

- THYLEFORS, B. & ROLLAND, A. (1976). Aspects oculaires d'un village onchocerquien de savane africaine après treize ans de lutte antismulidiënne. *WHO/Oncho/76.129*, Geneva, Switzerland: 12 pp., mimeogr.
- UNDEEN, A. H. & NOLAN, R. A. (1977). Ovarian infection and fungal spore oviposition in the blackfly *Prosimulium mixtum*. *J. Invertebr. Pathol.*, **30**, pp. 97–8, illustr.
- WEISER, J. (1968). Iridescent virus from the blackfly *Simulium ornatum* Meigen in Czechoslovakia. *J. Invertebr. Pathol.*, **12**(1), pp. 36–9.
- WEISER, J. (1977). *An Atlas of Insect Diseases* (Second Revised Edition). Dr W. Junk, The Hague, and Academia, Prague: 240 pp., illustr.
- WHO (1973). *Onchocerciasis Control in the Volta River Basin Area*. Report of the Mission for Preparatory Assistance to the Governments of: Dahomey, Ghana, Ivory Coast, Mali, Niger, Togo, and Upper Volta. WHO/OCP, Geneva, Switzerland: v+86 pp.
- WHO (1975). Ecology and control of vectors in public health. (Twenty-first Report of the WHO Expert Committee on Insecticides.) *WHO Tech. Rep. Series* No. 561, Geneva, Switzerland: 35 pp.
- WHO (1976). *Epidemiology of Onchocerciasis*. (Report of a WHO Expert Committee.) *WHO Tech. Rep. Series*, No. 597, Geneva, Switzerland: 94 pp.

### Technologies of Hope

At the Second International Conference on Environmental Future, held in Reykjavik in June 1977,\* reference was made to the recent ECE International Seminar on the Principles and Creation of Non-waste Technology. At that Seminar a whole series of papers showed how wastes, instead of being discharged and allowed to degrade the environment, could in fact be converted into useful and profitable products, or into new sources of raw materials and energy.

Such claims naturally find a rather sceptical audience—in view of the destruction which modern technology has wrought in the past—or are even faced with open hostility by those who believe that they are a smoke-screen put up by technologists and industrialists to use such 'technical fixes' to divert criticism and get back to their usual business of making money and ravaging Nature. However, now that the full proceedings of the Non-waste Technology Seminar are available in print†, it can be seen that these fears are widely unfounded and the attacks commonly unjustified.

The 77 papers cover a very wide range of industrial activities—from paper-making to electro-plating, from wine bottles to whey, from tyres to tin cans—in fact, the whole alphabetical list from ammonia to zeolites. These papers give practical details of many hundreds of different processes which have been modified to reduce waste and increase the quantity of useful products from a given amount of raw materials and energy. The presentation of so many examples proves that it is possible to clean up industry without the crippling financial burden which many industrialists have feared, and which has often been an excuse for inaction—or, worse, wrong action. If so much has been done without a conscious drive to avoid waste,

how much more could be done, now and in the future, with the knowledge that an alternative is available to industry.

The alternative is a radical one, however. It is not a question of 'business as usual', let alone of a 'smoke-screen': non-waste technology means a completely new approach to growth, to observing natural limits, and to working with Nature rather than against Nature. In fact it is necessary to be conscious all the time of the larger system which both constrains us and supports us if we approach production, raw materials, and wastes, from a systems viewpoint. As the Executive Secretary of the ECE said at the Seminar: 'The moment of truth has come. We should question every single assumption on which we have heretofore been building our palace of growth... I simply do not think that we, in one generation of 25 years, have the right to spend resources which have accumulated in the Earth's crust over millennia'.

Non-waste is a philosophy of conservation, and non-waste technology is the only technology by which this philosophy will be transformed into conservation as an industrial practice.

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\* See the account by P. & J. Stone published in our Winter issue last year (*Environmental Conservation*, Vol. 4, No. 4, pp. 309–10, 1977).—Ed.

† *Non-waste Technology and Production*. Pergamon Press, Oxford, England: 678 pp., 104 illustrations, \$68 or £38, 1978.

### Humpback Whale Sanctuary Proclaimed in Hawaii

The Maui County government in Hawaii has proclaimed a sanctuary for the critically-endangered Humpback Whale (*Megaptera novaeangliae*), which gathers to mate and calve in the area each year. The proposal for the sanctuary was put forward by Dr Roger Payne, who has been carrying out a study of the Humpback that has been supported by the World Wildlife Fund, the New York Zoological Society, and the National Geographic Society.

Humpback Whales have achieved fame because of their remarkable 'songs', which have been made into commercial discs. Scientists have discovered that there appears to be a new song every year, and that it is common to groups of Humpbacks.

The Humpbacks which congregate off Maui are being increasingly harassed by tourists in boats, in defiance of the U.S. Marine Mammal Protection Act. The new proclamation by Mayor Elmer F. Cravalho directs the Maui County Whale Reserve Committee to take appropriate action between December and May, when the

Humpbacks are present, to encourage residents and visitors 'to comply with the laws regarding whale preservation, to cooperate with federal and state agencies to enforce laws preventing the Humpback whale from harassment and exploitation'. It also directs the Committee to develop a Marine Research Centre and to provide the public with educational material on Humpbacks.

The Humpback has been reduced in numbers by hunting to about 7–8,000—a tiny fraction of its original population. It has been totally protected since 1955 in the North Atlantic, since 1964 in the Southern hemisphere, and since 1966 in the North Pacific; but there are no indications as to whether it is recovering in numbers.

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