For domestic use, the Company has developed convenient, easy-to-handle plastic trays filled with Rueffel's serendipitous mixture. Each tray is expected to retail for $4.30 and the company suggests that one is required for each 0.09 m^2 (one sq. ft.) of solar collector. As a rough guide, an 108 m^2 (1,200 sq. ft.) house would require 27 m^2 (300 sq. ft.) of collector area, needing 300 trays at a cost of $1,200. It is hoped that as production runs increase the price will be reduced. Even at this stage the company feels it has a competitive system, since the cost is comparable to rock storage with the added advantages of more heat stored per unit volume and an increased efficiency of heat collection (the Glauber salt system allows the collectors to operate at reduced temperatures thus increasing their efficiency).

Two residential scale demonstrations are now under way, and a third, under contract to the National Research Council, will be carried out in Ottawa. Another study, partially funded by NRC's Industrial Research Assistance Program, is in its third and final year of an in-depth examination of the performance of 700 trays in a closed loop system.

The company isn't forgetting about passive solar heated homes, nor industrial and institutional scale solar storage. For passive solar heated homes the trays are slightly modified. Carbon black is added to the plastic trays to prevent deterioration by ultraviolet light, and sodium chloride is included with the Glauber salt-peat moss mixture to reduce the phase change temperature from 90°C to 65-70°C. This reduced temperature helps to avoid the overheating experienced in many passive designs.

For industrial and institutional use, the company is marketing a system developed in Germany. The German system is, coincidentally, very similar to one developed by Drs. Ed Capes and Bryan Taylor in NRC's Division of Chemistry, who were edged out of acquiring an international patent. The Canadian system, currently under patent application, works by combining Glauber salt with other cheap chemicals, and a bit of oil. The special salt mixture prevents the troublesome super-cooling of the system while the oil serves as the heat transfer medium. The thermal performance characteristics of the Canadian system are superior to the competitors in that temperature and rate of heat delivery are constant, two important features not previously achieved with this type of solar storage. □

Sadiq Hasnain

A hill of sodium sulphate, a natural resource in Saskatchewan, ensures an adequate supply for solar heat storage. *(Photo: Saskatchewan Minerals)*

L'exploitation de cette colline de sulfate de sodium, ressource naturelle de la Saskatchewan, peut fournir une quantité considérable de matériau de stockage de la chaleur. *(Photo: Saskatchewan Minerals)*