

In this issue

Metallogeny

There is a view that minerals, oils and even natural gas are materials left by the advance and retreat of the primitive tectonic plates that formed the crust in earlier eras of the earth. Huge land masses 'glide, and dip and pirouette' across the surface of the earth, says the geologist poet. Over billions of years the earth has been performing its geological ballet. It is this "waltz of the continents—the ultimate in terrestrial choreography"—that formed the changing patterns of land and sea, the highest mountains, the deepest seas, the largest earthquakes, the most violent volcanoes. Are mineral deposits the surface remains of these continental collisions—the large scale traffic accidents on the globe?

We have on page 173 an article on geological metallogeny by Asoke Mookherjee in which he raises many questions. Why is an ore deposit where it is? Why was it formed when it was? Has the evolutionary history of the earth anything to do with it. It is not too well known that except probably for three elements—aluminium, iron and manganese—all the metals much sought after by man have no part whatsoever to play in rock formation. Our 'useful' metals are really useless materials which have literally to be thrown away when the crust is formed. Are ore deposits then these unwelcome waste products which are the scum discarded in the 'channel ways'—the sewers of the earth.

Mosquito control

The mosquito and the parasites it harbours have affected the directions of human expansion significantly. Large areas of the Terai region of Nepal and India remain a barrier to human 'civilization' because of the prevalence of malaria. Theodore Roosevelt, then President of the United States of America, ordered the filling up of swamps all over Panama when malaria threatened the construction of the canal that was to change the fate of South America. How prevalent is malaria in India? How prevalent is filaria, another major mosquito-borne disease? About two decades ago and earlier one could make an educated guess. Today, there is agreement that mosquito-borne diseases are widespread, but there are little reliable country-wide statistics. There are two reasons for this, one concrete and one abstract. The concrete reason is the proliferation of the urban slum. Not just the formation of areas of poor sanitation in already existing cities but the urbanization of new places without planning for sanitation and water handling. These urban centres have been centres for all sorts of parasitic diseases and their breadth and size do not parallel the growth of epidemiological studies. The second reason for the absence of good epidemiology is the demoralization that set in after DDT resistant strains emerged and this was compounded by the emergence of chloroquine resistant parasites. Since then, attempts at tackling malaria clinically and in estimating its extent and spread have been small

compared to the size of the problem. The National Malaria Eradication Program (NMEP) used to be active in every small town and city in the sixties. Every house had painted on it the date it was sprayed with DDT. DDT is now, like communism, the God that failed. Are there any messiahs in sight? A new attack on malaria requires learning from the past. New drugs using new approaches combined with sanitation and planned development is essential. In a tropical country of the size of India swamps will always exist. Rajamohan *et al.* (page 205) describe their studies on a protein that has activity against the larvae of mosquitoes. Mosquitoes lay eggs in swamps and their larvae grow and feed there. Strains of *Bacillus sphaericus* are known to produce proteins that kill the larvae that ingest them. The introduction of these bacteria into areas where mosquitoes lay eggs could be one way of reducing the mosquito population. To first analyse the properties of the larvicidal factors it is essential that they be available in large amounts so that their biological properties and environmental effects can be studied. Rajamohan *et al.* report the successful expression in *E. coli* bacteria of high level of the proteins that are toxic to mosquitoes and show that these proteins retain their larvicidal activity. The power of recombinant DNA techniques can now be used to analyse these proteins in detail. Such approaches to the control of insect populations have broad applicability both in control of human diseases that are insect-borne and of insect pests of plants.



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C.V. RAMAN AVENUE, P.B. NO. 8005, BANGALORE 560 080, INDIA

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* These two journals have been merged with *Journal of Biosciences* from 1991, but back volumes up to 1990 are available.

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