Medicine

Scientific accident helps patients to breathe

People who need to breathe oxygen because of respiratory diseases have been helped by an accidental discovery by scientists at the University of Calgary five years ago.

The scientists, Dr. Robert A. Ritter and his assistant David G. Turnbull, were working on a chemical process with commercial applications when they stumbled upon a new and simple method of producing near-pure oxygen from ordinary air. This has now been adapted for use by patients in the home, providing an alternative to the conventional use of bottled oxygen.

The health department of the Alberta Government helped Dr. Ritter and his partner through a grant and loans to set up a commercial company which now markets a machine to do this job. The department itself has bought 30 of these machines and has been lending them out for use at home on a trial basis for patients suffering from such diseases as chronic bronchitis, emphysema, asthma, bronchiectosis and cystic fibrositis.

One patient using the Reox 2500 unit, as the first Ritter model is called, is Irene Kettner, 45, a Calgary housewife who was previously hooked to an oxygen bottle, spent a lot of time in hospital and was unable to do much exercise or work. She suffers from a heart condition complicated by the loss of one lung — and she is full of praise for the new machine. "It gives me mobility which I didn't have with the oxygen bottle. It's easy to operate, safer to use and much cheaper. It takes away the depression I had with the oxygen bottle."

The average cost of operating a Reox 1500 is $6 a month, compared with over $200 for bottled oxygen. The savings in hospital bills are even bigger: about $100 per patient-day in Alberta. Other advantages are elimination of the possibility of bottled oxygen exploding and security of supply, as all it needs is household electricity current and air.

10-ton capacity

Dr. Ritter says it is economically viable to produce Reox systems with a capacity of up to 10 tons of oxygen a day. Above that capacity conventional methods are preferable.

His firm has had inquiries from hospitals and nursing homes about using Reox systems as a central source of oxygen. The process also promises wide applications in other fields such as cutting and welding, on ships and aeroplanes, chemical manufacturing and "whenever there is a need for a small quantity of oxygen."

It can also be applied to the separation of other gases and liquids. Dr. Ritter is seriously looking into the possibility of using the process to produce helium from natural gas.

Helium, a rare gaseous element which is lighter than air and does not burn, is irreplaceable because once it is lost it escapes to the upper atmosphere. Dr. Ritter estimates that about $25m. worth of helium is being lost in natural gas production in Alberta annually.

The patent for the process is held by the firm of Ritter Engineering, set up last summer when Dr. Ritter and Mr. Turnbull left the university to devote full time to commerical development of their discovery.

This was made while they were studying the process of absorption chromatography as a possible method of producing polystyrene, a common plastic used in the manufacture of a wide variety of products. The process uses the ability of certain molecules to attract and hold other molecules; they decided by chance to test it on air before trying it on ethyl benzene, the raw material from which styrene was to be extracted. After a few tests they discovered they had found something they weren't looking for — an easy way to produce an almost pure oxygen.

They developed an absorbant or molecular sieve to hold nitrogen, which constitutes 78 per cent of atmospheric air, while permitting oxygen to pass through. The absorbant, consisting of aluminium silicate and calcium cations, is capable of producing oxygen of up to 95 per cent purity. To provide a continuous flow of oxygen, two sieves are used in each separator unit, with one producing oxygen while the other, under the influence of a vacuum, cleans itself of nitrogen. The sieves alternate their functions at two-minute intervals.

Dr. Ritter reckons that with the exception of precision metal-cutting, which requires 100 per cent pure oxygen, the oxygen produced by the separation process can replace bottled oxygen in almost all medical, commercial and industrial applications.

Schools wage cut-price war on trash foods

Seven school boards on the island of Montreal have adopted a novel form of warfare against the trash foods that are ruining children's teeth throughout the civilised world. While banning trash foods from their school cafeterias, they have at the same time slashed prices for wholesome dishes with a subsidised food programme to discourage children from taking their custom elsewhere.

Candy and soft drinks are no longer available from vending machines; instead, the cafeterias offer milk and fruit. As a result, just over 30 per cent of students now buy the nutritionally balanced hot plate (for less than 50 cents), and 90 per cent of both elementary and secondary pupils buy one or more of the single items on sale (price from 5 to 15 cents) such as fresh fruit, side salad, yoghurt or cheese. Milk is the most popular drink.

Miss Nicole Saint-Jean-Demers, chief dietician of the Montreal Catholic School Commission, helped devise the programme, which evolved from a successful food subsidy system innovated by the Catholic Commission in 1973. She says prices have been cut only on items which were not automatically popular.

Her own board is the largest participant with 59 schools. An eighth board is expected