

## Mini-computer calculates daily doses of insulin

A new concept developed at the Hospital for Sick Children in Toronto is designed to help diabetics stabilize their blood sugar.

Toronto bioengineer Michael Albisser, in collaboration with diabetic specialists, has developed a miniature computer — it looks like an ordinary calculator — which helps a diabetic calculate the correct insulin dosage to handle that day's food and exercise as smoothly as possible.

Specialists have warned, however, that while preliminary results of tests of Albisser's device are encouraging, more extensive trials are needed to prove the value of the machine.

Diabetes causes high sugar build-up in the blood due to failure of cells in the pancreas to produce sufficient insulin, a hormone that enables the body to use the glucose derived from food.

Some diabetics produce no insulin at all and depend on daily injections of insulin. A diabetic's greatest day-to-day problem is balancing daily food intake, exercise and insulin injections to try to keep the inevitable fluctuations in blood sugar levels as smooth as possible and as near the normal range as possible.

Many specialists believe that stabilizing blood sugar levels would help prevent diabetic complications such as disease of the heart and blood vessels, strokes, blindness and kidney failure.

Dr. Albisser said that about a year ago, he began investigating methods to "optimize insulin treatment for the diabetic using a needle and syringe, a reasonable number of injections a day and a reasonable mixture of insulins to achieve the best possible control".

He said the breakthrough was made possible by developments in technology and a "capillary blood glucose monitor" — a device that enables diabetics to measure glucose levels in a pinprick of blood from a finger.

The tiny computer is programmed with an individual's known characteristics, such as the rate at which he absorbs food and insulin.

It also assimilates information on meals, blood sugar level, whether the patient intends to consume additional carbohydrates, exercise planned and how soon the workout is to follow the meal. Then it recommends the appropriate insulin dose.

## New gold coin has Canadian edge

The first Canadian coin to have the word "Canada" marked on its edge has been issued by the Royal Canadian Mint. It commemorates the four-hundredth anniversary of the landing of Sir Humphrey Gilbert in St. John's, Newfoundland.



The Royal Canadian Mint's new \$100 gold coin, minted to commemorate the four-hundredth anniversary of St. John's, is the first in Canadian coinage to have the word "Canada" on its edge.

One side of the coin features a ship's anchor, a sixteenth-century sailing ship and the Cabot Tower on Signal Hill in St. John's. The obverse bears the portrait of Queen Elizabeth II.

The wording on the edge of the coin, usually referred to as "security lettering", was once used as a means of discouraging attempts at counterfeiting. Today it is regarded as a technique for enhancing the coin's esthetics and for adding interest.

### Presentation in London

In London, England on September 26, a special presentation was made of one of the coins to six-year-old Humphrey Gilbert, a direct descendant of the famous explorer. The occasion was a press conference at Canada House, London, when Mint vice-president Denis Cudahy announced that for the first time, the Mint would use direct mail as the means for selling and distributing its products in Britain.

Market research, said Mr. Cudahy, had indicated a strong interest in Britain for

Canadian collector coins. The Mint will use the services of PHS Mailings, near Gatwick in Surrey, from where all orders in Britain will be filled.

The 22-karat gold coin which costs \$310, can also be ordered from the Royal Canadian Mint, Post Office, Box 476, Station "A", Ottawa, Ontario, Canada. K1N 9H3.

## Yeast learns two-step

A team of researchers at the National Research Council of Canada (NRC) in Ottawa has come up with a process in which a yeast produces alcohol directly from starch.

In the current technology of alcohol production, the starch must first be digested into simple sugars by the addition of enzymes called amylases, which come from other organisms, before fermentation of the sugars by brewer's yeast into alcohol can occur. This pre-treatment step with amylases is costly and time-consuming.

The novel NRC process uses only one yeast, isolated from soil some 20 years ago by a team of researchers and very similar to brewer's yeast, to accomplish both steps. The new yeast, called *Schwanniomyces alluvius*, produces sufficient amounts of amylase enzymes to break down the starch into simple sugars, which it then ferments into alcohol.

The NRC team, under the direction of Dr. Charles V. Lusena, has studied the conditions under which the yeast is best able to produce the extracellular amylases and to ferment the broken-down starch to alcohol. The starch raw material can be obtained from a number of sources: grains, potato, cassava, and various other root crops. In Canada, the 10 per cent of these crops that spoil annually can now be used profitably rather than lost.

Besides starch as the starting material, the versatile yeast can convert other carbohydrates, such as inulin, a large sugar from the Jerusalem artichoke, a plant easily grown in Canada and yielding more than one crop a year. Certain small sugars from wood wastes can also provide useful fodder.

Further studies are underway to make the conversion of starch to alcohol with this yeast commercially feasible. The researchers also look to other uses for *S. alluvius*, such as the conversion of waste starch material to single-cell protein, and the commercial production of amylases.