ered in any order; (2) all the cards representing minerals containing a given element or belonging to a given crystal system can be quickly separated and studied as a group; (3) there is ample room for making notes on both the face and back of the card for future reference; (4) the number of minerals considered is flexible. More cards can be added if necessary or cards representing minerals not studied in a given course can be removed, thus simplifying the determinative procedure.

The greatest advantage these punched cards have over Donnay's grids is that the separation by properties is easily and quickly made and it is unnecessary to thumb through the pack looking for the card representing a given property. Moreover, after a determination is made, the cards can be stacked together in any order and without refiling are ready for use again.

FIRE HAZARD WITH C. D. WEST'S HIGH REFRACTIVE INDEX LIQUIDS*

CHARLES MILTON, *U. S. Geological Survey, Washington, D. C.*

Twelve years after C. D. West[1] proposed the use of yellow phosphorus-sulfur-methylene iodide solutions, there have been few published data concerning their actual use. Recently, a discussion by Bruun and Barth[2] emphasized the stability of these liquids, with special reference to the refractive index, over a period of five years.

West very properly mentions that, "the liquids are stored in glass-stoppered bottles which are kept in a covered metal container, the latter to reduce fire hazard and to exclude light which has an adverse effect. In the present experiments, a half inch layer of water was kept over the liquids." It might be thought that such precautions would ensure safety; yet, under these very conditions, there is still a very serious danger of fire from this treacherous preparation.

A set of six liquids, prepared a year ago, was contained in 35 ml. glass bottles, each with ground-in glass applicator rod, and ground-in glass cap. The liquid was covered with about an inch of water. Finally, the six bottles were placed in a galvanized iron box, with a fairly close-fitting lid.

At intervals of several months throughout the year, the liquids were inspected and found to remain clear and apparently unaltered. What was not noted, however, was the gradual evaporation of the water layer in some of the bottles. Concerning this water layer, West observes, "The stability of the liquids on storage without a water layer has not been de-

* Published with permission of the Director, U. S. Geological Survey.

[1] West, C. D., Immersion liquids of high refractive index: *Am. Mineral.*, **21**, 245–249 (1936).

[2] Bruun, Brynjolf, and Barth, Tom. F. W., Stability on storage of the high refractive index liquids of C. D. West: *Am. Mineral.*, **32**, 92–93 (1947).

termined; it could hardly be less than what has been indicated by the foregoing," i.e. substantial stability over 9½ months. The presence of this water layer is, however, an extremely important matter.

Recently, the metal box was opened and immediately white fumes of phosphorus pentoxide were observed, with the characteristic garlic odor, and, almost simultaneously, a flash of flame. The metal box was heavily corroded and a yellow deposit—presumably phosphorus and sulfur—had formed around the neck of some of the bottles.

The explanation of these phenomena is that during the year the water had evaporated, notwithstanding the double ground-in seal of the containing bottle. Once the protective water was gone, the phosphorus-sulfur-methylene iodide "crept" up the interior of the bottle, and finally outside, whereupon the solvent iodide evaporated leaving a dangerous deposit of phosphorus-sulfur outside of the bottle. In contact with wood or combustible matter, a dangerous fire could have ensued. The metal box suggested by West is some protection, but has the disadvantage of hiding possible evaporation of the water layer.

Glycerine has been suggested as better than water for preventing evaporation of the phosphorus liquid (Dr. John C. Rabbitt, oral communication). In any case, a layer of protective liquid should always be maintained, with frequent inspections to ensure its presence. Especially, phosphorus liquids should never be put in "dead" storage in wooden cupboards!

CRYSTALS OF PARASCHOEPITE[1]

ALFRED SCHOEP AND SADI STRADIOT,
Baudeloostr. 87, Ghent, Belgium

Four of our best paraschoepite crystals, although very small, could be measured; their habit is short prismatic (Fig. 1). Results are given below:

	ϕ	ρ	
c (001)	—	0°	Observed on all crystals.
b (010)	0°	90°	Observed on all crystals.
a (100)	90°	90°	Observed on all crystals.
m (110)	66°59′	90°	Observed on all crystals.
d (011)	0°	41°04′	Observed on two crystals.
f (021)	0°	60°27′	Observed on all crystals.
e (041)	0°	72°19′	Observed on one crystal; face of poor quality.
p (111)	67°46′	66°26′	Faces of this form on one of the crystals are of poor quality.
q (124)	49°59′	33°47′	Observed on three crystals.
o (122)	49°47′	53°27′	Observed on two crystals.

[1] *Am. Mineral.*, **32**, 344–350 (1947).