

The Lords committee warns that there is a danger of Britain becoming complacent about the need to develop alternatives to the internal combustion engine because the availability of North Sea oil might make petrol-run cars economic in Britain after they have ceased to be so in other countries. The committee recommends that the government encourage electric vehicle manufacturers to continue their research at least at the present level, which it finds satisfactory, by continuing to give financial support matched in some way to the manufacturers' own investment. Government should also be prepared to make product-launch money available "to get over the volume-production lump in the next few years". The committee does not, however, suggest that electric vehicle research be centrally planned, finding the present system of manufacturers applying for grants on an *ad hoc* basis satisfactory. It has seen no evidence of any overlap of research.

There is one area, however, in which the Lords say that more work could be done. Hybrid vehicles, propelled by a combination of battery and internal combustion engine, are being vigorously explored in Japan and the USA, but have so far received little attention in Britain. They offer the most promising prospects for private use by overcoming the pure electric car problem of short range, typically 50-70 miles. They also do not necessarily depend on the development of new advanced batteries. A major disadvantage, leading to high capital cost, is that incorporating two different propulsion systems in one vehicle is technically very difficult. Nevertheless, the government should be prepared to make a "small" amount of public money available for testing them, says the committee.

The future of electric vehicle development lies with large companies prepared and able to invest heavily in research and development and not with small businesses set up to build one or two specialized vehicles, says the report. So far, the manufacturers of batteries and components, such as Lucas and Chloride, have invested much more than the major car manufacturers. A possible reason, put to the committee by BL Technology, a subsidiary of British Leyland, is that vehicle manufacturers add only 30 per cent of the final value of an electric vehicle, the electrical component manufacturers standing to win the biggest reward.

The committee hopes that the car manufacturers will eventually be enticed to invest in electric vehicle development by the prospect of major markets in countries which, unlike Britain, cannot rely on a steady supply of oil into the 1990s. It would be a pity, it says, if Britain were to lose its lead in electric vehicle technology now, only to be forced later into buying from abroad because it had been lulled into a false sense of security in the 1980s.

**Judy Redfearn**

## US petroleum

# Using less

Washington

Officials at the Department of Energy appear to share with the superstitious the view that to talk about good luck is to ensure that it will disappear — "don't count your blessings" and all that. Accordingly, not much is being made of the dramatic reduction of crude oil imports to the United States in the past year, which in the first eight months are down by 17.2 per cent between 1979 and 1980.

According to the Department of Energy's *Weekly Petroleum Status Report* for 29 August, imports of crude oil and refined products averaged 6,907 million barrels a day in the first 234 days of 1980, compared with a total of 8,341 million barrels a day in 1979. If this keeps up, President Carter's promises at the Venice summit on oil imports will be amply fulfilled.

The diffidence of the statisticians responsible for the weekly statistics is partly technical. The weekly *Status Report*, although admirably up to date, is based on returns from oil companies and crude oil refiners, and is therefore not a direct measure of actual consumption. Perhaps, it is said, the reduction of imports reflects reduced inventories in the distribution network. The rapid attrition of gasoline service stations certainly implies that many retailers' gasoline tanks have been emptied for the last time. The statisticians appear not to dare to take heart from the

supposition that most retailers going out of business are doing so because they are selling less.

The statisticians are also diffident because they do not understand why the most recent round of price increases for petroleum products should have demonstrated, after a decade of apparent price inelasticity, that even Americans will buy less gasoline and fuel oil if the price goes up sufficiently. Could it even be that some non-quantifiable consideration, such as the continued presence of American hostages in Iran, has changed people's buying habits?

Whatever the truth, the facts are clear. Between the first eight months of 1979 and the corresponding period this year, gasoline production for the US market has declined by 6.8 per cent, to an average of 6.6 million barrels a day (still more than a third of total volumetric production of 17.6 million barrels a day of all oil products). Distillate fuel oil is also down by 14.2 per cent, partly because householders and commercial consumers have turned down their thermostats, partly because oil companies are chafing at state and even more local price restrictions. Already there are fears that if the coming winter is cold, it may also be hard.

During the same period, stocks of crude oil and of petroleum products have soared. Primary commercial stocks have increased by more than ten per cent in the past year. Gasoline is in especially good supply. Fuel oil is, however, short.

The most obvious disappointment in the statistics so far available for 1980 is that US oil production has hardly changed since

## Saturn seen in Voyager sights

The accompanying photograph, released at the end of August from the Jet Propulsion Laboratory in California, is one of the first to have been gathered from the spacecraft Voyager 1, now on its way from Jupiter to Saturn. Between 22 August, when the first photographs were obtained, and 24 October, visual observation from Voyager 1 will consist entirely of single-frame photographs. Thereafter, the narrow-angle camera on the spacecraft will be used to collect mosaic photographs of the visible surface of Saturn and of the rings and to search for satellites at present unknown.

The closest approach to Saturn will occur on 12 November, when the spacecraft will also come closest to the satellites Tethys, Mimas and Enceladus. The closest approach to Titan, one of the principal targets for the cameras, will occur on 11 November. Visual observation of Saturn will continue at least until 18 November.

Visual observations are, of course, merely the most memorable of the observations made by planetary spacecraft. Voyager 1 is also equipped with magnetometers, infrared sensors (which will, in particular, produce a map of the surface of Saturn) and devices for recording the interplanetary particle flux and for measuring the size and density of material particles in the rings of Saturn.



*Saturn from Voyager 1 on 24 August, 1980. The dark band on the equator is the shadow of this rings. The three bright specks are satellites.*

1979, increasing by only 2 per cent. One explanation of this curious price insensitivity is that potential oil producers are waiting until the price of "new" oil is decontrolled towards the second half of 1981.

