



## TECHNOLOGY

# A quest for hidden ore

From Buchans, Nfld., to Faro in the Yukon, the painstaking search for ore deposits employs more than 2,000 private-sector geologists. All depend partly on the findings of researchers such as the University of Toronto's Steven Scott, who has been focusing attention on the role of fault lines—deep cracks in the earth's crust—as clues to the location of rich deposits of copper, lead, zinc, silver and gold. Scott points out that these deposits were originally laid down along faults. "We can see these processes in operation now, on the ocean floor south of Baja California," he elaborates. "Hot springs that rise from the cracks on the ocean floor and leach metals from the sea water are laying down rich deposits in a regular way." Millions of years and many geological transformations later, some of the deepest-lying fractures elude easy detection. Only satellite photographs reveal the critical line or "lineament."

Scott's insight struck him when, during a 1977 visit to a mining site in northern Honshu in Japan, he turned his attention to some wall maps of the area and began tracing imaginary lines connecting various ore bodies known to be found there. A pattern emerged: the ore bodies seemed to be occurring along underlying fault lines familiar to geologists, and to cluster where faults intersected. Since the Japanese deposits, called massive sulphides (rich in metals that are bound to sulphur), correspond geologically to others found in the Rouyn-Noranda area of Quebec, Scott suspected that his intuition had implications for Canada. With mine production accounting for 20 per cent of this country's exports, the bottom-line benefits could be considerable.

While the theory remains unproven, the evidence looks promising. In Honshu, two new ore discoveries have been found along a fault. In Buchans, a lead-zinc-copper mine marks the intersection of known faults with a lineament. And in Noranda, Que., where Falconbridge Copper Corp. announced a major copper-zinc find in January of this year, the location could have been predicted within a thousand metres by using data from one of Scott's just-published papers. Says Michael Knuckey, Falconbridge's chief geologist: "In principle, Scott is right."

—AUSTIN RAND

*Should read  
"underlying  
rocks"  
SBS*