IN BRIEF

Sea Law, round four

The Law of the Sea Conference convened in New York for another seven-week session this week surrounded by a major new uncertainty, the Presidential campaign in the United States, but with some other problems effectively sidestepped by the sprinkling (not to say, flood) of unilateral declarations of 200-mile fishing limits made in the past few months. The EEC countries have now declared their joint intent to introduce a community fishing limit, even if the conference does not come up with a proper agreement. It is, however, the wider question of how to deal with mineral resources on other parts of the sea bed that is likely to exercise the New York session most. How are these resources to be exploited "for the benefit of mankind as a whole" (to coin a conference phrase)?

And would the proposed International Seabed Authority actually wrap up every manganese nodule so inextricably in red tape as to make a good principle impossible to work out in practice? Any real decisions are likely to have to await a fifth round of conference—and the result of the US election in November.

What's happening on Mars?

Two of the three experiments carried on the Viking lander and designed to detect reactions in the soil characteristic of living organisms have so far yielded data. One, measuring the conversion of radioactively-labelled nutrients to labelled carbon dioxide, showed an initial rapid burst of activity which has since died down to almost nothing. In another, the soil released large amounts

of oxygen when initially dampened with water, even before the experiment proper (of adding a concentrated 'chicken soup' of nutrients) had begun, but nothing has happened since.

The best guess at the moment is that the Martian soil contains large amounts of bound oxygen, a not improbable speculation as the soil is rich in iron minerals which in some circumstances can readily bind oxygen under the influence of ultraviolet light. This would accord with earlier speculation that oxygen and hydrogen originating from water might be trapped in the iron minerals on Mars. So far it looks as though Mars may be the Mecca of the soil chemist (since no known soil on Earth has ever produced similar reactions, although the search is now on amongst desert soils) but that the question of life there remains as much of an enigma as ever.

PLANNING must be based on the best possible forecasts of future developments. Unfortunately the best is generally not very good. Dr Walter Marshall told a conference on Renewable Sources of Energy organised recently by the Royal Society of Arts that the only certain thing about forecasts of energy use was that they would always prove to be wrong. Thus the Central Electricity Generating Board's projections made in the early 1960s overestimated the peak load for current used in 1975 by some 40%, which makes one suspicious of their figure foretelling a doubling or even trebling of the use of electricity in the period up to the year 2,000.

Population projections are even more difficult. Thus one report published shortly before the 1939-45 war, when England and Wales had a population of 41 million, suggested that this might fall to 31 million by 1975, and that the chances of a population increase were remote. In fact numbers increased by 8 million. The most recent figures issued by the Office of Population Censuses and Surveys suggest that the present trend to ZPG (zero population growth) will suffer a modest reverse after 1981, and that numbers in England and Wales will grow by about 1½ million by 1991. It will be interesting for those who survive to see what really happens.

Forecasting traffic densities, on which future road programmes are based, is an equally chancy business. Until recently the Department of the Environment decreed that their figures produced by the Road Research Laboratory must not be questioned.

This arrogant attitude has at length been somewhat relaxed, but an enormous increase in the number of private cars and of their use is still

Forecasting error

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postulated. Yet there is little reason to believe that traffic projections are any more accurate than those for power or population.

Unfortunately many people seem to think that forecasting is becoming increasingly scientific, and that the use of computers is making the results more reliable. It is true that a great deal of mathematical skill has gone into the study of population trends, energy use and traffic census, and that the calculations arising therefrom have sometimes been speeded up by suitable computer programs, but unfortunately there has been no

improvement in obtaining the data used. The whole process has too often been one of "garbage in, garbage out". There are so many unknown and uncontrolled variables that it might be better to rely on crude sums done on the back of envelopes, than to use elegant calculations and expensive machinery which give a spurious illusion of scientific accuracy.

Some errors cannot be eliminated. We could foretell the birthrate accurately for about eight months from any date, and, provided there is no war or major epidemic, estimates of death rates and total population are foreseeable for a similar period. Forecasts for longer periods are simply guesses, affected by social factors which, so far, have defied accurate quantification. Only some form of rigid totalitarianism could improve the statistics.

Unfortunately some projections have a built-in source of error. Our government is committed to the idea of economic growth. Scientists in public employment appear to be expected to assume that this growth will take place, and that there will be increased energy consumption, more consumer goods, more travel and a growing "environmental impact". It is assumed that government policy will stimulate this growth in the economy. Some believe this to be likely, others describe schemes intended to produce growth as "pouring out public funds like water, to create lakes in which lame ducks will sink". It may be impossible to keep politics out of forecasting, but political factors should be identified and not concealed.