allowed to continue self-medication with clioquinol since this controlled her rhinitis. She returned to my clinic with foot-drop in addition to her paraesthesiae, having taken clioquinol continuously for ten months. After withdrawal of the drug her symptoms and signs regressed over a period of a year.

The first patient to develop this syndrome was admitted to the ward and fully investigated. There were no abnormal findings on investigation, and unlike Dr. Terry's patient there was no leucocytosis, nor have any of my patients developed pyrexia. The only unusual feature was the finding of serum vitamin B₁₂ values just below the lower limit of normal in both the patient in the ward and the girl mentioned above.

A sixth patient developed an episode of probable optic neuritis while taking clioquinol. He stopped the drug at once, and his symptoms disappeared in a day. When he returned to the clinic his eyes were normal.

In this series, no patients developed symptoms until they had taken clioquinol continuously for at least six weeks, and provided the drug was stopped at once the symptoms resolved in a few days. The matter was reported to the Committee on Safety of Drugs at the time, and as a result it was agreed that in future containers of clioquinol tablets sold to the public should carry the warning that it was inadvisable to continue treatment for more than a period of four weeks.

The final outcome of the original investigation which led to these findings has been published² but only three of the above patients were among the 35 subjects who took part in the prospective trial which was reported. This figure suggests that the risk of clioquinol neuropathy to Londoners is a little below 10% if they take the drug for long enough. It seems unlikely that the Japanese are more susceptible.—I am, etc.,

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¹ Gholz, L. M., and Arons, W. L., *American Journal of Tropical Medicine and Hygiene*, 1964, 13, 396.

² McEwen, L. M., and Constantinopoulos, P., *Annals of Allergy*, 1970, 28, 256.

Better Specimens from the Female Genital Tract

SIR,—You have drawn attention in leading articles to the rising incidence of gonorrhoea at a time when venereology is facing a recruitment crisis (5 June, p. 547), and to the problems of diagnosis in general practice (19 June, p. 670), as well as the special significance posed by the increasing incidence of nonspecific urethritis (10 July, p. 62).

Women constitute the main reservoirs of infection in gonorrhoea and probably also in nonspecific urethritis and genital herpes. The symptomless carrier state is very common and will be detected only by routine screening programmes. But even when clinical disease is present, the collection of satisfactory specimens for diagnosis in women is notoriously difficult for patients and doctor alike.

A new type of swab which we recently devised¹ should prove as helpful in general practice as we have found it to be in a busy

hospital outpatient department. The swab consists of an ordinary orange stick to one end of which is attached a thin strip of polyester sponge. The sponge used is non-toxic even to the delicate gonococcus, is very absorptive (retaining more than three times as much secretion as a conventional cotton wool swab), and has a moderately abrasive surface. One application of the swab to cervix, urethra, vaginal wall, or rectum provides ample material for microscopy and culture, either for immediate examination or dispatch to the laboratory in Stuart's transport medium.

The specimens have proved very satisfactory for the diagnosis of gonorrhoea, candidiasis, trichomoniasis, and herpes virus infections. In addition, excellent smears for cervical cytology can be obtained very rapidly and in every case, as a result of the gentle curetting action of the swab. We no longer have to submit women to scraping with wire loops that are painful and difficult to maintain in good order. The Ayre's spatula is not now required for cytology, nor is multiple swabbing necessary for smears and cultures. The patient's ordeal is thus reduced to a minimum, and so is the time taken for specimen collection.

It is hoped that the Department of Health will soon make these swabs available to general practitioners as a sterile pre-pack. This will at last make it possible to screen for subclinical infections large selected populations, such as patients at antenatal and family planning clinics.—We are, etc.,

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¹ Oates, J. K., Selwyn, S., and Breach, M. R., *British Journal of Venereal Diseases*, 1971, 47, 289.

Verdict on CS

SIR,—I would indeed be grateful for space to comment on some of the points raised in your article "Verdict on CS." (25 September, p. 722).

