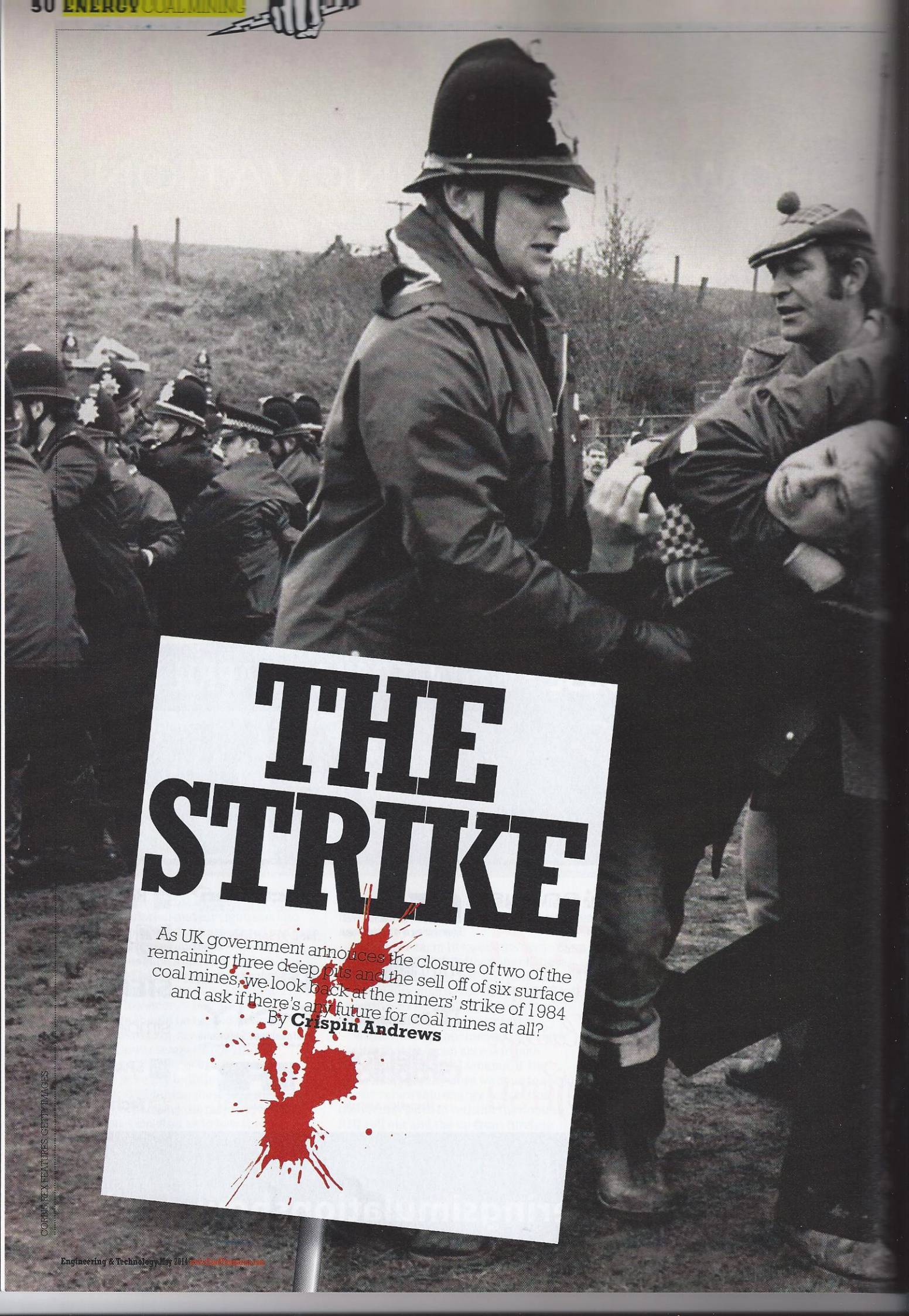

THE STRIKE

As UK government announces the closure of two of the remaining three deep pits and the sell off of six surface coal mines, we look back at the miners' strike of 1984 and ask if there's any future for coal mines at all?

By **Crispin Andrews**

CORBIS/REX FEATURES/GETTY IMAGES

The miners' strike took a violent turn at Daw Mill in Warwickshire when miners and police clashed in March 1984

WEBLINK

There's more information online...
Carbon Capture and Storage Association
www.ccsassociation.org/
The Coal Authority
http://coal.decc.gov.uk/
Confederation of UK coal producers
www.coalpro.co.uk/index.shtml

IN JANUARY 1974, the National Union of Mineworkers (NUM) demanded a 35 per cent pay rise. Edward Heath's Conservative government offered them 16 per cent, and so, in the middle of a recession and with inflation rising, the miners went on strike.

The previous October, Middle Eastern oil producing countries had hiked up oil prices, making British power stations more dependent than ever on coal. Heath's government introduced a three-day working week to save electricity. The Prime Minister even called a General Election, asking the electorate to decide who should run the country – government or coal miners. Heath lost. Labour's Harold Wilson gave the miners a 29 per cent pay rise. Margaret Thatcher, previously Education Secretary, replaced Heath as Conservative party leader.

