

Cheaper alcohol produced

A Canadian company has developed a technique that could help produce gasohol — a mixture of alcohol and gasoline — more inexpensively.

Alcohol is being used as a mixer with gasoline to stretch fuel supplies in the United States. The aim by 1985 is to produce 500 million U.S. gallons (almost two billion litres) a year of alcohol to be blended in a 90 percent gasoline mixture called gasohol.

"I hope by the end of the summer or early in the fall to have a pilot plant producing 500,000 gallons (2.2 million litres) of ethyl alcohol a year," said John Hughes, president of Plastistarch Corporation of Montreal.

The basic problem in turning grain into alcohol, he explained, is in breaking the big starch molecules into smaller sugar molecules that can be fermented with yeast to produce alcohol.

A method commonly used now in the U.S. uses enzymes to break down the starch.

The Plastistarch method — patented worldwide — features a narrow conical metal tube called a venturi tube into which starchy substances are inserted in liquid form at the wide end and forced out a tiny spout under high pressure and heat.

The starch molecules literally cannot stand the strain, and they are shorn into big-molecule sugars that are hydrolized to produce dextrose, which in turn goes into fermentation tanks.

The advantage over the enzyme system is that it takes only a fraction of time and space, meaning savings. Smaller units could be operated by individual farmers or local farm co-ops, keeping supply and transport costs to a minimum.

In the U.S. now alcohol costs about \$2 a gallon to produce, but a 40-cent-a-gallon federal tax rebate makes it competitive with gasoline at \$1.60 a gallon.

Hughes said his method could produce alcohol more cheaply, with exact costs depending on the size of the unit and the price of the wastes that are used. If the cost goes down to 88 cents a gallon, it becomes competitive with naphtha for use as a petrochemical feedstock.

Three units are under production this year at the Plastistarch factory. One will be capable of producing 500,000 U.S. gallons a year.

New instrument helps joggers measure heart rate

It was a matter of the heart or more specifically heartbeats that led to the development of a Canadian product that helps measure the value of exercise.

In recent years people have become more and more aware of the value of physical conditioning to a healthy body. So it has followed that the sight of joggers at almost any time of day and in any kind of weather has become a commonplace event. Most of the participants can only guess at how effective their jogging and running exercises are in terms of building a strong and healthy body.

Pulse measurement required

Some attempt to measure the effect or value of their efforts by taking their pulses to measure their heart rate. Most physical training programs require that participants measure their heart rate after exercising to verify if the desired effect has been achieved.

One jogging enthusiast, Dr. Leslie W. Organ, president of Owl Instruments Ltd. of Downsview, Ontario, found a common complaint among joggers was the difficulty in taking their pulses to measure their heart rate. "The best measure that you are exercising adequately is that you have to attain a certain heart rate — you must get it up to a desired level — depending on your age," says Dr. Organ. "This level is always a certain amount above your basic heart rate."

It is only when this level of heartbeats a minute has been reached that you know the exercise has given the desired results.

Dr. Organ started working to develop a machine that would instantly measure heart beats and reproduce their number with each pulsation.

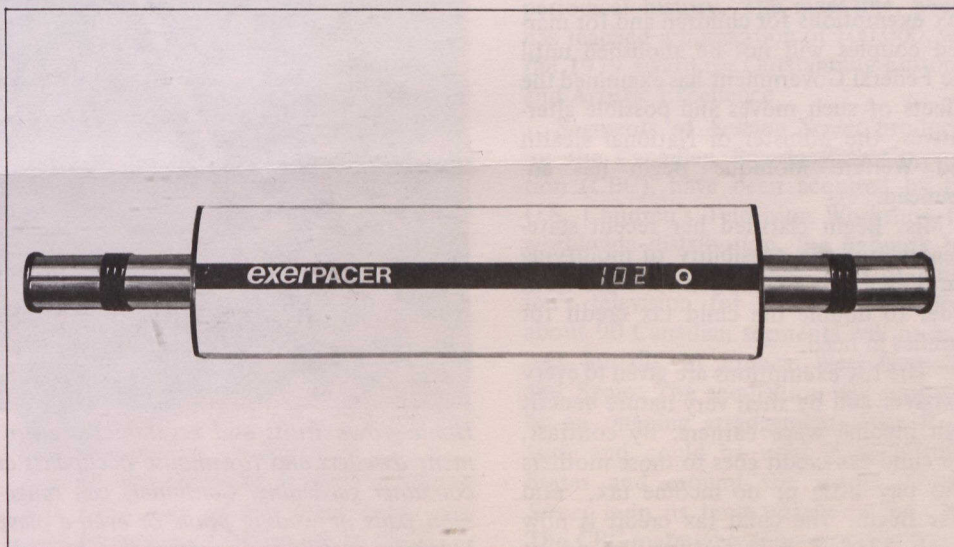
Owl Instruments Ltd. then perfected an automatic indicator of heart pulses. Made of electronic components activated by a simple nine-volt battery, the device registers heartbeats from 40 to 220 a minute with 98 percent accuracy.

The Exerpacer, as it is called, looks similar to the handles of a bicycle and is gripped simultaneously by both hands so the pulse can be registered. The electronic components and battery that make the Exerpacer function are compactly housed between the handles.

Simple to use

The Exerpacer is simple to use and allows anyone take his or her pulse immediately after sustained physical effort such as jogging, running, bicycling or swimming. The machine is entirely automatic and just requires a firm grip on the handles to operate. The battery activates the electrodes which reflect the heart rate on a luminous digital display screen. It takes only three seconds before the user can see his actual heart rate to within 2 percent accuracy.

Using the scientific chart supplied by Owl Instruments with the Exerpacer, the user can determine instantly if the exercise just completed worked the heart muscle enough to achieve an improved physical condition.



Owl Instruments' new digital Exerpacer automatic heart rate indicator.