

cumulated, the bundle would once more be exposed to the accelerator's stream of protons. Dr. Harms says it may be possible to renew the fuel bundle 50 times by this method.

He uses the illustration of a wooden log burning in a fireplace and accumulating a crust of ash which eventually smothers the fire. If the ash is repeatedly scraped away, the log can be made to burn repeatedly and eventually be entirely consumed. Depending upon other effects, the fuel bundle, even through this renewal, cannot be entirely consumed. But Dr. Harms explains that by using up as much of the fuel bundle as possible the amount of radioactive waste from nuclear reactors could be reduced significantly and the problem of storing such waste indefinitely could be alleviated.

There are additional benefits to nuclear transmutation, claims Dr. Harms. If several reactors were built around a central accelerator in one large energy park, the spent fuel could be removed from each reactor when necessary and taken next door by mechanical means for revitalization. This would be less expensive than transporting spent fuel to a distant storage facility by truck or rail, and would also reduce the chances of an accident *en route*.

Nuclear transmutation techniques may lead to more acceptable forms of nuclear energy. For example, it may be routinely possible to selectively add or remove subatomic particles from an atom in order to make it less radioactive. This would be similar to certain chemical reactions in which the addition of one compound neutralizes the potential hazards of another, says Dr. Harms.

Canadians giving up TV for reading

Canadians appear to be spending less of their spare time watching television, according to a Canadian statistical analyst.

Terry Cheney said a study has found that although television remains the most popular leisure activity, Canadians appear to be turning to other activities, particularly reading.

Mr. Cheney, a former Statistics Canada analyst now working as a consultant, said Canadians surveyed reported they spent 12.4 hours a week watching television in 1978, down from 12.9 hours in a 1972 survey.

In terms of total leisure activity, however, the proportion of time spent watching television has declined dramatically, he said.

In 1978, watching television, accounted for 36 per cent of time spent on six common leisure activities in the survey, down from 45 per cent in 1972.

Meanwhile, the popularity of reading has grown considerably, according to the study. Canadians reported they now spend about 6.1 hours a week reading, up from 4.9 per cent in the 1972 survey.

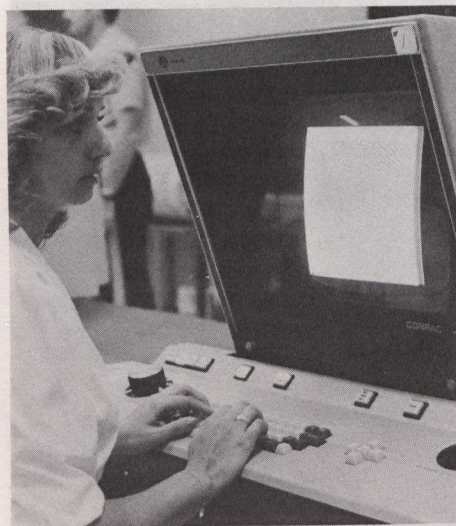
RCMP scanner aids in crime fight

The Royal Canadian Mounted Police (RCMP) is enlisting a new aid in its battle against crime, the world's first fully automated fingerprint scanning system.

The scanner can match fingerprints found at as many as 100 crime scenes a day against a file of 400,000 prints. Police forces across the country would have access to the file.

The system, developed by Rockwell International specifically for Canada, is housed in the RCMP's Ottawa headquarters.

First introduced at the beginning of the year, the system is expected to be fully operational by 1980. It can classify a single fingerprint every two seconds. The previous manual system took 30 seconds. The manual check was also limited to a bank of 50,000 fingerprints.



Canada now leads the world with its fully automated fingerprint scanning system. The previous manual system provided only a fraction of the identifying characters available with the new scanner.

Agriculture Canada scientists fight tropical diseases

Every spring Canadians are pestered by an onslaught of biting blackflies. But in the tropics, there is even more reason to fear the pests.

Some tropical blackfly species carry a disease called river blindness that afflicts about 30 million people in Africa and Central and South America. River blindness is caused by a tiny worm-like parasite that enters the bloodstream. If enough of the parasites are present they eventually cause blindness. Female blackflies, some of whom need blood to help mature their eggs, transmit the disease by first biting one person whose bloodstream contains the parasites and then transferring them to the next victim.

Scientists from Agriculture Canada's Biosystematics Research Institute in Ottawa are helping to establish control programs in some of the worst-hit areas. B.V. Peterson, an entomologist with the institute, has visited Brazil and West Africa as part of a project organized by the World Health Organization to bring the disease under control.

"For many years it was thought the major carrier of the disease in Africa was a single blackfly species, appropriately called *Simulium damnosum*," Dr. Peterson says. "Now we know that it is really a complex of about 25 species closely resembling each other. Only some of these carry the disease." Dr. Peterson has worked in tropical countries to help local authorities identify the separate species and locate breeding areas.

The females lay their eggs in moving water and the larvae, after hatching, cling to vegetation and rocks beneath the surface. The control being used at present is a bio-degradable product that, when put in the water, causes the larvae to lose their grip and be washed downstream. This prevents them from emerging as adults.

"Everything possible must be done to halt the spread of this disease," explains Dr. Peterson. "It causes untold human misery and economic losses. Canadians can feel fortunate that of the 150 species found in this country, none carry diseases that afflict humans."

A few species in Canada do transmit diseases that kill some bird and mammal species, while others launch attacks that kill livestock.