In March 1984, the coal miners went on strike again. This time to protest against the Thatcher government's plan to close 20 pits. There were rumours that the new Coal Board chairman, Ian MacGregor, wanted to close an additional 70. MacGregor said that these mines weren't making any money. However, if they closed, 20,000 miners would lose their jobs. The government remained firm. Miners all over the country came out in support of their comrades.

This Conservative government was prepared, though. They'd made sure that power stations had stockpiled coal reserves, coal could be brought in from overseas and oil could be used instead of coal to fuel power stations.

The miners didn't give in easily. Angry clashes between striking miners and police led the daily news and Arthur Scargill and Ian MacGregor became household names. After 12 months, during which many striking miners lived without wages, six people died and 11,000 were arrested, the NUM called off the strike. The government closed the pits and, ten years later, privatised the entire industry. The British coal mining industry had discovered the hard way that it was no longer indispensable. Never again would political solidarity shield miners from market forces and broader societal, economic and political imperatives.

Decline of British mines

In 1970, 292 British mines employed 287,000 miners and produced 145 million tonnes of coal. Now, Britain produces around 15 million tonnes of coal a year and employs fewer than 6,000 miners. In 2012, less than five million of the 60 million tonnes used in Britain came from British deep mines.

In September 2013, the British Geological Survey estimated that over 17 billion tonnes of coal remain in British coalfields, enough to provide power for 300 years. Yet soon there will be only one deep mine left in the UK. The rest of Britain's coal is produced by open face mines, where miners dig coal from the >

February 1981
Coal Board announces plans for major pit closures. Under pressure from the unions, Margaret Thatcher withdraws her proposals to close 23 pits.

June 1982
24,000 miners go on strike in south Wales to support health-care workers. Government offer health workers better pay deal a few weeks later.

March 1983
Ian MacGregor appointed head of National Coal Board. He had turned around the loss-making British Steel Corporation by almost halving the workforce.

5 March 1984
Coal Board announces that Cortonwood Pit is to close. Yorkshire miners walk out.

6 March 1984
MacGregor tells the NUM that 20 pits are earmarked for closure with the loss of 20,000 jobs.

12 March 1984
Scottish and Welsh miners join the strike. Violence at Bilston Glen colliery in Midlothian, when miners from the Polmaise pit near Stirling try to stop others going into work.

A worker pushes a cart at a Puda Coal Inc coal mine in China

< surface or just below for five years or so, before moving to another location. "If a private coal mine isn't making a profit it'll be closed," says Dr Eric Wade, a mining engineer from Durham University, and former adviser to the Northumberland NUM. "The land alone is worth a lot of money if sold for development."

The British coal industry didn't just collapse overnight, though. Norman Jackson, an international mining and management consultant, explains that the British coal industry had been in decline since the First World War. In 1910, over a million miners in 3,384 mines produced 264 million tonnes of coal. By 1960, 698 collieries with 450,000 miners produced 197 million.

"British mines came under increasing competition from alternative power sources and cheap coal produced elsewhere in the world," says Jackson, a former head of mining technology for the north-east coalfield. "Mrs Thatcher took on the miners because she wanted to open up new energy markets, to have a broader energy policy."

When the first coal-fuelled power stations opened in the late 19th Century, transporting large quantities of coal to nearby power stations in small containers made financial sense. The British rail system was extensive enough, and the British Isles small enough, to get coal to most parts.

Post Second World War, huge bulk carrier ships enabled companies to more efficiently and cheaply export coal around the world. Wade explains: "Coal from parts of the world where labour costs were lower could be produced more cheaply and became more readily available in Britain."

He adds that the Australian coal market took off in the 1950s. Cheaper coal was also available in South Africa, Argentina and later, after the collapse of the Soviet Union, from Russia. Jackson explains that today, countries such as China and India have advantages over Britain when it comes to competitive prices. "More space means bigger mines with easier access away from populated areas," he says.

India currently produces over 500 million tonnes of coal a year. Jackson believes this is likely to increase to 750 million tonnes over the next five years. In Britain, the biggest coal mines produce two million tonnes a year. China's biggest produce ten million. "I've been in China and seen them use huge pieces of equipment that cut out 250 metres of coal in one go," he says. "In Britain we're cutting out two metres at a time, maximum."

Jackson adds that bigger mines mean smaller development costs. "You can drive a road into a large mine, you're not reliant on a vertical shaft," he says.

British coal power

Coal-fuelled power stations provided 80 per cent of Britain's energy in 1961. In 1986, the year after the strike ended, that figure was 70 per cent. Things changed during the 1990s. Government invested in nuclear energy and by the middle of the decade gas had overtaken coal.

In 1990, gas powered less than 1 per cent of Britain's electricity. By 2011, it powered 40 per cent, with coal down to 32 per cent. The following year, the US shale gas boom led to cheap coal flooding the international market and more British power stations returning to coal to generate their electricity. Today, coal produces around 40 per cent of Britain's electricity generating power stations.

