

# Exploration geology

*The exploration and mining industries are booming, so it is an exciting time to be an exploration geologist. Read on to find out how to become one.*



Hazel Prichard

**W**e all use metals every day in items such as televisions, computers, mobile phones and cars, but where do they come from, how are they discovered and who looks for them? As well as needing metals, human beings have a great appetite for construction materials, oil and gas – the exploration geologist has the task of discovering new sources of all these materials.

## It's a lifestyle

This career takes you to places no tourist would go. Much of your work will be in a team, which might be in a multinational or a junior exploration company, or based in a government or academic institute.

Locating mineral deposits is intellectually challenging. It involves chases across continents, putting scraps of evidence together from local people, old

## Box 1 Hazel's career as an exploration geologist

I have had so many adventures. I remember enjoying 24 hours of daylight with Russian academics in the Polar Urals where breakfast was extremely fresh raw fish. Searching for chromite in the desert wadis of Oman, we fled flash floods caused by freak snowstorms in January. I have seen beautiful places such as the grasslands of southern Brazil with exotic birds and the perfumes and sounds of the Amazon jungle. We dodged icebergs to get to Greenland and I dived to the bottom of the Atlantic in a small yellow French research submarine.

At a very early age I was fascinated by multicoloured sediments and fossilised trees on the Isle of Wight. In my teens I learned about the plate tectonic revolution which occurred when people realised that the continents move and oceans are formed and destroyed at plate boundaries. I was lucky to discover some of the rare metal platinum on the Shetland Islands. I picked up a rock because it was a beautiful green colour. This was due to a nickel-rich mineral; an ideal host for platinum. Since then I have travelled to many platinum occurrences worldwide.



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## Box 2 Exploration geology at Cardiff University

This undergraduate degree trains students so that they can quickly adapt to the frantic pace of mineral exploration. They do a lot of fieldwork in the UK and abroad. Between the 2nd and 3rd years students do a project either in the industry or making geological maps. Being close to coal mining in south Wales the course has a long tradition, and Cardiff today still hosts much mining expertise. Teaching is research-led on metals, industrial minerals, oil and gas.

Student comments on the course include:

*Being able to use my initiative to manage my own project, organise my days, planning and digging trenches in the desert of Uzbekistan was great.*

*It was fantastic to map in western Australia where previous mapping was scarce, working with geologists who shared their knowledge and applying my university training.*



Students from Cardiff exercising their observation skills on a field trip

publications, maps, modern satellite images, geochemical analyses, geophysics, and of course the rocks themselves. Not only does it give you the chance to comprehend the magnitude of geological events, it can also be very well paid.

### Responsibility

Most geologists are keen observers, love to be in the open air and have a determined interest in what happens to the resources they are investigating. We need to ensure that metals are recovered in a responsible way, given the growing pressure on the world's finite resources. The exploration geologist can have a say in how and where mines are developed. Exploiting resources wisely is vital to society and human survival.

### High metal prices

Metal prices are at a 25-year high; they have doubled in the last 3 years. Sustained Western demand and increasing demand from China and India suggests that new resources will have to be found, offering a great future for exploration geologists.

### Training and employment

You need a broad skills base; being able to survive in extreme conditions is as important as understanding the geology. An undergraduate geology or exploration degree is a good start. It is possible to go straight into exploration after this, but an MSc gives further training. A PhD provides an opportunity to study an exploration challenge in detail. Graduates are employed in all sorts of situations, from the most remote parts of the world to offices where they analyse data using modern computer processing techniques.

**Hazel Prichard** runs the Exploration and Resource Geology degree at Cardiff University.



Magnetite mine in China

### Box 3 Useful websites

- Find out about Hazel Prichard's research at: [www.earth.cf.ac.uk/people/personal-info-page.asp?id=39](http://www.earth.cf.ac.uk/people/personal-info-page.asp?id=39)
- Details of the Cardiff University exploration and resources course are at: [www.earth.cf.ac.uk/teaching/undergraduate/exp\\_geology.shtml](http://www.earth.cf.ac.uk/teaching/undergraduate/exp_geology.shtml)
- All the other university geoscience/earth science/geology courses in the UK can be explored by links from the Geological Society website at: [www.geolsoc.org.uk/template.cfm?name=university\\_links](http://www.geolsoc.org.uk/template.cfm?name=university_links)

A recent talk by a US geologist began 'there is a huge gap in the supply of exploration geologists; companies can place three times the number of geologists available'.

An Australian employer recently commented 'there is a massive global skills shortage; there are few Australian geology graduates.'