

Maintaining the nuclear option

ONLY 35 years ago, nuclear power was being hailed as the wonder energy source of the future. Now some see its use as a guarantee of cataclysmic disaster sooner or later. But the real story isn't as simple as that. It never was, even in those first days.

Power was going to be so cheap — according to popular belief — that *Ideal Home* featured an all-electric, open-planned house built with walls of glass and under-floor heating (through quarry tiles). The nuclear planners knew that was nonsense. Capital charges would be too high for the first stations to be genuinely economic.

Even so, those eight magnox stations did well. For years they had the lowest costs per unit generated of any plant. That changed when fuel reprocessing costs increased, but they are still among the most reliable and the cheapest.

The next generation of nuclear stations, with Advanced Gas Cooled reactors and more efficient generating plant, ran into initial problems, though by the late 1980s the CEBG's five AGRs were producing better results. But the value of having nuclear plant had been proved in other ways.

The power cuts due to the miners' strikes of 1972 and 1973 caused great inconvenience and discomfort in homes and cost industry dear. The

effects would have been far worse if nuclear stations hadn't been providing supplies.

It was the same story during the year-long miners' strike of 1984 — and other things besides industrial action could cause disruption to coal supplies. The Big Freeze of 1947 had proved that.

Events like these demonstrated the value of having diverse fuel sources to safeguard supplies, as well as providing a cushion against unexpectedly severe price increases.

But although these were the main arguments for having an adequate proportion of nuclear-fuelled plant, economics were still important — and so was reliability. These were the main factors when in the later 1970s the CEBG put proposals to the Government for having Pressurised Water Reactor plant.

The PWR system had been under development in other countries for some 25 years, and it was believed that such a station would have lower capital and generation costs and a better performance than those of the AGRs which still hadn't proved themselves.

The Labour Government accepted that this would provide an alternative option to AGRs for further development. But the climate of public opinion had changed, especially since the



A spectacular demonstration of the safety of transporting spent nuclear fuel by rail from nuclear power stations for reprocessing was held in 1984. Watched by millions on television, a heavy diesel locomotive pulling three passenger carriages was driven at 100 miles an hour into a nuclear fuel flask as it lay on the test track at Old Dalby in Leicestershire. The loco was crushed but the flask remained intact.

nuclear accident at Three Mile Island.

It hadn't caused a radiation hazard and wouldn't have happened except for a combination of inadequate design and operator training, but to many people that didn't matter. Any nuclear plant posed a risk. No matter how great the care, sooner or later an accident would happen.

There was concern, too, about the transport of used fuel for reprocessing. Some local authorities through whose areas the fuel flasks passed even declared themselves Nuclear Free Zones. To provide reassurance the CEBG arranged a demonstration in which a train was crashed into a flask at 100 mph. The flask successfully withstood the impact, but some doubters refused to be convinced.

Although that demonstration didn't come until 1984, the need for it was another indication of opinion at the time the Board announced it was applying to build a PWR station at Sizewell.

Against that, the CEBG could point to their past record — and it was impressive. Environmental monitoring at every nuclear station showed that discharges of radioactivity had been kept well within safe limits. The emergency arrangements first planned in the early 1960s had never been needed.

All operators have stringent training and CEBG stations have been designed so that any potentially dangerous plant fault or operator error would shut the system down safely.

Over and above that, the Nuclear Installations Inspectorate — the NII — was a powerful and highly-efficient independent watchdog. No nuclear plant could be installed until they were satisfied it would be safe, and they would go on checking throughout the rest of the plant's life and during its dismantling.

At the public inquiry into the Sizewell B proposal, every aspect was examined — exhaustively. Then after the inquiry finished, but before the report was issued, came the Chernobyl disaster.

The Government sought the NII's advice about the implications and was told that their safety assessment principles would not permit the licensing of such a design as inherently unsafe as the Soviet one. Not only was that plant of a very different type to the PWR, there was a gross and fundamental difference in the quality of the safety approach.

The CEBG was given approval to build Sizewell B and work started in 1987. During the run-up to privatisation another three PWR stations were being proposed. But then came the decisions that the existing nuclear stations and Sizewell B would remain in the public sector, and that no further PWRs would be built until the situation was reviewed in 1994.

