

LEAGUE OF NATIONS

C.H./Malaria/256.

Geneva, March 31st, 1938.

HEALTH ORGANISATION

MALARIA COMMISSION.

The Secretary of the Malaria Commission has the honour to communicate the attached note by Lieut. Colonel G. Covell, member of the Commission for India, on:

"CERTAIN NATURALISTIC METHODS OF LARVAL CONTROL
EMPLOYED IN INDIA".

1. FISH. The use of larvicidal fish as an anti-mosquito measure was advocated in Bombay by Aitken in 1900, and has been practised in the wells in that city since 1902. Two local species, Anabas scandens and Haplochilus lineatus, were used for some years in the wells. More recently these have been stocked with gambusia.

Sweet has used gambusia with success in the wells in Bangalore and Mysore in recent years and has supplied these fish to many workers in southern and eastern India. A gambusia hatchery has been maintained at the Field Experimental Station of the Malaria Survey of India, Karnal, since 1929, and numbers of these fish have been supplied for larvicidal purposes throughout India.

There is, however, very little scope for this method of control in Northern India, because so many of the breeding places dry up completely in the hot weather, whilst those which contain water all the year round are seldom suitable for the malaria-carrying species of Indian anophelines.

2. SLUICING & FLUSHING. The method of flushing a stream by opening a sluice-gate in a dam at the intervals was originally recommended by Graham in 1913, and has been practised in the Gumti River, Lucknow, continuously since 1916. The gate of the weir is dropped at 5 a.m. every Sunday and raised again at 12 noon the same day. The effect is to lower the river level by about 3 feet at the weir, and larvae are flushed out from various stormwater drains opening into the river above the dam, in which the water is headed up during the week. (Raja Ram, 1935).

The treatment of streams in narrow valleys by damming and sluicing has also been practised by Ramsay in Assam. In the case of narrow valleys where the central stream and lateral seepages form extensive breeding grounds, he converts the whole into a series of lakes by means of small dams. Breeding at the periphery of these lakes is controlled by periodical alterations in the water level by means of sluice-gates.

3. GROWING OF DENSELY SHADED TREES AND BUSHES OVER BREEDING PLACES. This method has been used extensively by Ramsay in Assam and Bengal on Tea Estates, where the entire population of coolies is under disciplinary control. Narrow streams are protected by a double hedge of dharanta, eupatorium, lantana, bougainvillia, or bahok. Swamps are planted with a dense growth of tarapat or similar vegetation, whilst the edges of tanks are shaded with bamboo matting. These measures have been very successfully used in dealing with the breeding places of A. minimus, the principal carrier in Assam, a species which requires clear relatively cool water exposed to sunlight and containing vegetation.

Similar methods have been practised by E.M. Rice also in Assam. This worker has evolved what he calls a 'Shaded Broad Drain Method' intended to collect highland seepage water, preventing it from flowing on to the rice land by leading it through broad channels in which tarapat growth can be established. The channel is not less than 15 feet broad. Even in the dry weather its bed is kept wet by seepage water, providing a suitable place for an extremely heavy growth of tarapat.

Until the growth of dense shade-giving vegetation is fully established, breeding is dealt with by the application of paris green. Once it is fully established, tarapat grows to such a density that cattle do not readily go through it.

4. HERBAGE COVER METHOD OF LARVAL CONTROL. This method has been used with success by Senior White in the vicinity of certain stations on the Bengal-Nagpur Railway. The method is based on Williamson's experiments in Malaya. Shallow water is covered with packed grass, or with leaves of trees, with a few twigs intermixed, so as to form a brushwood drain. The herbage is trampled under foot till it forms an almost solid layer, a foot or more in height. Williamson's object was to prevent mosquitoes from laying their eggs in the water, and to render the water unsuitable for the breeding of malaria-carrying mosquitoes by contaminating it with rotting vegetation. In his experiments in India, Senior White found that ovipositing mosquitoes could penetrate the packing in large numbers, and is of opinion that the value of the method depends chiefly on the changes produced in the composition of the water. He gives a full account of some field trials of this method in the paper listed among the references at the end of the note.

Ramsay has also controlled breeding places in Assam by contamination of water by locally cut jungles and domestic refuse. The latter method was used many years ago on the North-West Frontier of India by Sinton.

5. SILTING. A method which has been used by Strickland and Murphy in Assam consists of diverting a silt-bearing stream through a marsh, whereby the marsh is converted into sandy flats.

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