

Last week a gentleman said to me: "My daughter has always had an ambition to go to college. She is now in the second year of her high school course, and she declares that if she can manage to graduate from the high school she will never go any farther."

Yesterday a doctor said of his son, "A. has to work days, nights and Sundays to keep his scholarship up to the standard in the high school."

To-day a woman said to me, "My son was within three months of graduating from—College when he broke down. That was a year and a half ago and he is not able to go back yet. I doubt if he ever graduates."

To cap the whole I quote from the morning's paper.

"Yale ought to establish a guard at West Rock, the high cliff on the outskirts of New Haven. The number of students who hurl themselves from its lofty summit while laboring under temporary aberration of mind, due generally to overstudy or over-anxiety concerning their studies, is getting to be something rather startling as well as admonitory. This latest one is the fourth in a single class."

Is it wise to make school work so severe as to kill out the laudable ambition of our children? The young man who spent three years and three quarters in college undoubtedly profited thereby, but he has no diploma and is, therefore, without his ticket of admission into the great business world.

The educated man of twenty-five years ago accepted as a matter of course that his son should go to college. To-day he faces the possibility of his child being returned to him after four years a physical wreck. It is useless to argue that the percentage of breakdowns in school is relatively small. That percentage may involve your child or mine, and, moreover, it is a percentage that is alarmingly on the increase.

ETHYL CHLORIDE IN GENERAL ANESTHESIA.

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How to induce anesthesia in the quickest, safest and most agreeable manner is a question that is continually recurring to the surgeon and the anesthetist. What agent or agents to use, and in what sequence or combination to employ them may become a question of very great importance. The time has gone by when ether naturally was looked upon as the narcotic selected and any one (student or half-trained nurse) knew enough to administer it.

Ether is still thought of first by most physicians and, indeed, is the anesthetic found to be the most satisfactory for all but the minor and quicker operations. Ether, however, has the misfortune to be objectionable to the majority of patients in many ways; first, the odor is offensive; inhalation irritates the throat, causing choking and strangling sensations, while after-effects are most disagreeable and last for a considerable period.

Therefore, there is a demand for some other narcotic in general use where examinations and dressings of a painful nature are to be made or in the reduction of dislocations, the opening of abscesses and again in many conditions where anesthesia for only a very short period is desirable and a prolonged period of recovery can be eliminated. For such cases ethyl chloride is found to be a most useful anesthetic. The anesthesia is pleasant and rapid, lasting usually from a few seconds to possibly three or four minutes, and from which recovery takes place quickly with little or no after-effect. If employed by a physician in his office the patient in half an hour can walk out as if no anesthetic had been administered. Another and very important factor is the ethyl chloride-ether sequence, given as an introduction to ether where anesthesia is desired for a more or less prolonged period. One advantage of this procedure is the great relief to the sensibilities of the patient. Many persons insist that they dread the taking of ether more than anything else. Other desirable points gained are: (a) reduction of time necessary to induce narcosis, (b) abolishment in most cases of the stage of muscular excitement, (c) a decrease in the amount of ether inhaled and (d) the tendency to lessen the usual after-effects of anesthesia.

Ethyl chloride was known as an anesthetic before 1850, but was little used until about 1900. In 1880 a committee of the British Medical Society reported that ethyl chloride was not safe to use as a general anesthetic owing to its liability to cause respiratory failure and convulsions. Even as late as 1898, in Sajous' Annual, the statement is made, "We would also warn against its [ethyl chloride] use for the purpose of inducing general anesthesia, as the dangers incurred therefrom are too great." Interest in its use was revived at this time (1898) by the reports of Lotheisen, and in 1901 by McCardie, who reported a large number of successful cases in general anesthesia. It is believed that the bad results obtained earlier were due partly to impure preparation of the drug, as well as improper methods of administration. The purity of ethyl chloride may be roughly tested by the absence of any disagreeable or garlicky odor and also by the fact that it should not turn blue litmus paper red. It is easily tested by pouring a little into the palm of the hand, and, if pure, no objectionable odor can be detected on evaporation.

Ethyl chloride may be given in almost as large a variety of ways as ether: by means of a closed inhaler, in a semi-open mask, or poured on gauze held in the palm of the hand. This last is convenient and satisfactory in confinements, while the first or closed method is perhaps the best for examinations and short operations. In the ethyl chloride-ether sequence the writer prefers the semi-open method, the distinction being chiefly in the amount of air allowed to mix with the anesthetic. The dangers of interference with respiration and circulation are often caused by using too concentrated a vapor and are greatly lessened by admitting a large amount of air.

