

# NATURE SOMETIMES FAILS

*Comment by Sir Theodore Rigg*

**S**IR STANTON HICKS is sceptical of the use of artificial fertilisers, and applauds the ancient practice of the Chinese and Japanese people in returning to the soil all excrements from the resident population. As a result, he says, the healthy soils of those countries produce healthy food which in turn produces healthy men.

Sir Stanton does not define a healthy soil or a healthy plant, nor does he mention any criterion or measuring stick for healthy men. How then shall we measure health in man? Unless our data on this matter are reliable and accurate, our conclusions concerning healthy soils will likewise be invalid.

A common measure of health in man is the death rate per 1000 of population. In New Zealand the death rate is the lowest in the world, 9 per 1000 against over 20 per 1000 in China and 17.6 per 1000 in Japan. The expectancy of life in both China and Japan is much lower than that in New Zealand. If we compare the production of farm products in New Zealand and China we find that the New Zealand farmer produces goods valued at £500 per annum compared with £19 per annum for the Chinese farmer. The Japanese farmer owing to the use—albeit in only small quantities—of artificial fertilisers has a higher production than the Chinese farmer.

## An Incorrect Assumption

The assumption that nature produces healthy soils containing all the necessary elements for plant and animal life is incorrect. Nature does her best with the resources available but if elements are present in the parent rocks in small quantities only, the soils produced by nature will be deficient in these elements. Many classical illustrations occur in New Zealand of such deficiencies.

Cobalt essential to healthy stock is a case in point. This element is deficient in large areas of volcanic soil in the Rotorua district, in the granite soils of Nelson and the West Coast and in the loess soils of Southland.

Until cobalt was identified as a nutritional element and a deficiency of cobalt in these soils ascertained, stock sickness was widespread over extensive areas of the soils enumerated above. Today the use of 4 ozs. Cobalt Sulphate per acre has remedied the trouble and enabled hundreds of thousands of acres to be used for dairying and fat lamb production.

Similar instances of boron, phosphate and other deficiencies are well-known on the soils of New Zealand. They have

been corrected by the use of the appropriate fertiliser with splendid results to New Zealand agriculture and the welfare of our population. Such soils would receive comparatively little benefit from the return to the soil of excrements from resident population, depending entirely on the food grown on those soils.

Nature has produced both fertile and infertile soils in New Zealand. All are



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subject to change over long periods of time. Soils which many years ago were highly fertile and covered by luxuriant bush are to-day barren and useless, e.g. the iron-stone soils of North Auckland once clothed with kauri and the Pakihi lands of the West Coast of the South Island once clothed with forests. In both cases the growth of the forests combined with the leaching action of rain has destroyed the soils. They stand to-day a witness not of man's ill-treatment but of deterioration under natural conditions of plant growth.

## No Closed Cycle

If deficiencies such as have been described do occur, how can any closed cycle mentioned by Sir Stanton give a healthy soil? Such a closed cycle—the return to the soil of what has come out of the soil—can never overcome the deficiency of particular elements. As a matter of fact, the closed cycle mentioned by Sir Stanton does not exist. Nature is slowly leaching even the best alluvial soils if the rainfall is normal; and the Chinese and the Japanese do not return to the soil the relatively large amounts of lime and phosphate contained in the skeletons of their multitudinous dead. In China, the removal of lime and phosphate from the soil by this means must be prodigious over the centuries. The annual number of deaths is about eight million.

The consensus of opinion of agricultural experts who have studied the soils and crops of China is that the use of phosphatic fertilisers would increase crop production by at least 25 per cent.

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