

- Barkov, A. Yu., Pakhomovskii, Ya. A., Trofimov, N. N. and Lavrov, M. M. (1994) *Neues Jahrb. Mineral. Mh.*, **3**, 101–11.
- Barkov, A. Yu., Savchenko, Ye. E. and Zhangurov, A. A. (1995) *Mineral. Petrol.* (in press).
- Barrie, C. T., Naldrett, A. J. and Davis, D. W. (1990) *Canad. Mineral.* **28**, 451–74.
- Boudreau, A. E. and McCallum, I. S. (1989) *Contrib. Mineral. Petrol.* **102**, 138–53.
- Cawthorn, R. G. (1983) *Trans. geol. Soc. S. Afr.* **86**, 137–41.
- Dokuchaeva, V. S., Zhangurov, A. A. and Fedotov, Zh. A. (1982) *Dokl. Akad. Nauk, SSSR*, **265**, 1231–4 (in Russian).
- Eales, H. V. and Robey, J. van A. (1976) *Contrib. Mineral. Petrol.* **56**, 101–17.
- Gierth, E. and Krause, H. (1974) *Norsk Geol. Tidsskr.*, **54**, 193–7.
- Halkoaho, T. A. A., Alapieti, T. T. and Lahtinen, J. J. (1989) In *5th International Platinum Symposium, Guide 29* (T.T. Alapieti, ed.). Geol. Surv. Finland, 93–122.
- Keil, K. and Fricker, P. E. (1974) *Amer. Mineral.*, **59**, 249–53.
- Lorand, J. P. and Cottin, J. Y. (1987) *Mineral. Mag.*, **51**, 671–6.
- McLaren, C. H. and De Villiers, J. P. R. (1982) *Econ. Geol.*, **77**, 1348–66.
- Mutanen, T. (1989) In *5th International Platinum Symposium, Guide 28*. Geol. Surv. Finland, 52 pp.
- Roth, R. S., Waring, J. L., Brower, W. S. and Parker, H. S. (1971) In *Solid State Chemistry* (Roth, R.S. and Schneider, S.J., Jr., eds), Proc. of the 5th Materials Research. NBS Spec. Publ. 364, 183–95.
- Tarkian, M. and Mutanen, T. (1987) *Mineral. Petrol.*, **37**, 37–50.
- Williams, C. T. (1978) *Contrib. Mineral. Petrol.*, **66**, 29–39.

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Geological Institute,  
Kola Science Centre of the Russian Academy  
of Sciences,  
14 Fersman Str.,  
184200 Apatity, Russia.

ANDREW YU BARKOV  
YAKOV A. PAKHOMOVSKII  
YURII P. MEN'SHIKOV

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## Precipitation of vaterite ( $\text{CaCO}_3$ ) during oilfield drilling

In our paper (Friedman and Schultz, 1994) we mentioned a vaterite occurrence in the Appalachians of Quebec, where it has been reported from cone-in-cone calcite of carbonate concretions in Ordovician shales (Fong 1981). Reinhard Hesse of McGill University responded “the occurrence reported by Fong (1981) most likely does not exist. Fong was a former graduate student of mine and was led to submitting the abstract by the late G. Donnay, who thought she had found vaterite peaks on one of his XRDs. However, all attempts to duplicate this

result with his material under my and Bob Martin’s supervision failed to reproduce a vaterite XRD trace”.

### References

- Fong, C. C. R. (1981) Vaterite associated with cone-in-cone calcite of carbonate concretions in Ordovician black shales, Ile-Aux-Grues, Ile-Aux-Oies, Quebec Appalachians. *Geol. Soc. Amer., NE Section, Abstr. with Programs*, 132–3.

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Department of Geology,  
Brooklyn College and Graduate School of the  
City University New York,  
Brooklyn, NY 11210,  
USA.

G. M. FRIEDMAN

and Northeastern Science Foundation,  
Rensselaer Center of Applied Geology,  
15 Third Street, PO Box 746, Troy,  
NY 12181-0746, USA.

Arco Oil & Gas Co.,  
2300 West Plano Parkway,  
Plano Parkway,  
TX 75075, USA.

D. J. SCHULTZ