too low a temperature for the practical exploitation of water's heat of fusion in home heating.

The advantage of using a substance which has a freezing point near room temperature for heat storage is obvious, and Glauber salt is just such a material. Referred to as sodium sulphate decahydrate ($Na_2SO_4.10H_2O$) in chemical terms, it has been the most universally and extensively studied material for heat storage. As 0.45 kg (one pound) of Glauber salt melts at 30.5°C, it absorbs 73 780 joules (70 BTU) of heat. To store the same amount of heat requires a lot more rock and water; the temperature of 1.8 *l* (4 pounds) of water must be raised by 8.7°C and of 9 kg (20 pounds) of rock by 7.8°C. Because of the small volume required, the salt could easily be accommodated in most existing structures and still meet heat storage requirements.

Unfortunately, the salt has proven extremely unreliable. In most demonstrations its structure has broken down after several cycles of freeze-thawing, a deterioration explained by examining the chemical changes involved. When the sun shines, the salt absorbs heat and melts. Remember that each molecule of sodium sulphate is bound to 10 molecules of water. Upon melting, a small amount of the sodium sulphate settles to the bottom with the remainder dissolving in the released water. When the mixture is again cooled, giving off heat, the dissolved sodium sulphate recombines with the water forming solid decahydrate crystals which quickly settle on top of the previous layer of anhydrous or water-free sodium sulphate. The top layer of crystals prevents the bottom layer of free salt from recombining with the water. Thus each cycle of heating and cooling eliminates more and more salt, gradually reducing the heat-storing capacity of the system.

However, Dr. Maria Telkes, from the University of Delaware, discovered a simple solution to this problem. The addition of a special clay — which acts as a suspending matrix "much like toothpaste" — prevents the salt from settling during the phase change.

In Canada, Saskatchewan Minerals of Chaplin, Saskatchewan, decided to try to adapt the Telkes formula to develop commercial products (for the curious, Chaplin is a town of 400 on the Trans-Canada Highway, half-way between Swift Current and Moose Jaw). The company intended to purchase the rights from Telkes but discovered that the method still had some drawbacks. Fortunately, Phillip Rueffel, now retired from Saskatchewan Minerals, had been studying the unique properties of peat moss for use in horticulture. It struck him that this material, so abundant in Canada, could substitute for the clay. Not only was his suspicion correct, but the peat moss proved to be superior to the clay silicates, functioning without their drawbacks and costing considerably less. A patent is now pending on this simple but effective solution to the solar heat storage problem.

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