CORRESPONDENCE

ON THE TREATMENT OF MUSTARD GAS BURNS IN THE EYE

To the Editors of The British Journal of Ophthalmology.

Dear Sirs,—The writer of a leading article in the British Medical Journal for November 4, 1939, makes the following statement:—In the improved protective measures rather than in improved methods of treatment lies the hope of counteracting the effects (of mustard gas on the eyes); for treatment of a gas injury, whether brought about by vapour or by liquid comes up against the fundamental difficulty that the effect of gas on a tissue is instantaneous, though there is some evidence that the prophylactic use of chlorinating agents will render a gas injury to the eye less serious.

The above statement may be timely in view of possibilities in the near future which may affect the civilian population as well as the members of the armed forces of the Crown.

There is some danger that enthusiastic ophthalmologists may advise remedies which will not assist nature. To take one instance, the application of cocaine, to alleviate pain, blepharospasm and the fear of impending blindness. One disadvantage of cocaine is the possibility of desiccation and exfoliation of the corneal epithelium, but the proponents of this form of therapy point to the alternative drugs pantocaine and procaine which do not threaten the cornea to the same degree. It is probably inadvisable, however, to use any local anaesthetic, (1) on account of the danger that the sufferer may himself cause damage to his cornea by friction with his finger directly or through the eyelid; (2) because the profuse outpouring of lacrimal fluid with its isotonicity and lysozyme content is probably the best bland lotion available, and an efficient local anaesthetic will diminish this beneficial result.

The other important question is whether any irrigation at all is desirable and, if so, whether such a measure should be carried out frequently and for long periods at a time. On the one hand there is experimental evidence which was quoted at the British Medical Meeting in Aberdeen that a drop of mustard gas oil applied to the animal cornea causes instantaneous damage, and that even immediate irrigation makes no difference to the subsequent result. Similar experimental results are also reported by Brevet-Col. L. T. Poole (Brit. Med. Jl., p. 972, 11: XI: 39). On the other hand, it has been noticed that the effect of gas on animals without lacrimation powers, such as the horse and mule, is more apt to produce extensive corneal damage than in man. M. Bonnefon also in his
paper (an abstract of which appears on p. 788) remarks that even some time after treatment has begun, the solution used for irrigation may become caustic. This statement needs confirmation before acceptance.

With regard to M. Bonnefon’s statement of the value of hypertonic solution, it will be well to keep an open mind on the subject and to try its effect on certain cases, but one must remember that in ordinary clinical work, a hypertonic remedy in the form of a half-saturated solution of magnesium sulphate has been extensively tried in cases of corneal ulceration and the results have not been especially convincing. Again M. Bonnefon in his paper lauds dionine as a useful accessory, but there are ophthalmologists of experience who can say that they have never seen any certain evidence that dionine has any therapeutic effect whatever as an ocular remedy.

Probably Sir William Lister has had a greater experience of the early stages of gassed eyes than anyone else in this country, and I hoped that he would have written for the Journal on this very important matter. He, however, says that he wrote his opinion fully in the Official History of the War and sees no reason to add to his views therein expressed. That article should be read by all those who are likely to have cases under their care. (Vide Official History of the Great War, Medical Services, Surgery of the War, Vol. II, pp. 529-540.)

In that portion of the chapter which deals with treatment he lays stress on the psychological value of separating the eyelids, and of thus convincing the patient that his sight has not been irreparably damaged. In mild cases a bland lukewarm solution was used for frequent gentle bathing; he thought that weak boric acid was as good or better than the 2 per cent. solution of sodium bicarbonate which was usually prescribed. Liquid paraffin was dropped into the eyes three times a day. In severe cases with pain and lid spasm, atropine ointment 1 per cent. as early as possible often gave marked relief.

If there were much conjunctival discharge, a weak solution of one of the organic silver compounds was instilled twice daily and was very efficient. It was inadvisable on account of the swelling to attempt eversion of the eyelids. These silver solutions were used especially when a corneal haze threatened ulceration. If the haze was overlooked, and silver was not used, severe infective ulceration was liable to occur, and Sir William Lister still emphasises the importance of this precaution. The eyes of course were not bound up, a frontal shade or dark glasses giving sufficient protection.

During convalescence, astringent drops of boric (2 per cent.) and zinc sulphate (¼ per cent.) were instilled three times daily as soon as possible, the shade or dark glasses were dispensed with. Any
neurasthenic tendency had to be combated by vigorous mental environment, fresh air, tonics and suitable occupation.

One may add then that it will be well to be cautious in the treatment of these cases. Any excessive irrigation is more likely to damage the delicate corneal epithelium than to get rid of any residual poison. It may be found that the use of cod liver oil (with or without glucose) will be found useful (as suggested in Professor Burn's letter, Brit. Med. J., November 11, 1939, p. 972) in place of liquid paraffin. It may also be found that a mild antiseptic such as acriflavine in oil (1%) or mercurochrome in water (2-4 per cent.) will be as effective in preventing sepsis as the organic silver compounds.

In conclusion one must emphasise again that prophylaxis is the best treatment. Some 20 years of experimentation is stated to have gone to the making of the service gas mask, and it is certain that the eyes and respiratory passages can be protected efficiently by the help of this apparatus. It remains for officers and instructors to see that the necessity for its use is impressed emphatically upon the minds of those under their care. Medical men may play their part in speaking of the need for this precaution. They would do so more readily if they could see the late results of the gassed eye casualties from 1917-18. There are nearly two hundred cases of severe defect of vision from late ulceration known in this country, and the total is still rising annually.

I have the honour to remain, Sirs,
Yours obediently,
Frank Juler.

London, W.1
November 11, 1939.