

Opportunities for Mining Education in Britain

by Alan Kennedy

CENTRES of education in mining and related subjects in Britain have decreased in number over the years, paralleling the decline in the country's predominantly coal-based mining industry.

Now, only four university departments or schools in Britain are exclusively devoted to mining and minerals extraction: the Camborne School of Mines, in Cornwall; the University of Nottingham Department of Mineral Resources Engineering; the University of Leeds Department of Mining & Mineral Engineering; and the Royal School of Mines (part of London University's Imperial College). However, many subjects directly related to mining — geology, geophysics, exploration, mineral processing and extractive metallurgy — can be studied at a number of other universities.

A recent trend in mining education has been the development of mining engineering and associated courses that will be compatible throughout Europe. This has in some instances involved extending Britain's traditional three-year undergraduate courses to the four or five years of their European counterparts.

Highly Trained

Modern mines and minerals engineering/coal preparation plants are now multi-million pound installations, incorporating the latest technological innovations, and the level of mechanisation in the industry is ever-increasing.

Mining graduates must be highly-trained: all departments now keep abreast of the latest computer technology but continue to emphasise the very practical nature of the mining profession. It is standard practice for students to spend long vacations working in a mine or plant (preferably overseas), while courses include much practical work such as geological and surveying field trips and mineral processing laboratory work.

The Camborne School of Mines (CSM) lies in the centre of an area of southwest England steeped in mining history: the important china clay (kaolin) quarrying district near St Austell is less than an hour's drive away, and the last producing tin mine in Cornwall, South Crofty, is a short walk from the main entrance.

Facilities include two underground test mines, a mineral processing plant and extensive laboratories.

Traditionally an independent mining school, the CSM is now merging with Exeter University, in neighbouring Devon, but will retain its name and Cornish location. Students registering from October 1992 will receive their degrees from Exeter University.

The level of study offered include: High National Diploma, Bachelors, Masters

and Postgraduate (DMT/MPhil/PhD), degrees in mining engineering, minerals engineering and mining/industrial geology. Entrance to undergraduate courses is with one or two "A" levels, preferably in maths, physics, chemistry or geology.

The CSM is always pleased to consider equivalent qualifications, such as the West African Examination Council's exams, and gives special consideration to overseas candidates, recognising, for example, the Diploma in Mining from Ghana's Tarkwa School of Mines, the International Baccalaureate, the BSc Science Part I of the University of Botswana, the Advanced Certificate/Diploma from the Zambia Institute of Technology, and so on.

In recent years, the CSM's international reputation has attracted students from Ghana, Nigeria, Zimbabwe, Zambia, Namibia, Botswana, Lesotho, Greece, Jordan and Saudi Arabia. Currently, overseas students account for around 10% of the total student population, and the number of women students is steadily increasing.

Long History

Nottingham, lies in the centre of England in an area of major coal and mineral production. The Department of Mining Engineering at the university there changed its name in August 1992 to the Department of Mineral Resources Engineering, to better reflect its broad range of activities. It offers spacious, well-equipped laboratories sited on a pleasantly landscaped campus, 5 km from the city centre.

The department has a long history of academic endeavour in subjects relevant to the minerals industry. It enjoys a worldwide reputation, with academic and research staff having expertise in geology, exploration, rock mechanics,

mine design and planning, drilling, mine surveying, underground and surface environmental engineering, mineral processing, mining finance, mining machinery, electronics and image analysis.

It covers the full range of mineral extraction industries, including metals, industrial minerals, coal, oil and gas. All aspects of these industries are covered, including exploration, geology, design and planning, mining finance, surveying, ventilation, rock mechanics, mineral processing, environmental impact and management practice. Undergraduate courses leading to the degree of BEng include Mining Engineering, Minerals Engineering, and Environmental Engineering and Resource Management.

The last-named, which has been operating for two years, is a three-year integrated degree course designed to meet the increased demand for qualified environmental engineers. It is administered within the department and has proved very successful. A new BEng Honours Course in Minerals Engineering started in October 1992.

European Collaboration

Nottingham's current annual intake target for taught courses at undergraduate level is 38, and there are currently students from Indonesia, Botswana, Kenya, Zambia and the United States in the department. Postgraduate courses, such as the range of minerals-related MSc courses, have also proved popular with overseas students, who have recently come from China, Zambia, South Africa, Canada, Poland and Colombia.

One such course particularly worthy of mention is the MSc in Mineral Resources Engineering and Management. Designed for engineers and

earth scientists wishing to update or extend their knowledge in a broad range of topics related to the international minerals industry, it normally lasts one year (full time).

The mining department takes an active role in European projects. For example, one in conjunction with Oviedo University, in Spain, is aimed at assisting the Polish mining industry adjust to a market economy.

