There were three tracheotomies (including one emergency laryngotomy) and eleven haemorrhages necessitating ligation of the external, and three of the common carotid. These three latter are all living, and apparently not suffering any discomforts as a consequence of this operation.

NOTE ON FLAVINE, SODIUM DESOXYCHOLATE, AND QUININE AS A MOUTH-WASH.

BY

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In the estimation of the value of chemical substances at present employed as antiseptics in the mouth and throat there is a sharp division of opinion as to the advisability of employing antiseptics in the treatment of infections where the chemical is brought in contact with such a delicate structure as the mucous membrane. Any chemical which would act as a bactericidal agent, which at the same time would not destroy the life of cells and inhibit phagocytosis, and which could be applied to such a delicate surface as the mucous membrane without causing an irritant action, would satisfy a long-felt want in mouth and throat treatment.

I have in the course of the last ten months examined a series of substances comprising the principal antiseptics, washes, lozenges, pastilles, etc., in common use.

Neufeld has shown that bile salts have a solvent action on pneumococci, but not on other bacteria. Bile salts also dissolve completely leucocytes, spermatozoa, amoebae, spirochaetes, and trypanosomes.¹ Mair has brought evidence to show that scarlet fever is due to a pneumococcus-like organism which is also bile-soluble,² and has indicated that there is reason to believe that "trench nephritis" is due to a similar bile-soluble diplococcus. Mair found that the solvent action on pneumococci of sodium desoxycholate was ten times as powerful as sodium cholate or the commercial sodium taurocholate.³

These bile-soluble diplococci show also a special sensitivity to solutions of quinine, and there is evidence that a combination of desoxycholate and quinine has a much greater bactericidal effect on them than can be accounted for by a mere summation effect.

A solution with the following formula:

Quinine hydrochloride	...	...	5 grams.
Sodium desoxycholate	...	...	40 "
Glycerin	...	...	250 c.cm.
Water	...	...	to 1,000 "

has been in use in the form of a fine spray for the throat and nose in cases of scarlet fever for some months, with results so far satisfactory that they show that the treatment does no harm, and that septic throats clear up with it at least as rapidly as with any other form of treatment.

Messrs. Allen and Hanburys are now preparing tablets containing:

Sod. desoxycholate	...	...	gr. 1
Quin. ethyl. carb.	...	...	gr. 1
Ol. menth. pip.	...	...	m. 30
Glycyrrhiz. ammon.	...	...	gr. 2

Also with flavine 1 in 1,000.

The quinine desoxycholate solution has a considerable bactericidal effect also on other cocci which are not bile-soluble, and in the strength used it appears to have no irritant effect on the mucous membrane.

The method employed to test the value of the preparations checking the development of bacteria were all carried out in the same month; only one test was made in twenty-four hours. The mouth was first rinsed thoroughly with distilled water, and after thirty minutes the saliva was expectorated from the mouth into a sterile test tube, and then a loopful inoculated into nutrient agar and plated. At the end of an hour another test was made in the same manner. These tests were used as controls. Immediately after the second control the substance to be tested was rinsed thoroughly over the mouth, and then tests made in the same manner every half-hour up to the fourth hour. Plates were incubated for twenty-four hours

and counts made. The most favourable results were obtained from a solution containing:

Desoxycholate	...	...	2 per cent.
Quinine	...	...	0.25 per cent.
Flavine 1 in 2,000.	...	...	

Judging from the chemical action of the desoxycholate and quinine tablet, it should be an excellent treatment for infected throats, as in the strength used in these tablets all the pneumococci strains are easily destroyed without causing any irritation on the mucous membrane. This pathogenic group alone is giving more trouble than any other strains to be found in the mouth and throat. Again, amoebae are very easily cleared out of the mouth with sodium desoxycholate and quinine in the strength used in these tablets, as I have found in cases of pyorrhoea caused by amoebae.

In the solutions containing desoxycholate and quinine and flavine the bacterial count, even after four hours, was in most cases considerably lower than the control before treatment, whereas with the more irritating antiseptic solutions the count rises rapidly after the initial fall until it reaches a figure in excess of the normal. I consider this secondary rise in the number of bacteria to be a useful indication of an irritant effect on the mucous membrane. The same difference is seen in comparing the effects of the 1 per cent. carbolic and the desoxycholate and quinine tablets. The latter do not show the same reduction in the number of bacteria as the corresponding solutions, possibly because the effect in the mouth is somewhat localized. At the same time the effect on the throat of the slowly dissolving tablet should be greater than that of a mouth-wash, as the swallowing of the saliva in which the tablet has dissolved keeps up a continuous action on the mucous membrane of the throat.

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ACRIFLAVINE PASTE AS A DRESSING FOR INFECTED WOUNDS.

BY

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Owing to the limited supply of acriflavine we have been using this reagent at Leicester in the form of a cream or paste, somewhat on the lines of the B.I.P. method recommended by Rutherford Morison, which has given good results in certain cases. Thorough and efficient surgical treatment of the wound is still a necessary preliminary, but the results so far obtained with acriflavine paste as an adjunct to such surgical treatment are sufficiently encouraging to justify a wider trial.

I speak of such injuries as lacerated wounds of soft tissues, compound fractures of limb bones, and of septic cavities in bones associated with osteomyelitis, which often resist repeated efforts at sterilization by scraping out, and the removal of foreign bodies and bony sequestra. It is these heavily infected, profusely suppurating wounds as we see them at the base hospitals that seem to be especially benefited by packing with acriflavine paste after preliminary surgical sterilization and drainage. Amputation wounds have also been treated by leaving a quantity of the antiseptic material between the lightly sutured flaps where the amputation has had to be carried through infected tissues.

Several different forms of cream or paste have been tried:

1. Acriflavine soap paste is made by neutralizing stearic acid with sodium carbonate in the proportion of 1 part of sodium carbonate to 1½ parts of stearic acid with the addition of 0.1 per cent. of acriflavine. The soapy compound so prepared is canary yellow in colour and firm in consistence.

2. Acriflavine gelatine is made by heating French gelatine in water with the addition of acriflavine 0.1 per cent. The consistence of the jelly is determined by the amount of water added.