

INDUSTRIAL FLUOROSIS OF FARM ANIMALS IN  
ENGLAND, ATTRIBUTABLE TO THE MANUFACTURE  
OF BRICKS, THE CALCINING OF IRONSTONE, AND TO  
ENAMELLING PROCESSES

By

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INTRODUCTION

IN the summer of 1938 one of us (F. B.) was called in by veterinary practitioners to advise on the possible causation of a "mysterious lameness of cattle" near Stewartby, in Bedfordshire. Clinical examination and proximity to a large concentration of brick kilns suggested "industrial fluorosis" of the type described early in the century by Bartolucci (1912), in association with a superphosphate factory in Italy, and this diagnosis was quickly confirmed by pathological and chemical examination of the bones of animals slaughtered for the purpose. Enormous values for fluorine were found, 1.0 to 2.7 per cent. expressed on the bone ash, as compared with normal values of the order of 0.05 to 0.08 per cent. During life, affected animals were found to be excreting large amounts of fluorine in the urine, even up to 68 parts per million as compared with less than five parts per million in urine of cattle from other areas, and analysis of urine, hay and pasture grass, was adopted as a means of mapping the affected area.

Because of pending litigation, the extensive studies made in 1938 and 1939 were not published in full at the time, but a discussion was opened at a symposium on fluorosis at the Royal Society of Medicine and a brief summary published in the Proceedings (Blakemore *et al.*, 1941).

Early in 1946 two further outbreaks of industrial fluorosis were encountered, one in association with the open air calcining of ironstone in Lincolnshire, and the other in association with a colour and enamel factory in Staffordshire. The former has been briefly reported upon by Green (1946) without full protocols. The latter, identified by D. W. P. Bythell, and further investigated on the biochemical side by Green, has been briefly referred to in the paper by Boddie (1947), but detailed protocols have not yet been published.

In the interval, the problem of fluorosis in farm animals in association with aluminium factories in Scotland was investigated by Boddie (1945, 1947), and the present writers have been frequently consulted by the Ministry of Health, Ministry of Agriculture and others in relation to fluorine hazards associated with industrial

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\* Clinical and pathological studies undertaken by F. Blakemore and T. J. Bosworth. Biochemical work by H. H. Green.