

## LETTERS TO ECOS



### Apatites

I greatly enjoyed reading the article 'Fossil magnets: keys to the past' by John Seymour in *Ecos* 35, Autumn 1983.

Unfortunately, the reference on page 16 to work by our fission track dating group at the University of Melbourne contains two significant errors which I think it is important to correct.

First, it is not *alpha* particles that produce tracks in apatites but the much more massive, and less common, fission fragments arising from the spontaneous fission of <sup>238</sup>U.

Second, far from being 'perplexed' by the pattern of young apatite ages found by Marilyn Moore along the south coast of New South Wales, we were delighted, because that is exactly what the project set out to observe. We had previously found evidence of similar heating events on rifted continental margins elsewhere, and predicted that they should be exceptionally well displayed in south-eastern Australia.

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### Classifying soil

The article 'Giving local soils international class' (*Ecos* No. 33) seems to us to place a more favourable interpretation on 'Soil Taxonomy' as discussed at the November 1981 meeting (a Brisbane workshop on this American soil classification system) than was the case. Indeed, in our opinion as participants, the case for 'Soil Taxonomy' could only be said to be 'not proven'. The general

reaction to it seemed less than favourable.

We agree with one purpose stated in the second paragraph of the article, namely, 'to develop a common language for communication, so that discoveries made in one place may be applied elsewhere', because this is one function of classification.

However, this stage cannot be attained until it is established that a given classification is, in fact, grouping 'like with like', and not confusing the issue in some way. On this point the symposium on 'Red-brown Earths of Australia', presented in October 1980, gave one of us (K.H. Northcote) an opportunity to test the classification of Prescott's original red-brown earth by 'Soil Taxonomy'. The result was simply that the red-brown earth lost both identity and properties it does have, and became endowed with properties it does not have!

The *Ecos* article states that overseas scientists do not know the 'Factual Key', one of Australia's two current soil classifications. The 'Factual Key' is, however, one of several prominent soil classifications presented in the new American publication 'Soil Classification' edited by Charles W. Finkl, Jr. and distributed by Academic Press (1982). Clearly the Key is known, but perhaps not as widely as 'Soil Taxonomy'.

Furthermore, judgements made 'from the papers appearing in international journals of soil science' are unsound when it is known that many such journals demand reference to 'Soil Taxonomy'.

It is also stated in the article that 'at any rate in the United States of

America' the categories of 'Soil Taxonomy' 'apparently agree well with the uses to which soils are put'. However, that is not what Dr Southard (of Utah State University, who addressed the workshop) himself said regarding soils in Utah, for these, he said, do not fit comfortably with 'Soil Taxonomy' when land use is considered!

One message from the November 1981 meeting was that the classification of Australian cracking clay soils by 'Soil Taxonomy' was sadly awry. Only Australian soil scientists could correct this, according to Dr Southard. However, to achieve this within the framework of 'Soil Taxonomy' requires stated principles that are not presently available. Surely, science requires principles.

A few months before this meeting, two of us (K.H. Northcote and G.M. Bowman) had the good fortune to drive Dr Southard from Armidale to Adelaide and showed him some problems likely to be experienced in using 'Soil Taxonomy' in Australia. Generally, these stem from the failure of Northern Hemisphere soil scientists to appreciate the properties of Australian duplex soils.

We are very much in favour of sound international communication in soil science, including soil classification. Probably the recent creation by the International Soil Science Society of a working group for the development of an International Reference Base for Soil Classification is the first positive step towards achieving a useable World Soil Classification.

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