

## Astronautics in Amsterdam

from Angela Croome

DR Kraft A. Ehrlicke belongs to the same generation of German-born space engineers and prophets as Werner von Braun and similarly helped to lay the foundations of the American space programme. It is not therefore too surprising that he retains an almost apocalyptic faith in man-in-space as bringer of solar energy (to supplement dwindling Earth resources) and grower of super crystals. That there are no limits to growth for life on this planet—only changes in pace and direction—was the theme of his keynote address to the 25th International Astronautical Congress, the annual rendezvous of the leading figures in the field, in Amsterdam last week. He urged growth and expansion in astronautics as a way of obtaining additional resources and accelerating the imperatives of international cooperation.

The note was not really in harmony, however, with the main tenor of the meeting. Programme scientists and project leaders today must have hard-headed arguments in justification of even low-cost automatic satellites. An all-day symposium on cost reduction in space operations is now a regular feature of the Congress, in fact. Dr Ehrlicke's industrial suburbs in orbit were not included in the programme.

The principal way of reducing the costs of space operations, of course, is to share them. The degree to which NASA has embraced this policy was heavily underlined at the Amsterdam gathering. Detente has certainly eased the way for American-Soviet space cooperation (where only a few years ago the 'space race' was an extension of the cold war) but the sight of Tom Stafford, captain of the American crew for next summer's Apollo-Soyuz rendezvous and docking project, and Alexei Leonov, the Russian crew leader giving a joint briefing on progress without interpreters gave credibility to the plan that has hitherto been lacking. Officially each country is contributing 50/50 to development, the 5 joint experiments, project management, even the command during the 2 days when the two capsules will become one; unofficially one learns that the exchange of information is all 'one way' and in particular the American space medicine experts responsible for crew fitness are unhappy at the lack of Soviet data.

There is only one American-Soviet flight scheduled at present and nothing definitely planned beyond. Next spring the two sets of senior negotiators (which includes the President of the Academy of Sciences on the Russian side) will consider possible further joint

ventures, and Soviet participation in the reusable Shuttle programme for the 80s has been mentioned. Meantime Europe through ESRO is firmly committed to designing and building the Spacelab element of the shuttle programme which will substantially share the burden of the civilian sector of the programme with NASA. What is now being equally stressed is the virtue of having an integral European contribution to some of the promising planetary programmes of the next 10 years. A system of multiple spacecraft to collect and recover some soil samples from the surface of Mars would be substantially aided by having, for example, Europe build and operate one of the Mars descent vehicles. Similar arguments apply for a 1978 Venus probe in two parts and ESRO is studying a Jupiter mission for the 80s which would be on a joint contribution basis.

A note of caution was struck in the law sessions. The problems of liability in the case of a failure or an accident where several nationals are taking part in a common spacecraft will be formidable and there is no really adequate international court to decide possible space disputes.

## Maltese conference cross over Caracas

from Wendy Barnaby, Malta

"IT IS", said Lord Ritchie-Calder, "the biggest smash-and-grab since the European powers at the Berlin Conference of 1885 carved up Black Africa." And his view of the Caracas United Nations Law of the Sea Conference was echoed by many of his fellow participants at Pacem in Maribus. The fifth meeting of this group, which can claim to be the most influential non-governmental organisation considering matters relating to the oceans, was held in Malta from September 9–13. Attracted to this discussion on the results of the Caracas proceedings were 64 people from 18 nations, the World Bank, the United Nations Environment Programme, the Commonwealth Secretariat and a number of non-governmental organisations. The statement which summarised the meeting's discussion was highly critical of Law of the Sea developments.

It was generally thought that the concept of a twelve nautical mile territorial sea plus a 200 nautical mile exclusive economic zone would eventually be accepted by the U.N. conference, possibly at its next session at Geneva in March 1975. Dr. Arvid Pardo, the original initiator of the U.N. Conference, argued that these concepts will not provide the necessary precision on the scope of national jurisdiction because rules determining the drawing

of baselines, from which each zone will be measured, have not been agreed upon. Nor are they likely to be. Neither has agreement been reached on the relationship of the continental shelf to the economic zone. What will happen to those parts of the shelf which extend beyond 200 miles from the baseline?

As present technology makes exercise by states of their rights to explore and exploit the resources in the economic zone easy to the depth of 200 metres, it would be possible to imagine those states with extensive continental shelves taking advantage of the imprecision of baselines to push their economic zones out to the limits of their shelves. The inequalities this would entail seem too blatant to be borne.

This question of the inequalities built into the proposed system let loose another shower of criticism, this time from Dr. Sidney Holt, the Director of the International Ocean Institute in Malta. He pointed out that although the underdeveloped countries may benefit in the short term from the economic zone concept (on the argument that, even if it will make the rich richer, it will at least give the poor more than they have at the moment), there is no guarantee that their long-term benefit will be great. This is because the potential yield from the living resources within the economic zone is limited to double the present catch, while the potential of living resources much further out is one or two magnitudes greater. This mid-water life, which includes pelagic squid and the shrimp-like krill of the Antarctic ocean, needs special technology to harvest it. It is a reasonable bet that the developed countries will perfect this before the underdeveloped ones. If the latter are not to miss out in the future they should be pressing for international arrangements to enable co-operation with the developed countries in the utilisation of these resources.

A more immediate deficiency in the Caracas machinery was the inconsistency in terms of reference between the Conference's three committees. The second and third committees dealt with the ocean space including the water column, but the first committee was limited to the seabed. The result is that "the authority" which each committee was trying to set up within its own terms of reference will have ambiguous jurisdiction. Clearly this ought to be sorted out quickly at Geneva. And, just as clearly, the Conference should adopt the solution favoured by Pacem in Maribus: jurisdiction that will cover the ocean not just the seabed. The seabed cannot be dissociated from the water column in the sort of issues that will face the world community in its attempt to draw up a law of the seas.