Now it is John Collier as Chairman of Nuclear Electric who has the task of preparing that new company for the review. He sees one of his main objectives as regaining the confidence of the public in nuclear power. And although he admits that won't be easy, his views are very clear:

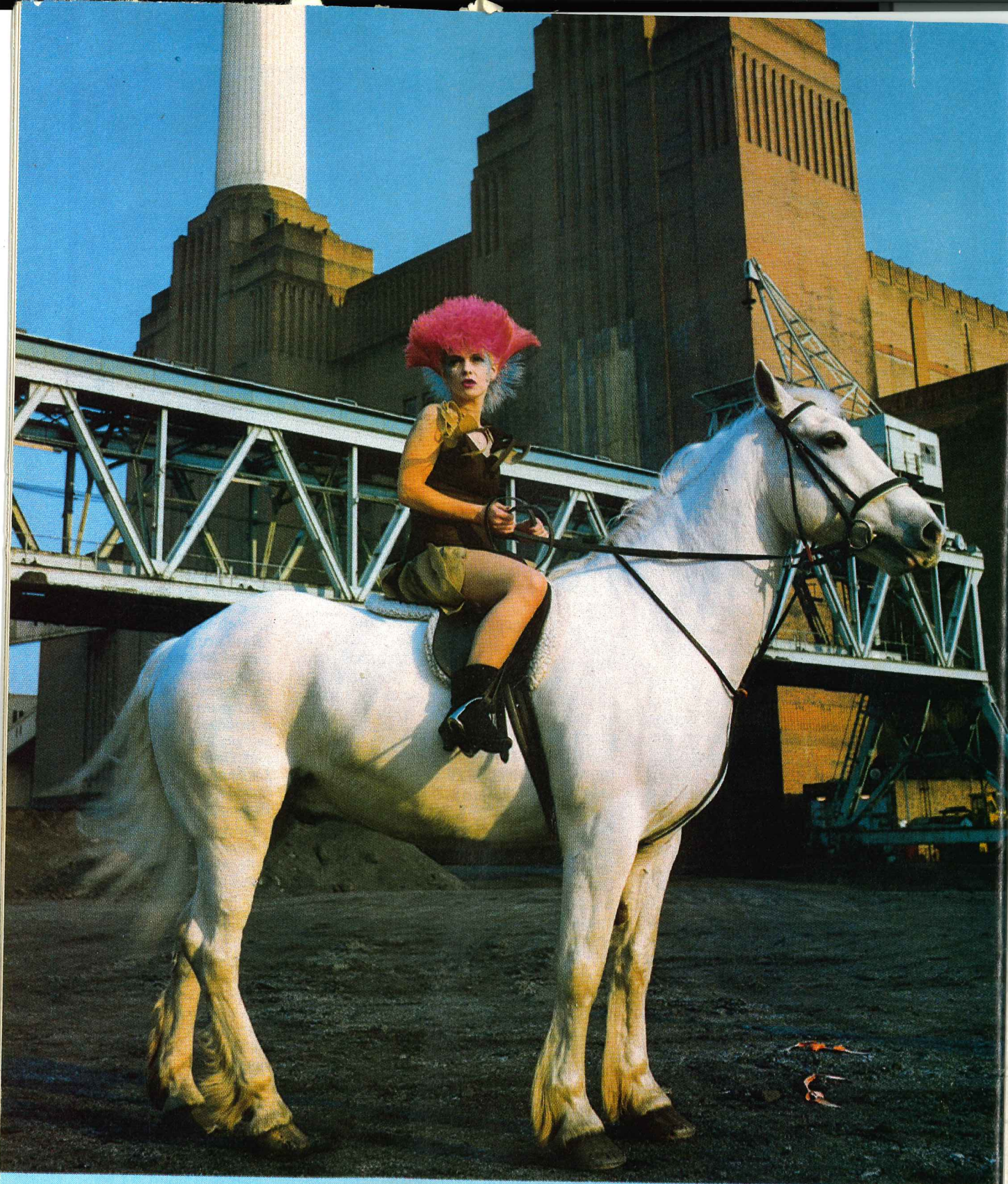
"I haven't spent nearly 40 years of my working life in this industry just to preside over its run-down and demise. Make no mistake, I see my role as planning for a future which includes building MORE nuclear power stations to maintain diversity and security of supply, and so help meet Britain's growing energy needs in an environmentally acceptable way.