The economic consequences of this changing pattern of consumption are plain to see. The three major automobile manufacturers are in the throes of launching their newest small cars — Ford unveiled its new Escort last week — with apprehension and despondency. If the cars do not sell, consumers will buy imported cars and the auto industry will collapse still further. But the profitability of small cars is not nearly as great as that of the old gas-guzzlers.

Using the standard relationship but on the assumption that coal production will continue rapidly to increase, the American Petroleum Institute is now guessing that by 1990 oil consumption in the United States will decline to an average 8-9 million barrels a day, with rather less than half of this imported. Even this estimate may be conservative, for the impending decontrol of petroleum prices may be an unexpected stimulus to drilling. Since the decontrol of natural gas prices during 1979, proven reserves of natural gas have increased more quickly than in the previous decade.

## Romanian energy

# Partners to-be

Romanian President Nicolae Ceausescu has found the answer to current and future problems of the development, efficient and economic use of raw materials and energy resources, according to the leading Party newspaper *Scinteia*. Reviewing the latest volume in the series "From the Economic Thinking of President Nicolae Ceausescu", *Scinteia* points out that the President was interested in the problem even before the energy crisis. This is, perhaps, not surprising as Romania, once so oil-rich that an oil-rig was depicted on the state coat of arms, has now sunk to the status of a net oil importer.

Judging from the review Ceausescu's book *Energy and Raw Materials Resources* (not yet available in the West) seems to reiterate the draft directives for the 1981-85 five-year plan and the long-term guidelines till 1990, recently accepted by the Joint Plenary Meeting of the Central Committee of the Romanian Communist Party and the Supreme Council of Economic and Social Development.

These guidelines provide for a multilateral energy strategy, to include: the expansion of geological prospecting throughout the country and the Black Sea continental shelf, the speeding up of hydroelectric projects, so that the 30 per cent exploitation of hydroelectric potential of 1980 will reach 45 per cent in 1985, 65 per cent in 1990 and 100 per cent in the year 2000, utilization of low grade and less accessible fuels such as shale, and the expansion of the nuclear energy

programme (660 MW capacity by 1985, 3,960 MW by 1990 and 10,000 MW by 2000).

Considerable emphasis is also to be placed on conservation, recycling and what looks remarkably like energy rationing — described by official policy hand-outs as "fixing rational ceilings on heating and lighting". Finally, Romanian scientists, whose work has been more firmly harnessed to the needs of the economy than in any other socialist country, will take part in wide-ranging interdisciplinary research to capitalize on the country's geothermal, Sun, wind and tidal resources, as well as biomass conversion. According to the directives, by the year 2000 these resources should account for some 20 per cent of Romania's energy production (by then nuclear energy will have reached 17 per cent).

Vera Rich

## Rural communities

# Living now

What sort of society could the future inhabitants of rural areas find themselves living in? A recent idea for a rural community for the future has come from the Dartington Hall Trust in South Devon, England in the form of a model village built on a scale of 1:250. Recognizing, no doubt, that the future can never be planned by the past, the Dartington model has been designed more as an "exercise in the imagination" than as a blueprint for a real village.

Thinking about the future of rural communities fits well into the work of the Dartington Trust, which was set up in the 1920s with the wealth of Leonard and Dorothy Elmhirst to bring back life to rural communities which has been depleted during the industrialization of the nineteenth and twentieth centuries. Most of Dartington's work consists of encouraging small industries, not necessarily associated with rural life, and cultural and educational activities in the countryside of Devon. Its latest venture, however, is more theoretical. According to Maurice Ash, the Trust's chairman, the model village is an

*Dream in balsa wood*



attempt to "speak a new language" by thinking differently about the world in terms of qualities rather than quantities.

That is not to say, however, that the "high" technology of the industrialized world has been ignored. The idea, according to Andrew Page, the brains behind the model, is to achieve a marriage of the microelectronics and green (ecological) revolutions. The model is for a community of about 2,000 people which aims to be as self-sufficient as possible by making use of both "low" and "high" technologies, the emphasis being on energy saving and preserving the quality of the environment. Electricity is supplied mainly from hydro and aerogenerators, transport within the village is by bicycle, horse and cart or on foot, as much local produce as possible is grown around the periphery of the village using labour intensive methods and waste recycling is done on site to produce clean water supplies and methane and other biogases. The village medical centre is designed to offer "alternative therapies" as well as modern medicine.

High-technology services come into their own when the village has to communicate with the rest of the world. Hence a community transport depot houses cars, lorries and vans for those needing to travel outside the village. But the most significant feature is the "cottage office" which houses a "resource centre" offering not only telephones, telexes, photocopying machines and secretarial and accounting services for local businesses, but also television with teletext, Viewdata and other link-up services for worldwide electronic communication. This acknowledgement of the microelectronics age also means that the village can offer educational facilities for all age groups.

Small-scale industry, for producing goods for sale outside the community as well as within it, is based on a mixture of high and low technologies. Few inhabitants would have only one job, the idea being to create job fulfilment by blurring the distinction between work and leisure and engaging people in different tasks at different times. Most people, for example, would spend quite a bit of time farming the green belt surrounding the village or digging their allotments, in addition to their main job. One of the main criteria for using high, labour-saving technology would be the elimination of boring and repetitive tasks.

It is unlikely that the model village will ever become a reality. But some of the ideas and detailed design work that have gone into creating it may be useful in less ambitious projects to build real futuristic societies. The Town and Country Planning Association and Greentown Group, for example, are currently looking for a site to build a small futuristic community of houses and small businesses. And Milton Keynes has already shown an interest in building such a community on a 25 acre site just outside the town. **Judy Redfean**