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## Damaged documents saved by freeze-drying

A spice company in Halifax has used its freeze-drying equipment to restore water-damaged church documents to a legible condition.

When the Brunswick Street United Church burned to the ground last June, its birth, death, marriage and financial records, dating back to the early 1800s, suffered considerable damage.

Alice Harrison, librarian at the Atlantic School of Theology, said the records were freeze-dried in a vacuum chamber owned by W.H. Schwartz and Sons Ltd., the Maritime provinces' major spice supplier.

The company uses the chamber — known as an ethylene oxide vacuum sterilizer — to keep its spices bacteria-free by injecting vaporized ethylene oxide along with steam.

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## Lubricant extraction method

A Canadian researcher described a breakthrough in lubricant extraction technology in Romania recently, that would increase savings and productivity in petroleum plants.

B.M. Sankey one of only 13 people invited to give a "special paper" at the World Petroleum congress in Bucharest, outlined the EXOL-N process developed at Imperial Oil Limited laboratories in Sarnia, Ontario.

Mr. Sankey described how EXOL-N can provide more product at less cost and with less oil input than older processes.

He said the experience of Imperial and its parent company Exxon with the Canadian process showed why so many of the 5,000 delegates at the 70-country conference were so keenly interested in it.

In addition to substantial operating savings, he said, "we saved many tens of millions of dollars in new plant investment".

The new process provided Exxon and its subsidiaries with greatly increased capacity at existing plants, removing the need to build new plants to serve growing markets.

Exxon and not Imperial, however, owns the process. J.L. Tiedje, manager of Imperial's research department, explained that the Exxon group of companies pool all research.

EXOL-N is being used at seven Exxon plants throughout the world, including one at Edmonton, and Exxon now is turning its attention to selling the process.

The speech by Mr. Sankey providing the first public description of the process in scientific details, would allow others to develop it on their own. Mr. Tiedje said. But it would be less costly, quicker, and generally "more sensible" to buy Exxon's complete details and engineering help.

EXOL-N, Mr. Sankey said, may wholly replace the two solvents, phenol and furfural currently used in lubricants extraction.

Phenol is highly toxic, causing serious burns on skin contact, while furfural is unstable at higher temperatures and much of it is lost when it reacts with oil and decomposes.

Among the additional efficiencies available with EXOL-N, he says, are net energy savings of 20 to 30 per cent and the ability to make repairs during operations because of a far higher safety factor.

Answering questions from a number of delegations, Mr. Sankey said the cost of NMP, the key ingredient in the process, was much higher than the two existing solvents. In the United States, phenol costs 35 cents a pound, furfural 55 to 60 and NMP \$1. But the advantages in productivity and energy savings far outweighed the cost, he said.

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## Gold rush strikes Quebec

Soaring gold prices, which have produced a mining boom in northwestern Quebec, are expected to add \$100 million to the regional economy this year, says the president of the Quebec Metal Mining Association.

Gonzague Langlois said that association statistics showed that the value of mining production in the region last year was \$202 million, with gold mines accounting for half that amount.

A dozen gold and copper mines were slated to open within two to three years, creating more than 2,500 jobs, he added.

The Abitibi-Temiscamingue region of northwestern Quebec produces 99 per cent of the gold mined in the province.

In the past four years, four new gold mines have come into production — the Darius and Thomson Bousquet mines in Cadillac, the Chadbourne mine in Noranda and the Belmoral mine in Val d'Or.

During 1980, the Bras d'Or, Kena and Kewegama mines owned by Silverstack Mines will come into production. The Quebec government-owned mining exploration corporation, SOQUEM, has a 50 percent holding in Silverstack.

In copper mining, Hudson Bay Mining and Smelting Co. Ltd. and Selco Mining Corp. Ltd., both of Toronto, have formed a joint venture to work a rich vein north of Joutel. Investments are estimated at \$80 million and are expected to create 300 jobs, said Mr. Langlois.

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## Cloud-watching uncovers new theory

Some long-term implications for air safety may result from studies on cloud turbulence, which are a spin-off from cloud-seeding experiments, that have been conducted for the past five years, by the National Research Council (NRC), in co-operation with the Atmospheric Environment Service of Fisheries and Environment Canada.

Using three NRC aircraft in the Thunder Bay, Ontario, and Yellowknife, North West Territories areas, summer cumulus clouds were seeded in attempts to determine rain-making capabilities for the purpose of fighting forest fires. During the experiments, measurements were made of the life, turbulence, vertical and horizontal winds and other characteristics of these clouds. Because seeding is done at the topmost layers of the clouds, numerous profiles were developed of the activity and characteristics of this zone.

In addition to the general information about upper cloud physics, researchers discovered cumulus clouds that possess differing characteristics in various areas of the country. Clouds in the Thunder Bay area, for example, showed more vertical development, higher moisture content and greater turbulence than their northern counterparts.

Because Canada's major airlines cross the country along the southern area, this finding could have an impact on commercial flight patterns. Differences in cloud dynamics between various locations may have implications for aircraft and pilot safety in other seeding operations as well as for private and other small aircraft. With continuing investigations, researchers expect to be able to produce a cloud "atlas" for Canada in the near future, which would be beneficial to all aircraft operators.