

Administration of oxygen was carried out almost continuously as the patient's face and extremities were extremely cyanosed; a further injection of camphor was given at 12.45 p.m. At 1.30 p.m., a saline enema of five ounces was retained, and during the afternoon the patient appeared to be holding his own; there was a very faint pupillary response to light from 2 till 3 p.m.; an enema of coffee and saline was retained at 4 p.m. At 5.45 p.m. the pulse rose from 116 to 128 and began to fail considerably; an injection of $\frac{1}{60}$ grain of strychnine hydrochloride was given, and at 6.15 p.m. a further injection of camphor, but the pulse became rapidly weaker and almost imperceptible, and at 7 p.m. the patient suddenly expired, approximately twelve hours after drinking the poison.

The following notes are extracts from a post-mortem report made by the Medical Specialist, Major W. E. K. Coles, R.A.M.C.:—

“ . . . No staining of the lips or mouth . . . the stomach contained free fluid smelling strongly of the chemical referred to . . . the whole of the gastric mucosa was very hyperæmic, but there were no perforations . . . kidneys normal in size, slightly congested. . . . Heart, liver and spleen appeared normal. . . . The alveoli of the lungs showed signs of acute congestion.”

A suggestion was forwarded to General Headquarters by the Assistant Provost Marshal that this silk cleansing fluid should be kept under lock and key, and should be labelled poison, and an order to that effect has been issued.

I am indebted to Colonel J. Tyrer Johnson, D.S.O., Deputy Director of Medical Services, The British Troops in Egypt, and Major L. Murphy, D.S.O., R.A.M.C., Senior Medical Officer, Abbassia and Helmieh, for permission to forward these notes for publication.

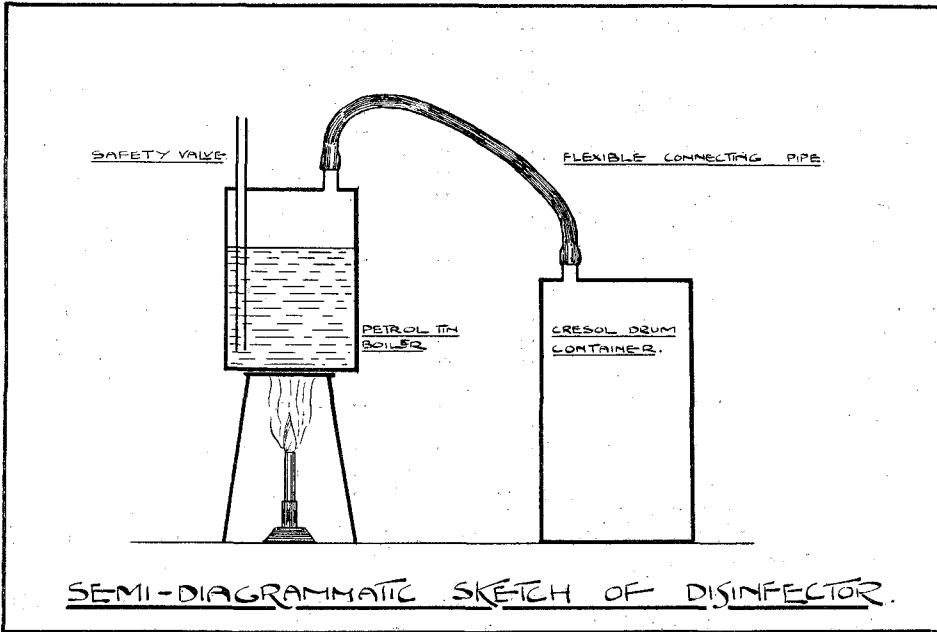
A PRACTICAL TEST OF THE LETHAL ACTION OF STEAM AND FORMALIN VAPOUR ON SPORE-BEARING ORGANISMS AND BUGS.

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THE apparatus required for the experiments was improvised from a length of rubber tubing, a two-gallon petrol can and a cresol drum with a capacity of 1,350 cubic inches. The petrol can was fitted up as a boiler, a Bunsen burner supplying the necessary heat. The cresol drum with the bottom cut out made an admirable substitute for a Lelean sack. A length of rubber tubing (ordinary garden hosepipe) connected the two tins, the hose connections being in each case at the top (see sketch).

The organism chosen was one of the subtilis group and was isolated from horse manure. A luxuriant growth was obtained on agar plates. A

cotton-wool swab was contaminated with the growth and an agar slope was inoculated as a control. The swab was placed in the cresol drum and steam passed in at the top; the swab was in contact with the steam for ten minutes. After removal another agar slope was inoculated from the swab. This slope was incubated for twenty-four hours and a profuse growth was obtained.



This process was repeated with lengthening periods of contact with the steam, with the following results :—

| Period | Result |
|------------|--------|
| 10 minutes | + |
| 10 " | + |
| 10 " | + |
| 15 " | + |
| 15 " | + |
| 15 " | + |
| 30 " | + |
| 30 " | + |
| 30 " | - |
| 45 " | + |
| 45 " | + |
| 45 " | + |
| 60 " | + |
| 60 " | - |
| 60 " | + |

+ = Growth obtained after contact.
 - = No growth.

It follows, therefore, that even one hour's exposure to steam is no guarantee of sterility from sporing organisms.

Five hundred cubic centimetres of formalin were added to one gallon of

water and put into the boiler. A powerful pungent vapour was given off necessitating the use of gas masks.

Swabs were again inoculated with the organism, and controls were again put up and showed a profuse growth.

The swabs were placed in contact with the formalin-impregnated steam for the following periods :—

| Period | Result |
|------------|--------|
| 30 minutes | — |
| 30 " | — |
| 30 " | — |
| 20 " | — |
| 20 " | — |
| 20 " | — |
| 15 " | — |
| 15 " | — |
| 15 " | — |
| 10 " | — |
| 10 " | — |
| 10 " | — |
| 5 " | — |
| 5 " | — |
| 5 " | — |
| 3 " | — |
| 3 " | + |
| 3 " | ++ |
| 3 " | ++ |
| 3 " | ++ |

This shows beyond doubt that five minutes' exposure to the steam and formalin vapour is the minimum period of exposure for the destruction of spore-bearing organisms.

To demonstrate the lethal powers of formalin-impregnated steam on vermin, the following experiment was carried out.

A number of well-fed bed bugs was used. They were placed in the top and bottom corners of a room of 2,934 cubic feet of air space. The bugs were in small test tubes, the tops of which were covered with gauze, to allow free access of the vapour. A petrol can boiler was again used. Into this one gallon of water and 500 cubic centimetres of formalin were placed. This was brought to the boil in the room. The room was then sealed and left for one hour, during which time the water had been boiling continuously. The room was then opened and the vapour allowed to disperse. All the bugs were found to be dead.