sies. It should be remembered that variations in susceptibility are well known in toxicology. There is no doubt that trilene can combine with soda-lime to form extremely toxic products and any possibility of this combination should be avoided in anaesthetic practice.” 11 references.

J. C. M. C.


“The changes in cardiac rhythm which occur during trilene anaesthesia are regarded by some with alarm whilst others consider them to be of no importance. There seem to be two reasons for this divergence of opinion. In the first place the exact nature, and therefore the significance, of these arrhythmias cannot properly be determined unless frequent electrocardiograms (E.C.G.) are recorded throughout the anaesthetic, and up to the present this has been done only in six cases. Secondly, in the reported cases in which marked arrhythmias occurred there have been other factors—such as intubation—which might themselves be held responsible for the change in rhythm... Forty patients have been investigated, 30 males and 10 females. All of these were examined clinically by one of us (C. G. B.) on the day before the operation and a routine 3-lead E.C.G. was taken. Each subject selected for this inquiry was normal clinically and showed a physiological E.C.G. Their ages varied from 10 to 74 years... Cardiac disturbances during the anaesthetic were noticed clinically in 12 cases, bradycardia and occasional premature contractions being the most common changes. Pulsus bigeminus was found in 1 case and 2 others each developed for a short period a rapid and completely irregular pulse. These few arrhythmias were in striking contrast to the large number observed cardiographically, for only 7 of our 40 patients showed no change at all in the E.C.G. during the operation. Very many varieties of arrhythmia were observed in the E.C.G.s and it was common for a patient to exhibit several of these successively as the anaesthetic continued. In general, however, these alterations in rhythm fall naturally into two groups. In the first there was a series of changes due probably to increase in vagal tone, and these tended to occur in the first ten or twelve minutes—often in the induction phase of the anaesthetic. We noticed that these changes were more likely to occur in those patients who showed signs suggestive of high vagal tone before operation, in the form of bradycardia and sinus arrhythmia... They were all transient and disappeared as the anaesthetic continued.

“The second group of arrhythmias tended to occur later, during the lower first or upper second plane, and took the form of ectopic foci initiating premature contractions sometimes in the auricles (in 5 cases), but more often in the ventricles (in 16 cases). At first the ectopic beats occurred quite haphazardly, and from a single focus, but as the anaesthetic proceeded they gave way in 11 patients to alternating ventricular premature contractions causing pulsus bigeminus. Shortly after this, in 6 cases, they were followed by multiple ventricular contractions arising from several different foci, and in 4 patients these abnormal beats occurred at a great rate—between 130 and 200 a minute—to give extremely bizarre tracings in the E.C.G. This last arrhythmia is, we believe, important, and we shall refer to it as 'multifocal ventricular tachycardia.' It must be emphasized that with this arrhythmia the pulse becomes completely irregular and extremely rapid, in fact indistinguishable clinically from au-
icular fibrillation. It seems probable that the cases of auricular fibrillation observed clinically under trilene anaesthesia have really been examples of this multifocal ventricular tachycardia. . . . Our results suggest that the frequency of multifocal ventricular tachycardia under trilene anaesthesia constitutes a potential danger, particularly if adrenaline is used during the anaesthetic. We therefore find ourselves in agreement with Hunter's conclusion (1944) that trilene should not be used as a routine adjuvant to gas and oxygen. 16 references.

J. C. M. C.

PHILLIPS, R. C.: How to Obtain Good Results with Brachial Plexus Block Anaesthesia. Mil. Surgeon 95: 197–199 (Sept.) 1944.

"One of the better methods of obtaining anesthesia for the forearm and hand is by the use of Brachial Plexus Block. . . . In the 52 cases in which we have used this anesthesia in our hospital, we have had to date (Sept. '43) the following results:

100% anesthesia ............ 42
80% anesthesia ............ 7
No anesthesia ............ 3

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However, several of the failures were due to incorrect technique in the earlier cases. . . . First, find the mid-point of the clavicle. Raise a skin wheal one finger's breadth above this point and one finger's breadth medial to it. Introduce the first 50 mm. needle through this wheal in a downwards and inward direction, i.e., in the direction of the first rib, about two inches before the rib reaches the manubrium sterni. This will vary somewhat depending upon the build of the patient. One must obtain paresthesia of the arm. . . . Usually, the point at which paresthesia is found lies just above the first rib, perhaps 2 to 8 mm. above it. The patient will tell you at once that he feels an 'electric shock' going down his arm, or a 'tingling.' Immediately inject 8 cc. of 2% Metycaine, obtained by adding the 5 cc. of 20% Metycaine to 45 cc. of distilled water. Leave the needle in place, and detach the syringe. Wait two minutes, and then introduce another 50 mm. needle just above and parallel to the first needle, and inject another 8 cc. through this second needle. Then introduce the third needle below and parallel to the first needle, each needle being one centimeter away from the first needle. The 24 cc. so injected should be enough to obtain good anesthesia, but it is very important to remember that brachial plexus block takes some considerable time in securing complete anesthesia. . . . Practically always, after 30 minutes there is complete or nearly complete paralysis, and of course anesthesia. Anesthesia will continue to increase for 45 minutes from the time that the initial injection was given. The average length of anesthesia is 90 minutes. . . . "One must be extremely careful, of course, to pull back on the syringe handle constantly and consistently, before injecting, as one must not introduce Metycaine or any other similar preparation into the blood stream. I have punctured the lung at least three times that I know of (air in the syringe) without event. . . . I use one minim of epinephrine for each ten cc. of solution of Metycaine. . . . This type of block is not suitable for upper arm surgery, unless accompanied by local infiltration of a ring around the arm just below the shoulder. . . . Since writing this article, ten months ago, I have done an additional 108 blocks, making a total of 160 Brachial Plexus Block Anesthesias. There have been no failures in the last 20 blocks, and only 3 in the last 100. I now use only one needle, and introduce it with the syringe at-