are now having to close manufacturing plant (which they might have expected), while the purchaser under whose umbrella they used to shelter now plans to play the international market for digital exchange equipment. The moral is that private companies that become over-dependent on a single customer (in Britain, Plessey and STC seem to be worst hit) are vulnerable in two respects: technically their pattern of activity is constrained, financially they depend on the whim of others.

There are also more immediate problems. The general depression and competitiveness of the computer market has made STC's purchase of the British company ICL seem less of a bargain that it did last year. Fierce international competition for general-purpose semiconductor chips, which has meant that prices have fallen by a factor of five within a year, has similarly afflicted the British company Thorn–EMI, the purchaser last year from the British government of Inmos, the semiconductor company. Those with an interest in these questions are now wondering which chairmen will be forced to leave which companies. Those with longer memories may recall the curious and still unexplained outburst last month by Lord Lucas, a government spokesman in the House of Lords, who surprised his audience with a recipe for the amalgamation of British electronics companies. The most obvious candidates for shotgun marriages are the companies whose balance-sheets (and share prices) have been hit by increased competitiveness of the general electronics market, but even companies such as GEC (no relation of US General Electric), which have stuck to customized semiconductor electronics for the most part, have disappointed their shareholders while maintaining their profits.

The outcome of this period of upheaval cannot, of necessity, be predicted. Indeed, even companies that have been hard hit in the past few weeks are strong industrial organizations, well able to ride out the storm. But the best-provided must be those whose interests span more than electronics pure and simple. They are best placed to swallow one or more of the others. The snag, for disappointed investors, is that in the present climate they may not wish to do so.

If the immediate future cannot be foretold, the more distant future is fortunately more predictable. Electronic computers with hugely different capacities are now well-established and productively used, while there is likely to be a lull of several years before machines of radically different architecture are working tools. So too are the technologies of telecommunications. But the marriage of the two fields has so far been half-hearted. That is why, with the increased competition between the giants of the two industries, the next decade should throw up novel opportunities for the smaller fry to become suppliers of specialized equipment; there should be plenty of niches for other companies to fill. Investors should know, however, that capital investment in research and development will be more than ever needed if they are to be filled. Meanwhile, ambitions to overtake the giants by sheer cleverness (which is not in short supply) should be surpassed. □

OPEC in the doldrums

OPEC is going through a bad patch, but remains a potentially powerful cartel.

OPEC, the Organization of Petroleum Exporting Countries, seems these days to stagger from one crisis to another. Last weekend's meeting in Vienna was no exception. After three days of talk, OPEC failed to persuade itself that there should be a system of production quotas that would restrict the amounts of oil that could be sold on world markets. Even the proposal that the total volume of OPEC production should be reduced by 7 per cent, unenforceable without production quotas, is only a formality, setting a ceiling (of 14.9 million barrels a day) believed to be higher than OPEC members now sell collectively. It is always possible that the economic climate may change before the next formal meeting of the organization, scheduled to begin on 22 July, but the prospects (for OPEC members at least) are not bright.

Why is OPEC now apparently so weak when it seemed, in 1973 and 1979, that it could fix whatever price it chose for a barrel of crude oil and still keep its members' oil revenues at levels that satisfied their needs for overseas currency? The time-lag between 1979 and now is significant and the explanation is almost banal. The sudden jumps of price in the 1970s were shocks to the economies of the oil consumers. The short-term effects included all kinds of economic problems, stagflation in particular. One of the long-term consequences has been simple old-fashioned price resistance. Customers reconciled to prices of between \$10 and \$12 a barrel (the official price of Saudi Arabian crude oil between the first and second shocks) have changed their ways, and have taken steps to use less oil. In retrospect, it is unlikely that OPEC would have dared put the price above \$30 a barrel in 1979 if it were not that Iranian production had been halted. Since then, however, the trend of prices for the oil products sold on the Rotterdam market has been steadily downwards, in dollars and without allowing for inflation.

The driving force behind these dramatic changes is the way in which the oil consumers have managed to economize in its use. It is almost as if OPEC's 1979 round of price increases had been designed to bear out the contention of the late Shah of Iran that higher prices were the best way of ensuring that oil would be left in the ground for "future generations" to use as a source of chemicals.

The industrial trends are neatly illustrated in British Petroleum's latest *Statistical Review of World Energy*, published last month. Between 1970 and 1984, the consumption of primary energy in the United States for each unit of gross domestic product (GDP) fell by some 17 per cent. In the other industrialized countries which are members of the Organization for Economic Cooperation and Development, where energy consumption per unit of GDP has always been roughly half that in the United States, the fall since 1970 has been more dramatic — more like 20 per cent than 17 per cent.

Two quite separate trends are apparent in the figures. First, all of the industrialized countries are using less energy for each dollar's worth of wealth that they generate internally. Second, within the total pattern of energy consumption, the importance of oil is steadily declining. All this is what would have been predicted from the elementary rules of supply and demand. The only surprise is that there has been such a noticeable change in a mere six years.

So does this mean that OPEC is now finished as a determinant of the price of oil and, by extension, of other forms of energy? That is not a reasonable calculation. Part of the reason why oil consumption has been depressed since the beginning of the decade is that economic activity has been at a low ebb, and part of the reason for that long depression was the sharp increase of the price of oil. OPEC's strength has during that period been contained by a kind of negative feedback which few industrialized economies have enjoyed. Ominously, with the improvement of economic activity between 1983 and 1984, there seems to have been a sharp increase of total energy consumption which restored energy consumption to the peak that it reached in 1979. (GDP had increased in the interval.) There is always a possibility that the full restoration of prosperity will have oil companies bumping up against the now much reduced level of production by the OPEC states, for oil is for technical reasons the most ready way of meeting marginal demands.

The moral in this for the oil consumers is that they must hasten plans for the use of other energy sources. Coal consumption has grown steadily, but only slowly, in the past decade, and there is plainly a limit to the speed with which supplies can be increased. Nuclear energy similarly lives on a long time-scale (that could and should be shortened). Energy conservation measures are similarly slow to take effect. But these and other devices are, if anything, more necessary now than at any time in the past decade. The unpalatable alternative is to see the price of oil increase yet again. □