A METHOD OF STERILISING SPONGES.

BY F. W. ANDREWS, M.D. OXON., F.R.C.P. LOND.,
PATHOLOGIST AND LECTURER ON PATHOLOGY, ST. BARTHOLOMEW'S HOSPITAL, ETC.

A YEAR or more ago I published, in conjunction with Dr. K. J. P. Orton, the results of a study of the disinfectant action of hypochlorous acid.\(^1\) In that paper we showed that in the presence of easily oxidisable organic matter hypochlorous acid is one of the most intense germicides known, even anthrax spores being killed in one minute by a 0.01 per cent. solution. In the presence of much organic matter the pure acid is comparatively inert but we described a combination of ammonium persulphate with hydrochloric acid in which practical advantage may be taken of the high activity of hypochlorous acid as a disinfectant, even in presence of moderate amounts of organic matter. It is to this combination that I wish to draw attention in connexion with the sterilisation of sponges.

The credit of first devising, for practical use in surgery, a highly active disinfection of hydrochloric acid with an oxidising agent belongs to Kröng and Paul.\(^2\) The mixture which they recommended—a 1 per cent. solution of potassium permanganate to which 1 per cent. of strong hydrochloric acid has been added—will kill anthrax spores in less than one minute. It retains its efficiency for more than four days after being made up and it acts with no staining powers and no injurious action on the skin, though it may fix blood stains in the crevices of the nails. It was as a skin disinfectant that we chiefly suggested its use, and I have successfully employed it for some time. Mr. W. Bruce Clarke, who tried it for a time in his surgical practice, had on one occasion some eczema of the hands after he had been operating for a whole afternoon, but others have not had this experience.

But whether or not the persulphate mixture proves a suitable skin disinfectant I feel very sure after several trials that it is one of the best and speediest means for sterilising sponges which can be found. I have subjected it to tests for the purpose of preparing sponges for use at the London Hospital and for University students at Guy's Hospital; Mr. M. W. Flack, B.A., Keble College, to a Price (University) scholarship for University students at the London Hospital; and Mr. J. F. Hornsey, B.A., Oriel College, to a scholarship for University students at Brasenose College. Professor Osler will commence his course of instruction introductory to the study of practical medicine on Monday, Oct. 16th.

I would emphasise two facts in connexion with this method. First, the persulphate mixture should have been made up at least four days before use but preferably not more than a month. Secondly, the method does not do away with the necessity for preliminary mechanical cleansing of the sponge. In this I differ from the writer of the discussion who states that the persulphate mixture will sterilise an hour is ample; the sponges should then be made up after having been soaked three times in succession with soap. After five minutes it should be mechanically under a hot water tap, scrubbing it two or three times with soap. After this I think one should not add the persulphate mixture, but I would prefer to make the sponge sterile by the persulphate mixture they can be sterilised with certainty in an hour, for by the cystic duct alone being obstructed, the area of the essential matter of the broth rapidly decomposes the hypochlorous acid. After four days' incubation at blood heat both tubes remained absolutely sterile. More than this, I left the sponge to stand in the persulphate mixture for four days and at the end of that period it came out beautifully bleached and looking like a new sponge. Nor were its texture and elasticity in any way impaired. This is only one out of several similar experiments which I have performed on sponges and it will be admitted that it can hardly have been exceeded in severity.

Some of the methods in common use for the preparation of sponges for surgical purposes occupy several days. By this method they can be sterilised in less than a day whereby considerable economy in the stock of sponges required can be effected. Moreover, discoloured sponges can be bleached and renovated. For this latter purpose a solution of potassium permanganate is probably the best mixture. The expense of sterilisation an hour is ample; the sponges should then be rinsed in sterile water and stored in carbolic solution. This is advisable because the persulphate does exercise a certain bleaching effect on these sponges. I find that if they are left soaking in the mixture for three or four weeks they become softened and eventually disintegrate, hence the shorter the sojourn at each sterilisation the longer will be the life of the sponge.

The marine sponge is so superior in absorbent power to its substitutes that any method which seems likely to insure its preservation should be thoroughly tried and a supply worth of trial. This is my reason for publishing the foregoing note.

Pathological Laboratory, St. Bartholomew's Hospital.

UNIVERSITY OF OXFORD.—Mr. C. G. Douglas, B.A., Magdalen College, has been elected a senior scholarship for University students at Guy's Hospital; Mr. M. W. Flack, B.A., Keble College, to a Price (University) scholarship at the London Hospital; and Mr. J. F. Hornsey, B.A., Oriel College, to a scholarship for University students at Brasenose College. Professor Osler will commence his course of instruction introductory to the study of practical medicine on Monday, Oct. 16th.

\(^1\) Centralblatt für Bakteriologie, vol. xxxv., pp. 645 and 811.
\(^2\) Zeitschrift für Hygiene, vol. xxv., p. 73.