to above $10^8$ organisms per mouse before starting the drug, and then at intervals counting the bacilli. This procedure was very laborious and in the present paper he describes a kinetic method that takes advantage of the accuracy available in the logarithmic phase of the growth curve of *Mycobacterium leprae*. The drug is given for only a limited period early in the growth curve and its effect is measured by the subsequent delay in appearance of the logarithmic phase of growth.

The growth curve in control mice was monitored from pools of 4 mice, killed at monthly intervals, starting 3 months after inoculation. Soon after the bacterial population had increased to the normal plateau levels above $10^8$, counts were made on similar pools of 4 mice from each of the treated and control groups, and the counts were repeated after intervals of 3 months. The drugs examined in the diet were DDS, ranging from 0.1% to 0.00001%, isoniazid 0.01%, 4,4'-diacetyl-diaminodiphenylsulphone (DADDS), thiambutosine (diphenylthiourea, DPT) and p-aminosalicylic acid (PAS); streptomycin, 2 mgm. thrice weekly, was injected. Some of the drugs were given in combination. In interpreting the results, 2 simplifying assumptions were made: (i) that after the beginning of administration of an effective drug the cessation of bacillary growth is rapid enough to prevent significant increase in numbers of bacilli, and (ii) that as soon as the inhibitory drug disappears from the tissues, bacillary growth begins at the rate observed in the control.

The results are given in tabular and in graphical form and they show that none of the treatments eradicated the infection. Streptomycin 2 mgm. thrice weekly and 0.1% DPT in the diet were each bacteriostatic. Isoniazid 0.01% and PAS 0.6% in the diet were each inactive. DDS 0.01% in the diet was bacteriostatic and probably partially bactericidal, the killing rate being estimated not to exceed 77-84%, 0.1% in the diet was no more effective. The combination of 0.01% DDS with either streptomycin or DPT was no more effective than DDS alone and isoniazid appeared to antagonize the antibacterial effect of DDS.

S. R. M. Bushby.


Elongation in vitro of *Mycobacterium lepraemurium* was described by Hart (*Int. J. Lepr.*, 1965, 33, 504) and by Hart and Valentine (*Trop. Dis. Bull.*, 1964, 61, 51) and it is a possible guide to the complete cultivation of this organism, but the method used by Hart and Valentine involved the risk of damage through centrifugation and washing for removal of the high concentrations of sucrose in the medium used for culture. The slide culture method is used in the present experiments.

Smears are prepared from lepromas which have been homogenized in sterile water and suspended in 0.1% bovine albumin V fraction. After being dried at room temperature the slide is immediately placed in the medium described by Hart and Valentine, but with slight modification, and incubated at 37°C for periods up to 30 days. A slide is fixed immediately after drying to serve as a sample of the initial inoculum. For fixation, the slide is transferred to 10% formalin water; it is then well washed and stained by Ziehl-Neelsen's method. For assay of elongation, photographs are made of the slides to give a final magnification of 1,000.

In this method, elongation was observed at pH 6.0, but not at pH 8.0. Infectivity activity of the bacilli was parallel to grades of elongation for 15 days after incubation, as judged by the ability of a 10% lepromatous suspension to produce lepromas in mice after incubation under the same conditions as the slide. However, after incubation for 30 days at pH 8.0, but not at pH 6.0, infectivity was still maintained, even though no elongation occurred at this pH value. Hart and Valentine observed that elongation gradually continued for about 2 months after incubation, but in view of the loss in infectivity it is doubtful whether elongation after incubation for this period represents a vital process.

Further studies on factors affecting the elongation phenomenon observed by this method are now in progress.

S. R. M. Bushby.

**OBITUARY**

Cyril I. Crowther

The Leonard Wood Memorial in particular, and leprosy workers throughout the world, mourn the loss of a most distinguished layman who for 8 years was President of the Memorial. He died on 27 October, 1968, at the age of 73. It was during his term as President that the Memorial founded leprosy research units at John Hopkins University (Baltimore), in Washington, D.C. (including studies by electron microscopy), and in Cebu, Philippines. Cyril Crowther was the genial and gracious stimulator of these and other projects. Ever mindful of the need for training young scientists in leprosy research, he encouraged the Memorial to develop its programme in this field. We salute a real friend of leprosy and leprosy workers, and express to his widow, his children and grandchildren our sincere condolences.