It may be the end of one nuclear era. But another chapter is beginning.

As public inquiries go, the Sizewell one — into the CEBG's plans to build a pressurised water reactor on the Suffolk coast — was memorable for its length rather than its intrinsic interest. True, its start on January 11, 1983, was marked by a demo conference and a Press conference, as was its final day on March 7, 1985.

But they were very much the highlights. In between there were 340 days of hearing, a British record, at which 200 witnesses gave a total of 16 million words of evidence. It was equivalent, it was calculated, to 24 copies of War and Peace. The average reader would doubtless have found that by contrast with the inquiry transcript Tolstoy's blockbuster of the Napoleonic wars was fast-moving, even racy.

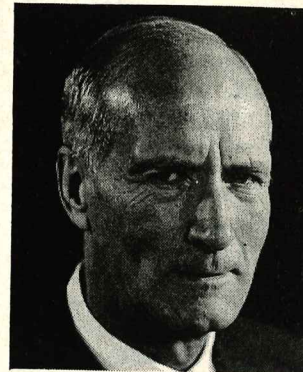




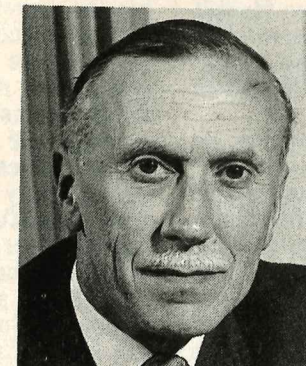
Pop go the power stations

BATTERSEA power station's imposing architecture has made it not just a prized monument for Londoners but a film maker's favourite too. Here pop singer Toyah Wilcox stars in a music video — just one of many productions shot on the site.

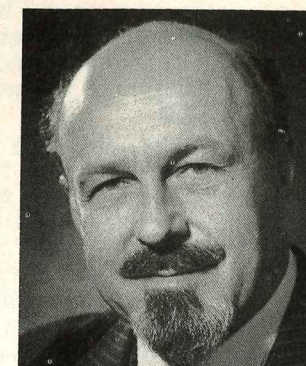
Others include *Superman III* and a Monty Python film. Since the station stopped making electricity in 1983, strong public pressure to preserve it for some other, quite different, use has led to a number of development plans being put forward.



Lord Hinton



Sir Stanley Brown



Sir Arthur Hawkins



Glyn England

Death . . . and reincarnation

THE Government's decision to privatise the electricity supply industry was one of the measures included in the Queen's Speech to Parliament in 1987, though the way it would be done wasn't spelled out until the 1988 White Paper.

That envisaged the CEBG's generating responsibilities and assets being split between two new companies, National Power and PowerGen, the larger of which (National Power) would inherit 70 per cent of the power stations, including the nuclear plant.

The grid would "retain its central role in scheduling and directing the use of power stations" but it would be owned and operated by a grid company which itself would be owned by the 12 distribution companies — formerly the Area Boards.

Clearly a difficult road lay ahead, and the Generating Board took a positive view. As Walter Marshall — now Lord Marshall — explained: "We thought it better if we handled the change ourselves, anticipating their legislation by dividing into three Divisions. And that's what we did."

Breaking up the CEBG was no small job. Every asset, including the various headquarters buildings, had to be allocated between the three successor companies — and so did every member of the 47,000 staff. Once again it was a time of major upheaval for many who found themselves having to move to different parts of the country and even to different types of jobs.

But there were further changes to come. As discussions progressed with the Area Boards, who would become the distribution companies, it became clear to the Government that the original proposals concerning nuclear

aspects wouldn't work out in the way intended.

The magnox stations were too near the end of their lives for a private company to recover the costs of reprocessing the fuel (including a sizeable backlog) and decommissioning the stations. So in July, 1989, it was announced that the magnox stations would stay in the public sector.

That was a relatively small hiccup, not affecting the more important nuclear plant — the AGR and PWR stations which would still go to National Power. Or so the Government thought until the economic implications became clear. To satisfy the City that it was worth investing in the National Power company, high prices would have to be charged for electricity from those stations.

