using sub-human primates as laboratory animals was held from December 17 to 19, 1969, at Rijswijk in Holland, organized by the World Health Organization and the Radiobiological Institute, TNO.

Tuberculosis, especially in the highly susceptible rhesus monkey, still takes its toll, but Dr L. H. Schmidt (South Research Institute, Birmingham, Alabama) contended that such losses should no longer be tolerated because they can be prevented by proper use of the tuberculin test, supported in certain circumstances by continued prophylactic medication with isoniazid.

Much interest at the meeting centred on the so-called Marburg disease from which in 1967 seven people died. Several species of monkey have been inoculated with the Marburg virus and every animal has died. Dr G. W. Kafuko (East African Viruses Research Institute, Entebbe) reported positive serological tests on monkeys in Uganda. He used antigen prepared from guinea-pigs inoculated with the Marburg virus and concluded that the virus occurred in the wild population of vervet monkeys which provided the monkeys which developed the disease at Marburg. But many participants thought it more likely that the Marburg monkeys had become infected from one of forty-eight species of animals with which they had contact at London Airport. Unfortunately the reservoir of this dangerous agent seems likely to remain a mystery until another outbreak occurs.

An important and relatively new virus disease of monkeys was described by Dr N. M. Tauraso (National Institutes of Health, Bethesda). It is called simian haemorrhagic fever, and five epidemics have occurred and caused heavy mortality in colonies of primates. High mortality from an outbreak of monkeypox in a zoo was reported by Dr J. C. Peters (Zoological Garden, Blijdorp, Rotterdam). Schmidt described outbreaks of two other pox virus diseases, known as yaba and yaba-like, in which tumours, fortunately benign, occurred in both monkeys and their human attendants. Dr L. V. Melendez and his colleagues (New England Primate Centre, Southborough) reported the isolation of a number of herpes viruses from several South American species. One isolated from squirrel monkeys produces a malignant sarcoma-like tumour when inoculated into marmosets. Clearly knowledge of the many primate herpes viruses which have been isolated is in a very confused state. A resolution was passed requesting WHO to coordinate studies to characterize and identify these isolates.

Drs D. W. van Bekkhum and H. Balner (Radiobiological Institute, TNO, Rijswijk) described their work on immuno-suppression in monkeys and the complications that often arise. There was much discussion on antilymphocyte serum and the need to develop a more refined product. Dr D. van der Waaij (of the same institute) described a method of rendering monkeys virtually free of bacteria by intensive dosing with selected antibiotics. Such animals are then able to withstand exposure to radiation that would lead to the death of "normal" animals from bacterial infection.

In Europe, national primate centres are now being developed in Holland (Rijswijk), France (Toulouse), Italy (Turin and Rome) and Germany (Göttingen), while Britain and Belgium are assessing their needs for such facilities. During the symposium some of the technical aspects of animal supply, quarantine, handling and housing were discussed.

ALGAE

Blue-greens in India

from a Correspondent

THE recent upsurge of interest in the blue-green algae provided the background for the first international symposium on the taxonomy and biology of blue-green algae held at the University of Madras from January 8 to 13. The production of mutants and the discovery of viruses—"cyanophages"—attacking blue-green algae have opened the way for the investigation of a chromosomal system which seems to be different from those in bacteria and higher organisms. The realization that the peculiar cells, heterocysts, possessed by certain species are the site of nitrogen fixation and have a bacterial type of photosynthesis and other specialized biochemical features has triggered new lines of research. The gas vacuoles found in planktonic algae seem to be an effective buoyancy regulating mechanism with unique features of fine structure. Molecular biologists are becoming aware that some blue-green algae provide experimental systems in which differentiation can be studied in the simplest conditions. On the practical side, the need to control offensive blooms of blue-green algae, and the hope that nitrogen fixation by these organisms may help to stave off starvation in Asia, are leading to more investigation of factors determining their growth and abundance in field conditions.

All these topics were discussed at the meeting, which attracted about a hundred people, twenty-five from outside India. It was hardly to be expected that any single meeting, even if as successful on other counts as this was, would resolve the unsatisfactory state of the taxonomy of blue-green algae. As it was, supporters of the classical schemes of Geitler and Fritsch, on the one hand, and of the drastic revisions of Drouet, on the other, defended their positions uneasily while the bystanders offered mostly unrealistic solutions or disquieting instances of the morphological plasticity of blue-green algae.

Among the wider aspects included under the heading "biology", several contributors, from the Universities of Benares, Madras and Udaipur, gave accounts of the development and germination of heterocysts which cannot easily be reconciled with the simple theory that they invariably fix nitrogen and do nothing else—in many respects these cells remain enigmatic. Dr Elisabet Henriksson (University of Uppsala) reported a survey of Swedish soils by the acetylene reduction technique, which showed that, even in a temperate climate, nitrogen fixation by blue-green algae may make an important contribution. The importance of blue-green algae in pioneer communities was emphasized by Dr G. H. Schwabe (Plön, Germany), who discussed the colonization of volcanic substrates on the island of Surtsey, Iceland.

Dr N. G. Carr (University of Liverpool) presented evidence suggesting that enzyme repression mechanisms such as those found in bacteria do not operate, at least in tricarboxylic and amino-acid metabolism, in the blue-green algae. A new type of cyanophage, attacking *Anabaena cylindrica*, described by Dr R. N. Singhe and co-workers (Benares Hindu University) may be an infective RNA-containing virus with unusual morphology and reproduction linked directly to photosynthesis.