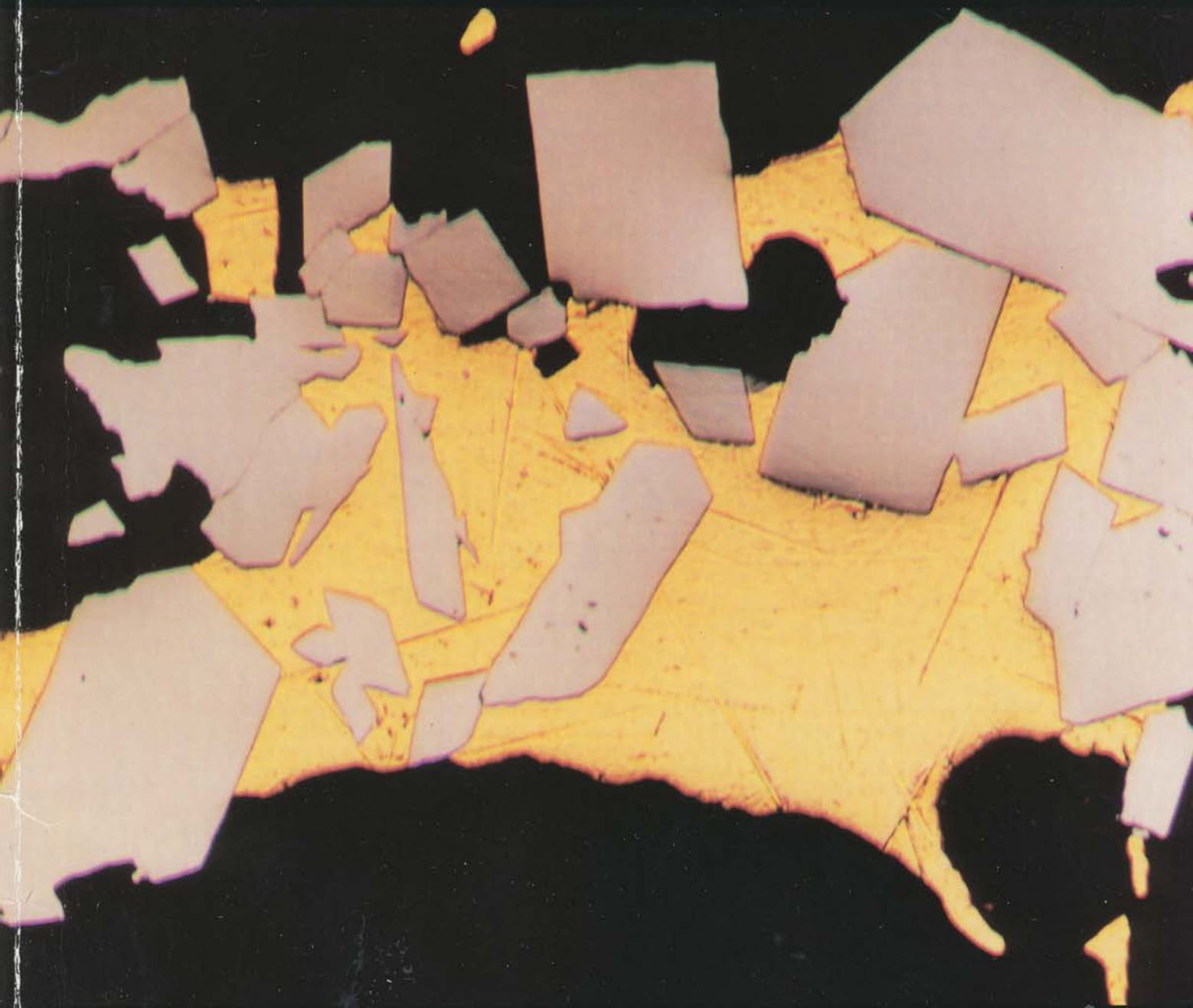


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Cover picture: Coprecipitated arsenopyrite and native gold in the Klondyke quartz vein, Kolsvik gold-arsenic deposit, Bindal, Nordland. (Reflected light with oil immersion, magnification ca. $\times 400$) (Photo: Peter Ihlen and Lars Petter Nilsson, Geological Survey of Norway).

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- Paetzel, M. & Schrader, H. 1991: Heavy metal (Zn, Cu, Pb) accumulation in the Barsnesfjord, Western Norway. *Norsk Geologisk Tidsskrift* 71, 65–73.
- Landvik, J. Y. 1982: Weichsel stratigrafi, sedimentologi og glasitekonikk på Godøy, Sunnmøre. Unpublished thesis, University of Bergen, 151 pp.
- Mangerud, J. 1980: Ice-front variations of different parts of the Scandinavian ice sheet 13,000–10,000 years B.P. In Lowe, J. J., Gray, J. M. & Robinson, J. E. (eds.): *Studies in the Late-Glacial of North-West Europe*, 23–30. Pergamon Press, Oxford.

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