into the cause of two deaths following such anaesthesia disclosed that the trilene had undergone decomposition while in contact with soda lime in the apparatus, and further work was started to discover the extent of decomposition and the substances produced. . . . Trilene undergoes decomposition in the presence of soda lime, producing, among other substances, dichloracetylene and phosgene. . . . This decomposition occurs at room temperature but is greatly increased as the temperature rises. . . . The presence of moisture affects the decomposition products, little dichloracetylene being formed. Ether retards the decomposition of trilene over soda lime and stabilises the dichloracetylene produced. . . . General results show that trilene should on no account be used as an anaesthetic in the presence of any alkaline carbon-dioxide absorbent." 2 references.

J. C. M. C.

MALLINSON, F. B.: *Curare in Anaesthesia.* Lancet 2: 75–76 (July 21) 1945.

"Intocostrin is a pure extract of curare. . . . For practical purposes in normal adults, I have injected up to 3 c. cm. of the solution intravenously during 1–2 minutes, just before the peritoneum is to be opened, the patient being under light anaesthesia. Relaxation with contracted gut develops within 4 minutes, usually in 1–2 minutes. If relaxation is insufficient or the operation prolonged, repeat doses of up to 2 c. cm. will effectively restore relaxation. The maximum amount I have given during one operation has been 10 c. cm. . . . Concomitant anaesthesia need never be deep but for satisfactory results should be into plane 2, because curare is inadequate as the sole relaxing agent. . . . None of my cases has shown any untoward effects during or after operation referable to the action of curare. The small number of cases so far studied (40) renders any figures of postoperative complications valueless, but no increase over more usual methods of anaesthesia has been noted." 7 references.

J. C. M. C.

ANONYMOUS: *Curare in Anaesthesia.* Lancet 2: 81–82 (July 21) 1945.

"Two things at least seem certain—that like many other potentially noxious drugs, curare, in proper and controlled dosage, is safe and produces a desirable effect, in this case muscular relaxation; and that when an unduly generous dose is given, respiratory paralysis occurs with a suddenness as dramatic as after an overdose of 'Pentothal' or cyclopropane. This complication holds no terrors for the modern anaesthetist, since it responds to artificial respiration. If pentothal is 'safe' curare is safe. And if curare is to be condemned because a little too much stops breathing, so must pentothal. The safety of these drugs depends on the administrator. . . . When using curare, the anaesthetist soon learns that those reflexes he calls 'the signs of anaesthesia' can no longer be elicited, however little general anaesthetic has been given. They form no guide as to whether his patient is feeling pain or is unconscious. Care must therefore be taken to deaden sensation and ensure unconsciousness, or the worst imaginings of the novelist may come true, for the patient can give no sign if the general anaesthetic is ineffective. The danger of curare is paralysis of the respiratory muscles. Intercostal paralysis, which every anaesthetist should be able to recognise without fail, usually occurs before diaphragmatic. . . . Reliance should then be placed on artificial respiration by inflating the lungs with oxygen, and since this has always been carried out no patient has come to any harm

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through this complication, according to the published reports. The pharmacological antidote to curare is 'Prostigmin'; but, while this should not be withheld, no dramatic effect is to be expected from it in such an emergency.

. . .

"Curare, then, justifies further study. Here is a substance which when injected into the circulation produces relaxation of the voluntary muscles, so eliminating 'the cause of more profanity by the surgeons and sweat and tears by the anaesthetist than any other occurrence in the operating-room.' In addition, the relaxation necessary for the satisfactory performance of abdominal operations is procured without the postoperative complications which follow the large doses of the more familiar anaesthetics needed to give the same relaxation. But as Griffith puts it, 'curare is still a poison, and like every other poison it should be handled intelligently and only by experienced physicians.'"

J. C. M. C.

GRIFFITH, H. R.: *Curare as an Aid to the Anaesthetist.* Lancet **2**: 74–75 (July) 1945.

"It is now more than three years since we began to use a purified extract of the old drug curare as a muscle relaxant in patients under general anaesthesia. . . . For many years it has been my own practice to use cyclopropane as the agent of choice for general anaesthesia, to the almost complete exclusion of ether. . . . Curare may also be used with other anaesthetic agents. . . . I have frequently given curare to patients under ethylene or ethylene-cyclopropane with good results. Incidentally, I would like to interject a good word for that almost forgotten agent, ethylene—a particularly safe anaesthetic for use in such poor risk cases as toxic thyroids, and made doubly efficient when combined with curare. . . . Hudon of Quebec (1944), and others, have shown how curare may be used to reinforce the action of 'Pentothal.' It may be given to patients in whom the relaxation of spinal anaesthesia is wearing off too soon, provided the sensibility of the patient is well obtunded by hypnotics or a 'sleeping dose' of general anaesthetic. It may also be used to facilitate bronchoscopy in muscular patients, and tracheal intubation in cases where there is difficulty in securing adequate relaxation. However, curare in safe doses is not in any sense an anaesthetic agent and I do not recommend it for general use in conscious patients. The effect is too uncomfortable. My own feeling is that curare is most effectively used with gas anaesthetics, especially cyclopropane, and also, but more cautiously, with ether. It may be given intramuscularly without irritation, but we prefer to use it intravenously because of the greater control thus assured. . . . In the light of more than three years' clinical experience, curare is considered to be of value to expert anaesthetists by affording a better surgical field for abdominal operations with light and non-toxic anaesthesia. . . . It will probably have a permanent place in anaesthesiology."

J. C. M. C.

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