Silicone Fluid for Sterilization of Dental Hand Pieces

The use of oil heated to high temperatures has been suggested for the sterilization of dental hand pieces. The advantages of oil are that it can be heated to a temperature capable of killing bacteria and that it prevents rusting and dulling and at the same time lubricates metal instruments. The disadvantages are the objectionable odors produced by the cracking of oils when heated at a temperature sufficiently high to kill bacteria, and the low flash points of some of the suggested oils. The addition of aromatic oils has been advocated to mask the odors produced by the cracking of oils. This is not a satisfactory procedure.

We have found that a silicone fluid manufactured by the Dow Corning Company has all the desirable and none of the objectionable features of oil. This fluid had no odor after being held at a temperature of 300° F for more than 1,500 hrs. It has a flash point of 600° F.

Mixtures of freshly isolated saliva, blood, and a culture of *B. subtilis* were used to test the sterilizing efficiency of the silicone fluid. The bacteria were killed when the oil was held at a temperature of 300° F for 10 min, but not at 5 min.

At the present time we are using this method of sterilization only for dental hand pieces. We have reason to believe that it can also be used for hinged metal instruments as well as those that are apt to rust or dull when autoclaved or boiled. Tissue tolerance tests, and the effect on the clostridium group of organisms are now under study. Rubber and cemented instruments cannot be sterilized by this method.

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Varves in the Bed of Lake Erie

In the *Ohio Journal of Science*, 1943, 43, 195–197, Prof. Ira T. Wilson reported a total of 12,223 varves from Sandusky Bay in Lake Erie, representing the minimum time lapse from the Late Maumee stage through the Elkton stage of cold glacial waters. This report has not received the attention it deserves because of doubt that varves were actually present.

Prof. Wilson's method of demonstrating the varves in his smooth clay cylinders was to tear them apart longitudinally. The thin silt layers broke apart at once, but the thicker elastic layers were drawn out into a ragged series of tapering plates before breaking. While these plates could be counted, the general appearance was very different from the graphic color bands ordinarily used in varve counting. This may account for a certain amount of skepticism.

I have just had the opportunity to inspect sampling operations of Prof. Wilson and Alex Ross in southern Lake Erie, east of Green Island, and to secure a core which they consider to be of glacial origin and varved in the same manner as the Sandusky Bay material. Using a simple method which I have employed to find laminations in peat (*Ecol.*, 1932, 13, 1–6), I froze the material. The ice crystals in the thin layers of coarse material forced the thicker layers apart, giving an appearance much less questionable than that of the jagged plates obtained by tearing. Shaving the side of the frozen core with a safety razor gave a beautiful preparation which leaves no doubt in my mind that varves are present. However, material from the open lake, as might be expected, shows some lenticular intrusions in the varve series.

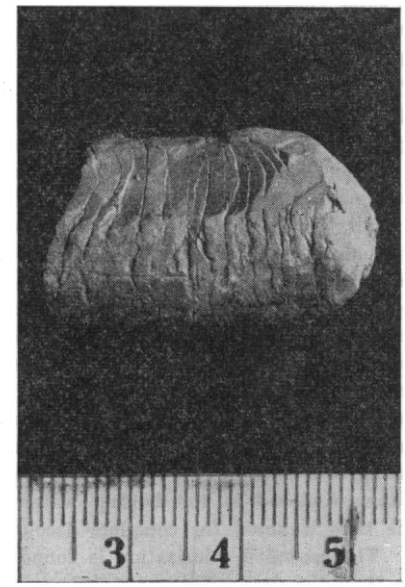

FIG. 1

Fig. 1, taken against a millimeter scale, shows fairly well the effect of freezing. Unfortunately, this core was accidentally thawed, refrozen, and dried before a photograph could be taken. Since drilling has been suspended for the year, fresh specimens are no longer available.

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