

MEDICAL MATTERS.

THE BACTERIOLOGY OF TOOTHBRUSHES.

In a paper presented in the Section of Odontology, at the meeting of the British Medical Association, and published in the *British Medical Journal*, Mr. Herbert Smale, M.R.C.S., and Dr. D. W. Carmalt-Jones presented a paper embodying the results of some experiments on the bacteriology of toothbrushes, the objects of which were to determine by a rough quantitative method the numbers of bacteria to be obtained from a bristle of a toothbrush in constant use, and to find a means of reducing those numbers by the use of various antiseptics. As a result of these observations, they offer some suggestions on the treatment of toothbrushes, with a view to promoting the hygiene of the mouth.

The importance of oral sepsis as a cause of disease is a matter which is receiving an increasing amount of attention every day, and has had of late some brilliant exponents, those especially worthy of note in this country being William Hunter, who has traced many cases of severe anæmia to this cause, and Kenneth Goadby, whose most recent work on the subject deals with arthritis produced by an organism of the mouth. All recent advance in the study of infection is due to the recognition of bacteria as a cause of disease, and the knowledge that they gain entrance to the tissues through some breach of surface. The presence of pathogenic bacteria and an abraded surface of mucous membrane are both conditions readily to be found in the mouth.

As is well known, bacteria are always present in mouths in nearly infinite variety, and several types of organisms can always be cultivated therefrom on the media in common use.

The obvious duty of the dental surgeon is, therefore, to see to it that the mouths of his patients are, as far as in him lies, kept aseptic, and for this purpose to take care that all overhanging edges or ledges where food can get retained are removed or corrected. No pains on his part to ensure this can be too great; further, it is his duty to instil into the minds of his patients the necessity of personal effort on their part to attain this object. To be a genius in keeping one's mouth clean there must be developed the infinite capacity for taking pains.

The toothbrush, quill toothpicks, and floss tape or bass are all necessary for really efficient tooth cleaning. It is quite a difficult process, as you all know, to remove effectually all the scurf of Leuwenhoeck, and yet it is essential, if decay is to be prevented, that all nidus; such

as epithelial débris or food, upon which bacteria can flourish shall be removed.

It may be urged that it is hopeless to labour for such a Utopian condition of mouths, and that, in spite of all efforts, they will be septic; carried to its legitimate end, this argument would lead to the abolition of all cleaning, except that which Nature has provided by mastication, but until we return to the condition of the beasts that perish, which is neither desirable nor probable, and while the public eats such food as is now usual, it is essential, and one would think compulsory, for every effort to be used to render the mouth and teeth as clean as possible.

Each of the instruments employed—namely, bass, toothpick and toothbrush—clearly becomes infected with bacteria at once, and is rendered unfit for surgical use, and the question arises how to treat them. Bass no one would use a second time; the toothpick reflective people will also throw away, but the toothbrush is a different matter. Considered from a bacteriological point of view, the toothbrush is infected with septic material, which is not removed, the brush is merely rinsed, not subjected to any sterilizing process, and left on the washing-stand till next time. When next used it is open to two objections: first, septic organisms are introduced into the mouth generally (though, in view of the condition of that cavity, this may be no more than carrying coals to Newcastle); and secondly, an infected instrument, consisting of numerous sharp points—bristles—is used for the scrubbing, and consequently scarification of the gums, and this is obviously a very unsurgical proceeding.

Experiments conducted with the object of ascertaining the condition of toothbrushes after use proved that a bristle from a toothbrush, which had been in use for some months, twice a day, with a tooth-wash, yielded a very extensive growth of bacteria at the end of forty-eight hours, mostly staphylococci and streptococci, and a few coliform bacilli.

This was as expected, for the toothbrush was well-infected and in a very unsanitary condition. But a new toothbrush was obtained, boiled for 15 minutes, and an observer cleaned his teeth, rinsing the brush after use. A bristle was taken at once, placed in a broth tube, and incubated for 24 hours; the result was that a thick growth was found all over the agar tube. As a control experiment, another bristle was taken before the brush was used, and treated in a similar manner, but no growth was visible after 36 hours, proving that the brush was sterile before use.

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