18. Chirikov, B. V., *Phys. Rep.*, 1979, **52**, 265.
19. Articles in Refs. 1 and 2 discuss applications in fields ranging from chemical kinetics to weather prediction, weak turbulence, plasma physics, etc. Ref. 21 details much of the work in chemistry. A good source for a variety of applications is the recent Journal, Physica D (Nonlinear phenomena)
20. Percival, I., *Adv. Chem. Phys.*, 1977, **36**, 1.
21. Noid, D., Koszykowski, M. and Marcus, R. A., *Ann. Rev. Phys. Chem.*, 1981, **32**, 267.
22. Einstein, A., *Verh. Deut. Phys. Ges.*, 1917, **19**, 82.
23. Lehman, K., Scherer, G. and Klemperer, W., *J. Chem. Phys.*, 1982, **76**, 6441 and **77**, 2853.
24. Noid, D., Koszykowski, M. L., Tabor, M. and Marcus, R. A., *J. Chem. Phys.*, 1980, **72**, 6169.
25. Marcus, R. A., In Ref. 1. Ramaswamy, R. and Marcus, R. A., *J. Chem. Phys.*, 1981, **74**, 1379, 1385.
26. Jensen, R. V., *Phys. Rev. Letts.*, 1982, **46**, 1365.
27. Aleksev, V. M. and Yakobson, M. V., *Phys. Rep.*, 1981, **75**, 287.

NEWS

ENVIRONMENTAL BIOINORGANIC CHEMISTRY

A tripartite US-Italy-China conference on environmental bioinorganic chemistry, took place in San Miniato in June 1983. In addition, UK, Swiss and Swedish delegates were also present.

Major topics of the conference included pollution caused by heavy metals, in particular, by toxic and carcinogenic metals such as mercury, cadmium, lead and arsenic; environmental damage caused by radioactivity from nuclear plants or from the recycling of nuclear materials; environmental damage in the Mediterranean sea and other marine environments; and the problem of acid rain. The scientific bases of the toxicity of heavy metals in living organisms were also considered.

The main priorities of the conference were to correlate the directions of research, and encourage international cooperation between Italy, the US, China and other countries, since there is a great deal of concern for the protection of the environment and for the possible damage which can be caused by heavy metals. Within this context, it is necessary still to learn a great deal about the chemical basis of toxicity, *i.e.* the chemical reactions that lead to inflammation, cell degeneration and irreversible damage to the nervous system. Such problems are aggravated by the fact that different animals respond in different ways to toxic stress. For example, the mouse eliminates arsenic in a different way from the rabbit. This is because the mouse has a blood protein that can coordinate directly with arsenic and can then eliminate it through normal blood exchange.

Genetically manipulated algae and bacteria can be designed to remove copper, nickel, silver and uranium very efficiently. Progress is being made in increasing the selectivity of particular metals. Work at Berkeley has resulted in complexing agents that can selectively remove extraneous metals from living organisms and radioactive metals from blood.

Another objective in environmental management is the control of salinity which, for example, has been studied both in Padua and Sheffield. Such environmental problems have major economic repercussions. It has been argued for example, that if international industry could invest 2 per cent of its turnover in the recuperation and recycling of dangerous substances, the final benefit to society would be at least 10 times greater than the initial investment.

The Conference was sponsored by the Italian National Council for Research, and the National Science Foundation of Washington. One of its main aims was to correlate directions of research between the three main countries involved so that the wastage of the scarce manpower and funding way be avoided in the future. (*Chemistry in Britain, December 1983, p. 1016*).