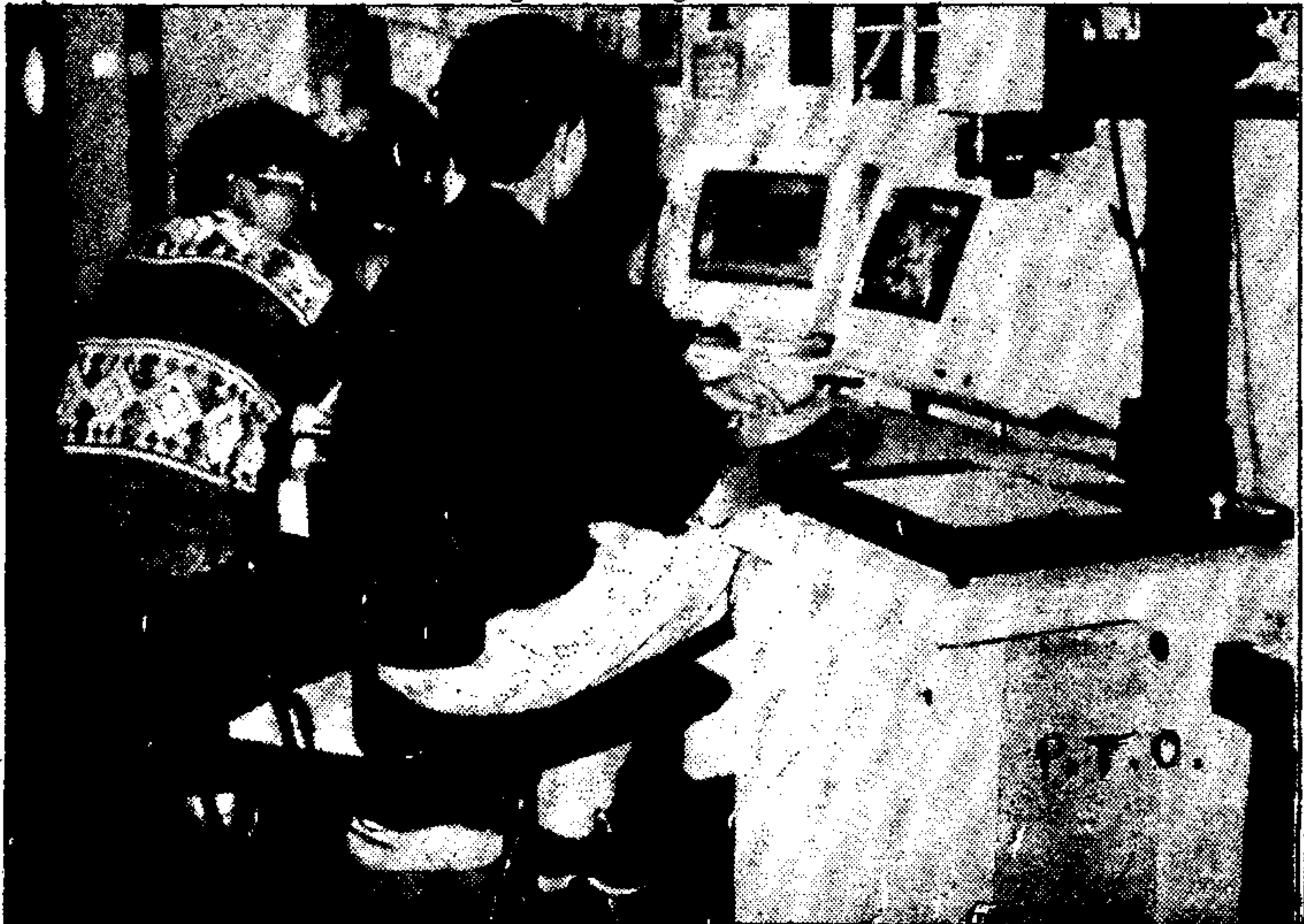
In recognition of these strong international links and in an effect to promote further collaboration, the department has established the International Training Centre for the Minerals Industry (ITCMI), which will act as a focus for international developments and is an ideal point of contact for any interested overseas student or company.

The centre offers education and training opportunities at all levels, either as part of established courses or by providing, when necessary, specialised training activities to suit specific requirements.

From October 1992, new entrants to the department will also be offered optional courses in European languages when "modularisation" is introduced. This acknowledges Britain's increasing ties with Europe, where the lack of another language could put British mining graduates at a severe disadvantage in relation to their continental counterparts.

Global Recognition

Leeds University, in Yorkshire, northern England, is one of the largest in the country and two years ago was voted the country's most popular in a national survey of students. The Department of Mining and Mineral Engineering, already a centre of excellence with an international reputation in such fields as geostatistics, was further



Advanced image analysis facilities in use at Nottingham's ITCMI

strengthened in 1990 by merging with the Department of Mining Engineering at Newcastle, northeast England, which itself had global recognition in areas like rock mechanics.

Leeds claims to have the largest mining/minerals department in Britain (and possibly Europe). A variety of courses related to the minerals extractive industries are offered, including Mining Engineering, Mineral Engineering and Quarry Engineering. To gain admission to the Mining or Mineral Engineering courses candidates require a minimum of two C-grade passes at "A" level in maths and chemistry (or equivalent).

Course content includes mining engineering, mathematics, geology, basic civil/mechanical/electrical engineering, statistics, engineering materials and project work over a three-year period. The Minerals Engineering course places more emphasis on processes of metals recovery from the mined ores.

The department has been attracting a growing number of female students taking mining-related courses: there are currently ten female students following undergraduate courses and a considerable number of female postgraduates.

Leeds has excellent teaching and research facilities, including well-equipped laboratories and a restored lead mine used as a field centre.

Basic Engineering Content

The Royal School of Mines (RSM), in South Kensington, London, offers a wide range of courses in minerals-related subjects and has a particularly strong postgraduate structure.

The current curriculum has a significant basic engineering content, a large input in specialised areas such as rock mechanics, significant element of management, geostatistics and computing; and, in the light of Britain's European Community membership, a foreign language requirement has been reintroduced. Extensive use is made of project work to maintain an element of practically-based ordinary mining engineering.

A mining graduate of the RSM should be able to handle a computer, have a detailed knowledge of rock mechanics, some knowledge of geostatistics, and be up-to-date in mechanisation trends in underground and open-pit mining; he will also have a working knowledge of the fundamentals of mine finance and management. Thus armed, the graduate will have a broad base from which to branch out and specialise in any particular area.

The RSM has traditionally been more orientated towards metal mining, with most of its graduates initially pursuing careers outside Britain and has always attracted students from overseas.