If 21st Century market forces are less favourable to the British coal industry, so too is the green agenda.

Coal produces electricity more cheaply than gas, but it emits more CO_2. Almost twice as much, according to some studies. In 2013, the government introduced a carbon price support tax, charging companies £9.55 per ton of CO_2. The European Union directives require coal-fired power stations to reduce their CO_2 emissions by 2023 or face closures.

There could be another answer. Five British companies have been given government go-ahead to develop a process called underground coal gasification (UCG). Originally conceived by Sir William Siemens and Dimitri Mendeleyev in the 1860s and 70s, since the Second World War the process has been trialled in Europe, Russia, the USA and Australia, while the Angren plant in Uzbekistan still uses it. Additional costs mean it hasn't yet caught on in Britain. However, with the industry's survival in question people are willing to look at alternative solutions.

Combusting coal deep underground produces gases, in particular methane, which can be used in power stations to generate electricity. An oxidant, usually oxygen, water and steam, is injected into the reaction zone. A second bore hole takes the gas emitted to the surface in a controlled manner.

The simplest way of doing this is to create two vertical wells connected by a third horizontal well. Using two lateral wells provides greater distance between the injection and production wells and provides access to more coal.

In 2012, Portman Energy developed single

10 April 1984
National Union of Mineworkers president Arthur Scargill declares the strike official at a meeting in Sheffield.

30 May 1984
Scargill arrested for obstruction. He led a picket line at the Orgreave coking plant in south Yorkshire. Police allowed him to let working miners through. He refused. He was later fined £250.

18 June 1984
Thousands of riot police clash with 5,000 miners at Orgreave. Mounted police wielding batons break up the crowds. Angry protesters bombard police with rocks and other debris. Hundreds hurt.

September 1984
Thousands of miners and police clash at Malty Colliery near Rotherham. The NUM and the National Coal Board manage to negotiate an end to the strike. Scargill refuses to accept it.

November 1984
More strikers return to work. In South Wales, a taxi driver is killed by a concrete block, dropped onto his car as he took a working miner to the pit. Two miners jailed for life for his murder.

January 1985
After a tough Christmas, more men head back to work. NUM realise that the strike will have to be called off.

3 March 1985
NUM delegates vote by 98 to 91 to call off the strike.

well integrated flow tubing. Horizontally drilled lateral oxidant delivery lines into the coal and a single or multiple syngas recovery pipeline combusted a larger area of coal.

It begins with coal but ends up with gas in the power stations, and less CO_2. Supporters believe that UCG could get at coal that is inaccessible via other forms of coal mining such as the coal under the North Sea.

The process is not problem free, however. It generates CO_2 as well as methane and, according to critics, contaminates ground water with coal tar by-products. Other critics believe the process would be more carbon intensive than traditional coal mining. The five British companies involved are yet to get their drilling permits.

Phil Garner, director general of Coalpro, the Confederation of British Coal producers, believes that the answer to this and many other problems faced by the British coal mining industry, in an ever greener world, is to invest in carbon capture and storage (CCS) technology.

CCS technology can capture CO_2 emissions from power stations in three ways. Firstly by scrubbing exhaust gases after combustion, using ammonium carbonate. Alternatively, the CO_2 can be removed pre-combustion by heating the coal in pure oxygen and a chemical, amine, which binds with the resulting CO_2.

Benefits of emissions

Drax Power Station near Selby, North Yorkshire, is involved in a new £100m government-backed project where the fuel will be burnt with extra oxygen to produce almost pure CO_2. The oxygen is separated from air and combined with recycled flue gas consisting of mainly CO_2 and water vapour. This then acts as an oxidant that, during combustion, produces the pure CO_2.

The CO_2 will then be piped out into the North Sea where it will be stored in an aquifer, an underground layer of water-bearing rock. Or the empty North Sea gas fields.

Once the technology is in place, engineers hope to capture 90 per cent of Drax's CO_2 emissions. That's around two million tonnes of CO_2 per year. Similar technology is being designed for the Petersfield gas-fuelled power station. A report produced for the Trades Union Congress and the Coal Industry last February claims that CSS technology could provide Britain with a new £15bn to £35bn industry by 2030, given enough government backing.

It'll be expensive, though. Coalpro's Garner warns that other such schemes have come to nothing through lack of government investment. He believes that Britain needs a range of international and home grown power options to have a thriving energy system. "We've relied on Russia for a lot of gas and coal recently," he says. "Then Russia invades Ukraine and there could be a problem."

Other countries are also looking into this technology. Mining and management consultant Jackson believes that authorities in countries such as China and Russia, who tend to do what they think is right and tell their people afterwards, can act more decisively to bring about change than governments who, at least on the surface, rely more on public opinion to rationalise their actions and policies.

Jackson thinks there's another problem: the location of some of the British coal seams. "There's one not far from Oxford, but imagine what would happen if word got out that a mine was to be built there," he says.

People like lower energy bills, but they don't necessarily want coal mines in their back yards. *