# MICROPALAEONTOLOGY NOTEBOOK

# Note on the use of hydrofluoric acid for the recovery of conodonts from Ordovician cherts in the Southern Uplands of Scotland and the significance of the conodonts

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Procedures have been described for the recovery of conodonts from cherts by dissolution in hydrofluoric acid (see Stone, 1987 for a review), but this technique rarely has been applied. Cherts are more widely distributed in southern Scotland than are limestones which have been the focus of most research on conodonts. The HF technique thus opens a new and possibly more widely applicable avenue for conodont research for southern Scotland than the traditional methods.

Ordovician conodonts on the surfaces of red cherts were reported from several localities near Peebles by Lamont and Lindström (1957), and the same authors found conodonts in yellow siltstones interbedded with cherts south of Abington. These localities were visited to obtain samples that we believed to have a high probability of containing conodonts in order to test the HF procedure on Scottish rocks. We found conodonts in red rocks like those reported by Lamont and Lindström at their Noblehouse and Ruddenleys localities. Unfortunately the rocks there are not cherts as they reported, but are red mudstones instead. Such rocks are not amenable to the HF techniques.

Microscopic examination of grey cherts collected loose below Ravengill Burn (Grid Reference 26/921199, one of Lamont and Lindström's localities) showed that they contained radiolaria, a common fossil in the cherts of Scotland. Small pieces of these cherts, aggregating about 50 g, were placed in dilute (10% by volume) HF. The acid was decanted episodically after periods ranging from 8 hours to 73 hours, and the undissolved material was wet-screened through a 30 µm sieve with the fine fraction caught on filter paper. The 30 µm fraction was immersed again in the decanted acid and dissolution continued. After seven repetitions of this procedure, the original sample had been reduced by 38% to 31 g of undissolved material. Reasonably well-preserved conodont elements were recovered from the fine-grained residues by examining the filter paper under the binocular microscope and removing the specimens with a moistened artists' brush. As noted by earlier workers who developed this method, the procedure renders the specimens brittle and splintery. Some specimens were lost or

destroyed while trying to remove them from the filter paper, especially if they became entangled in the fibres of the paper. Four of the retrieved elements are generalized coniform and ramiform elements that do not offer significant biostratigraphic resolution. The remaining four specimens are unequivocally identified as elements of a species of *Pygodus* Hadding. Species of this genus occur only in rocks of Llanvirnian and Llandeilian age. This is significantly younger than the conodonts that Lamont and Lindstrom found in the yellow siltstone at Ravengill Burn which is situated at the crest of the ridge (Ravengill Dod) above the place where our sample was collected. The local geology may be more complex than has been assumed previously.

The recovery of eight specimens from such a small amount of rock (19 g dissolved) indicates that conodonts can be as abundant in these cherts as they are in many limestones and is a strong endorsement of the potential of HF dissolution of cherts as a significant contributor to future studies in the Southern Uplands and the Highland Border where cherts are common. Additional work is needed to develop improved methods of extracting the specimens from the residues and manipulating them during study without breaking them. In particular, it seems desirable that these operations be done before the filter paper has dried so that the fibres at its surface are flexible.

### REFERENCES

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- Stone, J. 1987. Review of investigative techniques used in the study of conodonts p. 17-34. In R.L. Austin (Ed). *Conodonts: Investigative Techniques and Applications*. Ellis Horwood Ltd., Chichester for the British Micropalaeontological Society.