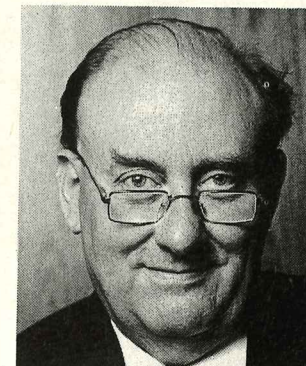
The reasons were complex and linked to the fact that nuclear stations had high capital costs. As Lord Marshall later put it, the benefits of nuclear power accumulate over half a century.

"The plain fact of the matter is that we are going to have a new electricity industry which is driven by short-term market considerations."

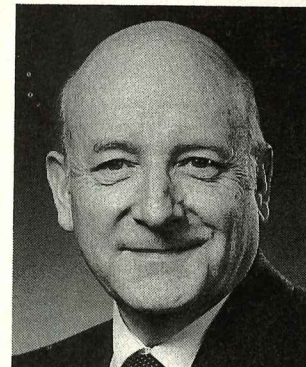
It did not alter the strong arguments for having nuclear power to ensure diversity of fuel supply, but it did make the privatisation of nuclear power impracticable.

In November, 1989, the Government announced that the AGRs and Sizewell B PWR station would also remain in the public sector, and that no further PWRs would be built until the situation was reviewed in 1994.

To Lord Marshall in particular the



Lord Marshall



Gil Blackman

There have been only six chairmen of the CEBG. The first, Sir Christopher Hinton, later Lord Hinton, served from 1957 to 1964, Sir Stanley Brown served from 1965 to 1972, Sir Arthur Hawkins from 1972 to 1977, Glyn England from 1977 to 1982, and Lord Marshall from 1982 to 1989. Gil Blackman was appointed Chairman in January this year.

For the record

STATISTICALLY the CEGB's life was marked by improvements in key operational areas.

● There was a FALL in the real price of electricity — after allowing for inflation — that the Board charged the area boards, despite increases in the price of fossil fuel, one of its major costs.

● Expressed in 1988/89 price levels the CEGB charged the area boards 3.782 pence a unit in its first year. In 1988/89 (the last reported year) the price was 3.653 pence a unit — a reduction of 3.4 per cent.

● Over the same period the CEGB had to pay almost 22 per cent more in real terms for the fossil fuels it bought.

● An important factor in the electricity price reduction was improvements in thermal efficiency, a measure of the amount of energy from each tonne of fossil fuel burned. In 1958/59 the Board achieved a system thermal efficiency of 26.1 per cent; in 1988/89 the figure was 35.47 per cent.

● Despite big increases in the demand for electricity, the years also saw a fall in the number of staff. In 1958/59 the CEGB employed 53,128 staff to meet a peak demand of 20,889 megawatts. Thirty years on demand had increased to 46,875 megawatts and staff numbers had dropped to 47,201.

● Over the same period manpower productivity — expressed in units of electricity sold per employee — had risen from 1.59 million to 5.14 million.

announcement came as a blow. He felt unable to accept the Government's decision and resigned — and Gil Blackman was appointed the last Chairman of the CEGB.

They weren't the only ones to be affected. For national power staff, there was another period of uncertainty as they and assets had to be reallocated between National Power and the new Nuclear Electric Division. It was a last minute exercise which couldn't be completed until early 1990 with Vesting Day only a couple of months away.

On March 31, 1990, the assets of the CEGB will be formally vested in the new companies. It will be the end of an era — 42 years since the industry was nationalised.

During that time the whole pattern of generation and main transmission in England and Wales has completely changed, to the benefit of consumers.

The industry had had its problems — and not just the difficulties inevita-

ble in times of rapid development. Political decisions have been foisted on it. There have been the effects of a worldwide recession. But throughout it all, it has held fast to its aim: To provide the most economic and reliable supplies of electricity practicable.

For many staff, they haven't always been peaceful years. As one long-serving manager said: "Only one thing was certain. Whatever I'd planned for the day ahead, something different would happen." But he added: "In spite of it all, something of the industry's early spirit was still there — that come hell or high water only one thing really mattered. Making sure that supplies were kept flowing."

Gil Blackman put it differently:

"The CEGB has been called a lot of things in its time. All I can say is that whatever the hell it was, it did a good job."

And that says it all.



The CEGB story

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