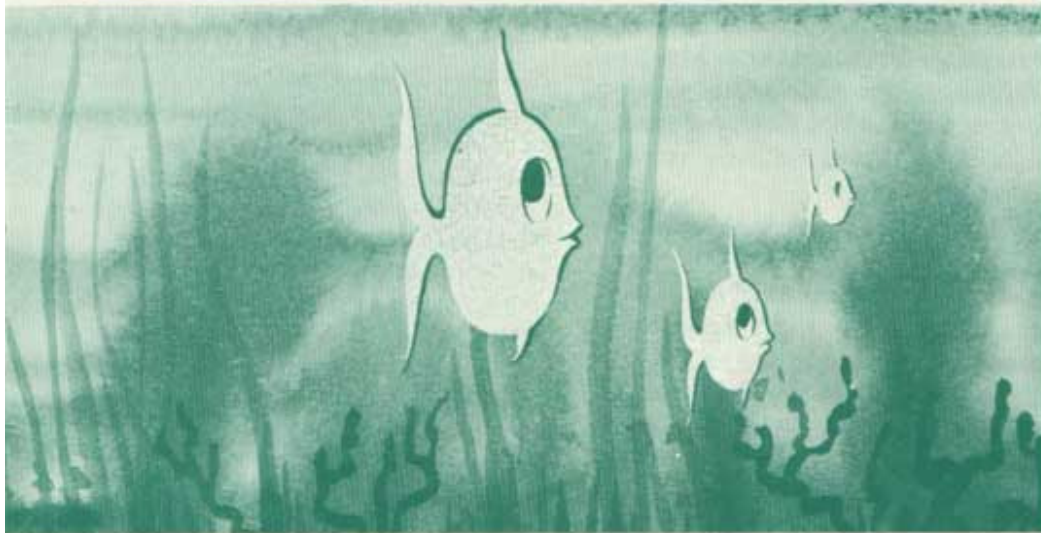
The findings resulted from a continuing study of hearing and related senses in fishes conducted by Dr. Warren J. Wisby of the University of Miami's Institute of Marine Science. His investigations, supported by the (U.S.) National Science Foundation and the Office of Naval Research, could serve as a basis for understanding the amazing ability of fish to orient themselves in an environment that, to most humans, seems without landmarks.

Dr. Wisby's work has shown that sharks, and perhaps other predators such as barracuda, have the ability to pinpoint the source of particular kinds of sounds and to recognize them as coming from possible food

from the hypodermic needle required for insulin injections.

At present there are four oral hypoglycemia (sugar-reducing) agents available by prescription. Three belong to the sulfonylurea family that

act by stimulating the pancreas to release more insulin. The fourth, phenformin, functions differently. It does not stimulate insulin production, but increases in some still unknown manner the utilization of



sources. Sharks tested by Dr. Wisby could detect and locate the source of low frequency sound waves when cruising over 200 yards from the sound source — far beyond visual range and with no blood in the water for sharks to smell.

How the sharks can pinpoint the location of a sound source is still not certain. In humans, part of the ability to locate particular sounds is due to the fact that the ears are set far apart and are outside the skull. One ear hears a sound slightly before the other one, the mind performs a subconscious problem in triangulation, other information is considered, and the answer is presented.

Dr. Wisby believes this process may differ in the case of sharks. The ears of a shark are set inside its cranium and are very close together. This fact, coupled with the high speed of sound waves traveling through water (one mile per second, or five times faster than sound in air), suggests that sharks receive all sounds in their ears almost simultaneously. A location solution through triangulation is unlikely.

It seems more probable, says Dr. Wisby, that sharks are locating the source of a sound through a group of sensitive cells along their sides. This group of cells, called the "lateral line", has been a controversial subject among fish experts for a number of years. It is possible that their function, never certain, is connected with sound reception and orientation. ■

glucose in the muscle and liver cells.

This has excited researchers who have been confronted with new problems as their knowledge of the complex disease of diabetes has expanded.

At the recent annual congress of the Canadian Association of French Language Doctors held in Montreal, Professor Albert Renold of Geneva, one of the world's foremost authorities on diabetes, outlined some of these problems.

One of the most provocative recent discoveries, said Professor Renold, is the fact that the "stable adult" diabetic (the largest single class of diabetics) frequently has normal or above-normal levels of insulin. He added that other recent research has also revealed normal and above-normal amounts of insulin in some juvenile diabetics who were formally considered to be insulin-dependent.

It would seem, said he, that insulin injections or the use of oral compounds that stimulate insulin production would be of little value in the treatment of this group of diabetics. It is his theory that there is some "antagonist" in the diabetic that interferes with the action of insulin. In such cases, above-normal amounts of the hormone can complicate the diabetic condition. Since insulin apparently is involved in the production and storage of fats in the body, it is highly suspect as a contributing factor in the obese or overweight stable adult diabetic. This has led to increased interest in phenformin. Investigators have found that in addition to non-stimulation

of insulin production this compound has the added benefit of reducing insulin levels in the body.

Continuing studies with phenformin may well reveal more truth about diabetes and perhaps lead investigators on to more effective methods of therapy.

What is needed now, according to two New York researchers, is a good classification of the different types of diabetes. In a report issued late last fall Drs. Charles Weller and Morton Linder of the Diabetic and Metabolic Research Unit, Grasslands Hospital, Valhalla, N.Y., stated:

"To choose the most efficient diabetic therapy there is need for a more complete understanding of the various kinds of diabetes. A practical disease classification must be made, based on certain metabolic characteristics of this syndrome."

Meanwhile, certain facts can be accepted without argument, according to authorities in the field. One in every 55 people has diabetes and approximately one third of these are unaware of their condition.

The most likely targets are persons who are blood relatives of diabetics . . . are overweight . . . or are past 40 years of age. Weight control is important in the prevention of diabetes. Fully six out of seven people over 40 — when their diabetes was diagnosed — were overweight before the onset of the condition.

Diabetes can be controlled, delayed, or even prevented if brought to the attention of the doctor in time. The easiest way to do this is by adding regular physical examinations to your list of things-to-do, every six months or a year. ■