### **DEVELOPMENTS IN SCIENCE TEACHING**

### Inquiry on the Retreat



Students in the Department of Life Science arrive at Nottingham University not knowing anyone. Our solution to this is to whisk them away on the Retreat, a weekend in October at Dovedale House in the Peak District. The beautiful setting of Ilam near Dovedale provides a spectacular and emotive backdrop for the Inquiry game. The game takes a full day from 9 am to 10 pm and throws people together, giving them the opportunity to develop team skills and their powers of persuasion.

The Inquiry is a simulation of an application for planning permission to develop a new limestone quarry at Parwich in the Peak National Park. The students divide into four groups of about 6-7 and each group takes on a major role in the planning inquiry. One group represents the company making the application, one the Peak Board, one the local District Council, and one a miscellaneous group of local people (Derbyshire Wildlife Trust, the council for the protection of Rural England etc.). It is up to each group to obtain enough information during the day, and then to decide how their case should be presented at the inquiry. Each group receives an information pack containing the brief of the Peak Board, the distribution of quarries in the Peak District and the national need for quarry products

The day begins with a visit to a working limestone quarry, the Middle Peak Quarry at

Wirksworth. The management provide very knowledgeable guides to escort each group round the site and to answer their questions. After lunch in the best pub in England (The Yew Tree at Cauldon!) we drive to Miller's Dale, where the Reserves Officer of the Derbyshire Wildlife Trust (who is very experienced at taking part in planning inquiries) takes us up to a nature reserve overlooking the Dale. The reserve is an old limestone quarry, now a Site of Special Scientific Interest with a large population of orchids. After a lively discussion, we return to Dovedale House by 5pm, via the site of the proposed quarry. The rest of the time until 8 pm groups prepare their cases.

At 8pm the Inspector arrives (a specially imported expert who is either a lawyer, a local councillor or an academic who has experience of the inquiry procedure) and from then on, the whole procedure becomes formalized. Each group presents their case and is cross-examined by the other groups. The outcome of the case depends upon how well this is done. It is certainly true to say that many decisions have been greeted by disbelief by the students: they sometimes tend to assume that in a National Park it will be very difficult for a commercial company to override the case for conservation. Each Inspector's decision is keenly awaited!!

Peter McGregor & Francis Gilbert

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## THE NEW ACADEMIC

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#### This issue includes:

EDITORIAL: NUMBERS, PROFESSIONALISM AND QUALITY-BUT NOT FOR FROGS P 2

QUALITY ENHANCEMENT AND ACADEMIC PROFESSIONALISM PROFESSOR LEWIS ELFON PP 3-5

STUDENT WEXPECTATIONS
GEOFF MOORE AND
WENDY STEWART-DAVID
PP 6-7

Supplemental instruction: Students helping students to learn Jenni Wallace pp 8-9

LETTERS P 10

DEVELOMENTS IN SCIENCE TEACHING EDITED BY KATE EXLEY AND IVAN MOORE PP 11-14

RAISING THE NUMERACY
OF HIGHER EDUCATION STUDENTS
MICHAEL CORNELIUS
PP 16-17

DOWN WITH ESSAYS GRAHAM GIBBS PP 18-19

HOW WAS IT FOR YOU?

JOHN COWAN AND JUDITH GEORGE
PP 20-21

News

STAFF AND EDUCATIONAL DEVELOPMENT IN HIGHER EDUCATION: A STATEMENT OF GOOD PRACTICE

P 24

# Ants, Small Mammals and Enthusiastic Students

I first became aware of the full impact of 'non-lecture' teaching when I met eight bleary eyed students on a June morning in 1989. Their somewhat bedraggled appearance was not the result of riotous living but the fault of rampaging enthusiasm.

One group of undergraduates had been taking hourly readings at their ant trail throughout the day and night. Another group had chosen to study the nocturnal habits of small mammals. That such behaviour was not atypical on the Genetics fieldtrip made me seriously consider the factors which had brought about such fervour and motivation. I am now of the firm opinion that 'ownership and control' are the key factors influencing enthusiastic study and learning.

The field trip students had identified, in groups, their own experimental subject, had designed their own experiments, had tested their own hypotheses and presented their group results to their colleagues. Tutor input had been kept to a minimum at all stages and staff had taken on the role of advising-facilitators rather than lecturers. It didn't matter that, probably, all the experimental results could be found in a good library, what did matter was the nurturing of enquiring scientific minds and the development of good experimental practice. The experience students obtain in analysing their own data and presenting their findings to colleagues is also invaluable.

I now realize that my experience was by no means novel. Many scientists have developed innovative teaching and learning methods which incorporate elements of student ownership and control whilst striving to make the content and process relevant to 'real life' situations. So why keep on re-inventing the wheel? Surely, in many cases, it is more efficient to adapt and customize rather than to start from scratch. With that underlying belief, Ivan Moore and I began collecting examples of exciting science teaching from colleagues who are working in Higher Education.

Kate A. Exley

Pages 11-14 describe some of the innovations in science teaching discovered by Kate Exley and Ivan Moore.