First, critics of the use of CS were invited to ponder on the deaths in Attica jail, as reported by *The Times*,¹ with the implication that CS could somehow have avoided the tragedy. Your writer had apparently missed an earlier report;² just before the attack "... a state helicopter flew low down over the prison and dropped tear gas grenades. . . . Dense clouds of gas billowed out . . . of the prison building as . . . state police . . . rushed in." It is difficult to see how CS could have accomplished anything more in a situation where the copious use of tear gas failed to prevent 42 deaths.¹ I assure you Sir, we ponder.

Second, your description of CS as being "more poisonous than chlorine and capable of being metabolized to cyanide" was incorrectly attributed to me, and was taken from a synopsis prepared by editorial staff.³ These informative synopses are useful guides to the content of articles, but tend to be exaggerated; quoting from them can be misleading. What I had actually written (apropos the whitewashing of the image of CS) was

"... CS is somewhat more poisonous than chlorine." In parenthesis, new data presented in the Himsworth report⁴ reassures that CS aerosols generated from munitions are less toxic than aerosols of the pure compound.

Third, I am in full agreement with your comment that "... this emotive link with cyanide has no justification." One must not, however, ignore the strong factual link which, quite properly, the committee took very seriously in their report. Substantial evidence, albeit of an indirect nature, has been presented, showing that toxic amounts of CS given by injection kill by cyanide liberation.⁵ The authors recognized the difference between the situations of injected mice and exposed individuals; "Comparisons with or extrapolations to the effects of aerosols on people are extremely difficult to make . . .".⁵ The position was clarified recently by a publication⁶ describing an interval of two to three days between the exposure of dogs to lethal aerosols of CS and subsequent mortality. The point that short-term deaths may involve production of cyanide, and that long-term deaths arising from CS aerosols involve another mechanism has now been established.^{4,7}

If your anonymous writer has misrepresented me, that same Christian feeling which earlier prompted my work on CS now prompts me to forgive him gladly. But, Sir, when he uses the authority of your distinguished Journal to mislead your readers, it causes me pain to reflect that my forgiveness is of no avail.—I am, etc.,

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¹ *The Times*, 15 September 1971, p. 1.

² *The Times*, 14 September 1971, p. 1.

³ Jones, G. R. N., *New Scientist and Science Journal*, 1971, 50, No. 756, p. 690.

⁴ Home Office, *Report of the Inquiry into the Medical and Toxicological Aspects of CS (Orthochlorobenzylidene Malononitrile) Part II*, Cmd. 4775, London, H.M.S.O., 1971.

⁵ Jones, G. R. N., and Israel, M. S., *Nature*, 1970, 228, 1314.

⁶ Cucinelli, S. A., Swentzel, K. C., Bishop, R., Snodgrass, H., Lovre, S., Stark, W., Feinsilver, L., and Vocci, F., *Federation Proceedings*, 1971, 30, 86.

⁷ Jones, G. R. N., *Nature*, (in press).

Epidemiology of Malaria

SIR,—The note on epidemiology of malaria (21 August, p. 487) calls for fuller comments. It is not unexpected that most of the cases of imported malaria occur in long-term residents in tropical countries. However, a substantial proportion of cases (23 out of 68 known) was seen in short-term visitors, and this can only mean that few of them take the protective antimalarial drugs during their stay in malarious areas, or that many interrupt their protective drug regimen on their return instead of continuing it for four weeks.

The fatality rate of 5% for all malaria infections is high enough, but if calculated for *P. falciparum* only it would amount to 5/49 equivalent to 10%—a truly frightening figure. It seems to continue in 1971 with four deaths in 91 cases of malaria notified in England and Wales during the first half of the current year. This should cause concern and greater effort is needed to increase the awareness of the medical profession of the risk of mis-diagnosed or mis-treated malaria.¹