items of a more hopeful and immediately practical nature, though expressed in very guarded terms.

Surely there is enough positive evidence that some of these methods have an effect. If results are conflicting there must be a reason for it capable of discovery. It may be possible to improve the composition of oral vaccines, preferably in the first instance by studies in animals: *Salmonella* infection in mice might permit large-scale work at no great cost. Controlled trials in man on an adequate scale present far greater difficulty, but the undertaking of them in places where typhoid is endemic should be considered.

1 World Health Organization, *Technical Report Series*, No. 500. Geneva, W.H.O., 1972.
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3 Mel, D. M., Arsic, B. L., Nikolic, B. D., and Radovanic, M. L., *Bulletin of the World Health Organization*, 1968, **39**, 375.
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Fluorides and the Prevention of Dental Decay

Recent official publications[1 2] have again emphasized the importance of an optimum ion level in the drinking water as a means of reducing dental decay. Extensive investigations in many parts of the world, including the United Kingdom, have shown that in areas where the concentration of the fluoride ion in drinking water is approximately 1 p.p.m., either present naturally or artificially added, the average amount of dental decay is halved. Few studies have been on adults, but recently J. J. Murray[3] has clearly shown that the protection from decay so evident in children continues throughout life. When a comparison was made between the adults, it was shown that people aged 65 in Hartlepool had the same average dental decay as 19-year-olds in York. But opposition to the fluoridation of public water supplies continues, and so effectively that in 1962, six years after the introduction of fluoridation, the Scottish burgh of Kilmarnock discontinued it. The results of doing so were that the decay in the children's teeth returned to the pre-fluoridation levels.[4]

The slow progress towards water fluoridation on a national scale had led to a search for alternative methods of supplying fluoride. Tablets, each containing 2·21 mg of sodium fluoride, when dissolved in 1 litre of water provide a concentration of 1 p.p.m. This is an effective means of administering fluoride, but in practice it is tedious to keep up year in and year out and unlikely to succeed among any but the most enthusiastic and dedicated of parents.

Other methods of administering fluorides include the use of fluoridated milk and salt. The question of fluoridated milk has received publicity in recent years, but a leading article published in the *British Dental Journal*[5] did not regard the measure as viable. Salt is widely used and can be fluoridated at a very low cost. A recent report by a W.H.O. Scientific Group[1] recommends that if investigations now in progress confirm the efficacy and safety of the procedure it should be put into early and general use. But the group added the proviso that adding fluoride to salt should be confined to areas where water fluoridation is not feasible.

For many years attempts have been made to assess the value of fluorides applied to the teeth after their eruption into the mouth. Early surveys produced equivocal data, but more recently a steady stream of reports have been appearing which have established the efficacy of the various methods. Solutions of stannous fluoride 8% and 10% and solutions of acidulated fluorophosphate 1·23% applied to the teeth regularly by the dental surgeon have reduced the incidence of cavities in children by 30-40%. These solutions have largely been superseded by the acidulated fluorophosphate gel, which is more pleasantly and conveniently applied to the teeth in soft, plastic, closely-fitting trays.

Fluoride toothpastes with a fluoride level of 1,000 p.p.m. have been available in the United Kingdom since the early 1960s. The original of these pastes contained stannous fluoride, but at present the only fluoride pastes available in the British market contain sodium monofluorophospate as the active ingredient. Early clinical trials carried out in the U.S.A. showed remarkable reductions in the incidence of caries in young children, but later studies, including five U.K. trials reported simultaneously in 1967,[6] showed more modest but still clinically valuable reductions. In one of the British studies M. N. Naylor and R. D. Emslie[7] found that fluoride toothpastes exerted their maximum effect on newly erupted teeth, and they postulated that if used regularly and conscientiously such pastes give protection during the period of maximum susceptibility to decay—namely, the first year or so after eruption.

Another form of home application is the mouth rinse containing low concentrations of fluoride. These rinses have been shown in Swedish studies to reduce considerably the number of new cavities in children.[8]

In Britain today an increasing number of general dental practitioners are carrying out and advising on measures for preventing dental decay by means of the topical administration of fluorides in the form of solutions, gels, rinses, and toothpastes. New methods and vehicles are regularly being devised, and at present interest is being generated in the combined use of gels and toothpastes. But enthusiasm for this kind of approach must not obscure the advice that water fluoridation is the most effective method of reducing decay and is entirely safe.

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Histidinaemia

First recognized in 1961, histidinaemia is an inborn error of metabolism in which the amino-acid histidine cannot be metabolized to urocanic acid owing to the absence of the enzyme histidase from skin and liver. Since its first description there have been a number of case reports and family studies each describing one or two children with the disorder, and it is timely that B. G. R. Neville and his colleagues[1] should review these and add seven more from their own experience.

Cases of histidinaemia were first discovered in the in-