During its administration no cyanosis appears, but the face is invariably flushed and the breathing becomes deeper and more rapid, finally becoming stertorous as full anesthesia approaches; the pupils dilate, eyeballs are fixed and often turned down and the reflex of the conjunctiva is abolished. In most cases muscular relaxation is not complete.

The following has proved to be a satisfactory procedure: A Blake ether cone with the gauze packing so arranged that there is a small thinly covered place in the middle on which the ethyl chloride spray is to be directed. Accurate adjustment of the rubber cushion of the cone to the face is a necessity, as no air must be allowed to get under the cone. Care is taken to reassure patients by letting them take a few breaths through the cone before putting on the anesthetic and informing them emphatically that there will be no unpleasant or choking sensations. Direct them to breathe quietly in the ordinary manner and either through the nose or mouth as preferred. Do not allow any unnecessary talking or disturbance in the room. Ethyl chloride is now sprayed into the cone so that by moving the stream about the thinly covered place is thoroughly included and well saturated. After an average period of about sixty seconds the patient will be sufficiently anesthetized to change to ether; the cone is now filled with more gauze and a small amount of ether is poured on; ethyl chloride has been retained on the gauze in the form of frost to an appreciable amount, and by the prompt addition of the ether a mixture is breathed for a short time, and while the ether is gradually being increased the ethyl chloride disappears. In this manner the sequence is obtained without any spasm and it is rare to have any stage of muscular excitement. Complete anesthesia usually results in about three minutes; the pulse rate is not increased and is often lessened in cases where the patient had been frightened or excited at the idea of taking an anesthetic. The pulse also becomes softer owing to the dilatation of the peripheral blood vessels. The amount used by this method is from 6 to 10 ccm. for an adult, somewhat more than is the case where the closed method is followed out. The amount of ether is much less than when ether alone is used. As with other anesthetics, atropine hypodermatically given half an hour to an hour before anesthesia is begun is of value in reducing the amount of mucus and saliva secreted. Morphine, scopolamine and strychnine are occasionally of decided benefit; care should be especially used as to scopolamine in cases of arteriosclerosis, as here it is contra-indicated.

The usual preparations, as for any general anesthesia, should be carried out and where the patient does not seriously object, it is best to give the anesthetic on the operating table; this obviates the disturbance and shock which is caused by lifting the patient from bed to truck and truck to table while but barely narcotized and who during the moving often comes out of the influence enough to retch and possibly vomit. It

also saves an appreciable amount of time, which is an element of great importance.

The writer's experience with the use of ethyl chloride as a general anesthetic dates from 1902, since which time he has used it in about 300 cases; in no case has he seen any unpleasant or untoward effects. The nausea and vomiting during recovery are usually less than is the case with ether alone but occur more frequently than after nitrous oxide. In a series of about 50 cases in one private hospital the lessened after-sickness compared with patients who had been given straight ether was noticeable enough for nurses to mention it. Occasionally a patient was found who required an amount far in excess of the average without any satisfactory explanation; one particular case in point was a young woman who inhaled 60 ccm. without losing consciousness, and nearly 500 ccm. of ether was necessary to finally produce narcosis.

The use of ethyl chloride is contra-indicated in partial stenosis of the air passages, whether due to edema from within or pressure from outside, as in an enlarged thyroid, in diseases of the lungs and in cases with a weak or uncompensated heart. It is difficult to anesthetize alcoholics with ethyl chloride, for the violent muscular movements to which such cases are so prone with any anesthetic makes it hard to keep the cone properly adjusted.

The objection to the use of ethyl chloride usually made is that at least in general estimation it is not quite so safe as ether or nitrous oxide. Statements as to the frequency of fatal accidents with the various narcotics are of little value because only a comparatively small number of the cases anesthetized are ever reported and the total number is not known. Various estimates are given, however, on the different anesthetics which may be taken as approximating the truth as to their relative safety. These estimates are: With, Nitrous oxide, 1 death in from 25,000 to 30,000 cases; ether, 1 death in from 15,000 to 20,000 cases; ethyl chloride, 1 death in from 10,000 to 15,000 cases; chloroform, 1 death in from 5,000 to 10,000 cases.

The deduction from the above plainly proves that ethyl chloride is probably as safe as ether but not as safe as nitrous oxide. Serious practical objections to the use of nitrous oxide are the bulk and weight of the apparatus necessary in administration and the alarming appearance of such paraphernalia to many patients, especially when they are children.

The conclusion reached by the writer is that ethyl chloride has sufficient advantages and points in its favor to warrant its administration in the majority of cases where an anesthetic is employed.

AGAINST MARRIAGE OF THE SICK. — A bill has been introduced into the Pennsylvania legislature forbidding the marriage of persons suffering from pulmonary tuberculosis, epilepsy, insanity, imbecility, idiocy or other hereditary disease. — *Medical Record*.