

NEWS AND VIEWS

What will Happen to Geology?

THE disappearance of most of Britain's professors of geology and geophysicists into the headquarters of the Natural Environment Research Council one day last month is likely to have passed practically unnoticed. Some cynics would say that their failure to emerge afterwards would not have had a perceptible effect on the world of science. What was discussed one can only guess. What should have been discussed is a different matter.

Geology in Britain has gone through many phases in its hundred and fifty years of effective life. It was at the centre of the scientific scene during the evolution controversies. It led to an understanding of the history of the Earth by a brilliant use of facts drawn from observations linking natural history with rocks. It has hardly ever fostered the household names with which other sciences are bedecked, but the Geological Survey has produced without a great fuss maps of Britain more detailed than those of anywhere else in the world. But it now finds itself being accused of doing more and more about less and less. The whiz-kids of geophysics find oil, gas and minerals. They push continents around and produce very convincing arguments for the explanation of the major features of the globe. And they issue dire warnings to geologists that their textbooks will have to be rewritten completely (Arthur Holmes's *Principles of Physical Geology* is an honourable and clear exception). On the other hand, scientists in general might be excused for assuming that most geologists are palaeontologists and most palaeontologists have staked out a square mile as their life's work. A revamping of the geologist's image is badly needed, but can only be justified if the image is actually worth polishing up.

The Institute of Geological Sciences is certainly moving in the right direction. The growing emphasis on marine geology is thoroughly healthy, and the geophysical, geochemical and hydrogeological divisions have a welcome vitality. The limitations placed on the IGS marine work by having to share the research vessel John Murray with about a dozen universities are absurd, but no doubt the provision of more extensive marine facilities is a very high priority for the NERC. The concentrated efforts of the IGS on making geology a more dynamic subject will undoubtedly pay off in terms of undergraduate admissions, where the swing away from physics and chemistry, as basically dull and difficult subjects, could produce gains to geology comparable with those biology is now experiencing.

But geology, in order to sustain any numerical advances it may receive, must show itself vital and exciting. The IGS is playing its part, but the universities have a lot to do. At present about forty departments produce each year about five hundred graduates

who seem to find jobs without too much difficulty, and more go into industry than in almost any other discipline. More could be absorbed if the universities fired students with more zeal to go abroad after their training and work in challenging environments. Some African countries still offer the wide open prospects that England offered in 1850. It is unfortunate that many university departments do not look beyond the British Isles and so are not in any position to give their students the world picture they badly need. Geophysics is sparsely taught by most departments.

The solution may well be one which the NERC gathering is least likely to find palatable—a stiff reduction in the number of departments. To teach geology in all its facets and convey something of the excitement of being involved, each department needs eight to ten committee staff members. It is dubious whether more than half a dozen universities measure up to this standard—the teaching of the others being supplemented by overworked lecturers trying to keep abreast of a subject in which they do not work. A reduction to twenty in the number of departments with appropriate reconstitution of the staff might seem too drastic a step, but in the long run we might have twenty real centres of excellence with a global grasp of geology.

Of course, university administrators can point out that this will prevent some science students from entering geology departments during their career at university. But those with a genuine desire to move to geology could be given the chance to change universities. The Treasury might regard a halving of the number of departments as an opportunity to thin out the money, but the NERC should say in no uncertain terms that (a) it regards much of the basic research being done as of high quality (and remarkably good value for money) and (b) the recruitment of geology students into industry, which is becoming a touchstone for deciding whether a subject is worth support, is running at a very high level.

CHEMISTRY

Photoelectron Spectroscopy

THE technique of photoelectron spectroscopy has emerged during the past few years as a powerful method of measuring the energy levels of electrons in molecules. This fact was marked last week by the first international conference on "Photoelectron Spectroscopy", which took place in London under the auspices of the Royal Society.

The theory of the technique is very straightforward. When molecules in a gas are bombarded with monochromatic radiation, electrons are emitted with energies