

## Great Projects to develop the ocean basins

The economic development of the Indian-Pacific oceans' basin requires a "crash program" approach, comparable to the United States' industrial mobilization of 1939-43. This implies a vast, energetic improvisation, guided by a well-aimed conception, but relying chiefly, at first, on the most unlikely assortment of obsolete productive capacities and unqualified labor. Only in this way can the now-lacking pre-conditions for rapid development be created.

An explosion of world trade, especially in capital goods needed for the indicated development projects, will rapidly place a premium upon high-speed ocean freight. We must therefore examine the strategic choke-points that will be created in shipping within and among the world's principal ocean-basins: Indian-Pacific, Mediterranean, North Atlantic/North Sea, South Atlantic, and Caribbean. The choke point from the Mediterranean into the Indian-Pacific basin is the Suez Canal. From the South Atlantic into the Indian Ocean basin it is the Cape of Good Hope. From the North Atlantic and South Atlantic, through the Caribbean, into the Pacific Ocean, it is the Panama Canal. Within the combined Indian-Pacific basin, it is the Strait of Malacca, presently a crippling choke-point, which could be remedied only by a high-speed, sea-level canal through the isthmus of Thailand. This global approach gives a somewhat different view of the development of the basin than examining the basin internally, and is the correct view of the potential for development of the basin itself.

Each project should stand on its own merits economically, but the package of projects as a whole should embody the principle of equity among nations and peoples, and each part of the basin should benefit from the package of projects as a whole.

There are three major infrastructural projects required to permit efficient commerce into and within the Indian-Pacific oceans basin: 1) the sea-level canal through the Panamanian isthmus, 2) the canal through the isthmus of Thailand, and 3) improvement of the Suez Canal.

The additional three principal proposed projects are principally inland-water-management development projects: 1) the south-north Grand Canal modernization project within China, 2) the Mekong River development project, and 3) the water-development project for the vast fresh-water potentialities of the Indian subcontinent, principally India, Pakistan, and Bangladesh.

While decreasing the percentage of labor employed in consumer goods industries and increasing the ratio of capital

investment to investment in consumer goods in the economy overall, priority should be placed on research and development and on education of the population. This will be facilitated by changing the character of urban life. Today's "megapolises" are becoming increasingly unmanageable. The older large cities of the world, steeped in congestion and decay, have reached the point in their history that efforts to ameliorate such conditions, poured into those cities, vanish with either no perceived net benefit, or a very short-lived amelioration of the problems addressed.

The general alternative to this urban sickness is the creation of *nuplexes*—agro-industrial complexes, urban industrial centers servicing the rural areas in which they are embedded, powered by complexes of nuclear-energy facilities in clusters of between 1.0 and 6.0 gigawatts capacity. With modern approaches to mass-transit systems, and with a policy of constructing cities on top of two or more layers of honeycombed base, instead of urban sprawl, we might develop cities of fine limits in size, internally efficient in terms of mass transit.

There are three leading areas of scientific achievement required globally: 1) fundamental and applied technologies of relativistic plasma-physics bearing on the central target of controlled thermonuclear fusion; 2) the conversion of plasmas into systems typified by energy-directed beams, such as lasers and "particle beam" modes; 3) biological advances centered around the definition of living processes and advances in biotechnology. In every national economy, there must be established points of entry, in educational, laboratory, and production institutions, through which these frontier projects can be tackled.

The economic development of the Indian-Pacific basin encompasses a span in the order of two generations, for which the general features of the initial quarter-century are rather clear today, and the second quarter-century foreseeable in those broad terms of reference we need to make decisions today. On condition that a crash program effort is dominated by shifts in technology, what must tend to emerge is a new view of man's management of his environment. This will be a view informed significantly by work in designing construction of earth-like environments on such locations as the Moon and Mars. We will say to ourselves, "If we have demonstrated that we can grow forests on Mars, as well as human colonies, why do we not employ the same repertoire of technology to adopt a similar, gardener's approach to management of our environment on Earth?"