Correspondence

ARTIFICIAL RESPIRATION BY INTRATRACHEAL INSUFFLATION

To the Editor:—I am indebted to Dr. M. Bernard Brahdy (THE JOURNAL, Dec. 11, 1937, p. 2006) for calling my attention to the article (Brahdy, Leopold, and Brahdy, M. B.: *Am. J. M. Sc.* **178:**405 [Sept.] 1929) in which he described the development of a portable apparatus for carrying on prolonged artificial respiration by intratracheal insufflation. My inquiries directed to personnel interested in the care of such cases were not in the nature of research into the historical aspects of the situation. It was merely an attempt to determine practice now or recently in vogue.

The method devised by Dr. Brahdy, while a decided improvement over the intratracheal technic of Meltzer, was apparently subject to the same complications which have rendered the Meltzer, Elsberg and other intratracheal insufflation methods obsolete (Flagg, P. J.: Intratracheal Inhalation Anesthesia, *Arch. Otolaryng.* **25:**405 [April 1] 1937). Experience has demonstrated that it is not practical to attempt to use cumbersome, complicated, motor-driven apparatus at the home, in the ambulance or as part of one's emergency kit. On the other hand, equipment is now available and in common use that can be wrapped in a towel and carried in a small hand bag (oxygen supply excepted), whereby results similar to those described by Dr. Brahdy may be secured (Flagg, P. J.: Asphyxia, *Arch. Otolaryng.* **12:**23 [July] 1930).

I am heartily in accord with Dr. Brahdy's reference to clinical practice, and I have repeatedly emphasized these conclusions (Flagg, P. J.: The Color of the Blood as a Sign of Death, *M. Times & Long Island M. J.*, July 1933, p. 205).

Dr. Brahdy's response would seem to confirm my previous impression, namely, that simple equipment for intratracheal intubation and insufflation to prevent sudden asphyxial death is not generally available in institutions caring for terminal poliomyelitis and that this condition exists in spite of the fact that no objection is advanced against the use of this emergency treatment.

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RESUSCITATION

To the Editor:—In trying to correct one error, I seem—inadvertently—to have promoted another. In THE JOURNAL, Nov. 6, 1937, page 1561, I showed that forcible artificial respiration of the asphyxial new-born by means of apparatus of the pulmotor type, such as the E & J Resuscitator, is contrary to sound principles and may sometimes be harmful. In place of such treatment I suggested that "the passage of a soft catheter into the trachea of an apneic and flaccid baby is so simple an operation and insufflation by the Meltzer-Flagg technic is generally so effective that there is little justification for any other procedure."

To my amazement and horror, Dr. J. Lyman Hurlbut in THE JOURNAL, Dec. 25, 1937, page 2157, takes this recommendation to mean "the procedure of inflating the infant lung as one would a balloon," and he adds, on the basis of the recent paper of Wilson, Torrey and Johnson (*Surg., Gynec. & Obst.* **65:**601 [Nov.] 1937), that "there is compelling experimental evidence that forcible inflation of the infant lung, even when done under extreme control, is not only useless but as unsound physiologically, and harmful anatomically, as any respirator or pulmotor."

In that statement I fully concur. What Dr. Hurlbut and, perhaps, others fail to realize is that intratracheal insufflation is not done for the purpose of inflating the lungs. It should not inflate and, if properly done, it cannot inflate. It merely supplies oxygen so deep in the respiratory tract that the blood is oxygenated without any respiratory movement of the chest. The catheter should be small enough to allow ample space between it and the walls of the trachea for the excess gas to escape freely. This was Meltzer's technic (THE JOURNAL, May 10, 1913, p. 1407) and Flagg has not altered it.

While on this subject I may add that intratracheal insufflation is also the best treatment for patients under spinal anesthesia in whom the drug happens to reach the roots of the phrenic and other nerves to the respiratory muscles. In the resulting respiratory paralysis, neither artificial respiration nor carbon dioxide inhalation is effective; but, with a jet of oxygen blown into the bifurcation of the bronchi, the blood is sufficiently oxygenated to maintain life indefinitely. So Meltzer found; but he found also that under insufflation in adults the elimination of carbon dioxide is decidedly subnormal. To meet this condition he recommended that the thorax be compressed by hand several times a minute. When the anesthetic block of the respiratory nerves wears off, natural respiration returns.

In a flaccid asphyxial baby the accumulation of carbon dioxide would aid in starting respiration once the blood is adequately oxygenated by insufflation.

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Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TOXICITY OF ALUMINUM IN KITCHEN UTENSILS

To the Editor:—One of my patients has been asking me about aluminum kitchen-ware. The people who go round selling stainless steel are telling some of my patients that the American Medical Association some years ago condemned aluminum kitchen-ware because it is injurious to health. Is that true and does the A. M. A. still hold to that view? They are also told that the aluminum vessels may induce cancer. That sounds like nonsense to me. But it seems to me that some years ago also that view was held in otherwise well informed circles.

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ANSWER.—This old problem of toxicity from metallic aluminum utilized in millions of household utensils comes up with frequency. THE JOURNAL does not accept as proved any contention that metallic aluminum as used by householders is in any wise injurious to health, nor is it known to be a source of cancer. The attitude of the majority of the scientific world is indicated in a series of excerpts from various publications, some of which have earlier been abstracted in THE JOURNAL:

Beal, Unangst, Wigman and Cox (Aluminum Content of Foodstuffs Cooked in Glass and Aluminum, *Indust. & Engin. Chem.* **24:**405 [April] 1932) reported a study in which general foods of average diet were cooked in glass and aluminum vessels and were analyzed for aluminum. The taking up of aluminum by neutral foods was negligible; acid and alkali foods are relatively more corrosive. In no case, however, did they find sufficient aluminum dissolved from utensils to interfere seriously with phosphorus absorption. An average daily intake in case all foods are cooked in aluminum is 12 mg., of which 5 mg. is derived from the utensils. Sugar decreases corrosion of aluminum utensils. The largest amount of aluminum was found in apple butter cooked six and a half hours and containing 118 parts per million as compared to 1,400 parts per million necessary to produce the first symptoms of phosphorus starvation in animals. No systemic pharmacologic effects can be ascribed directly to absorbed aluminum. Aluminum does not appear to be cumulative in tissues.

Other workers generally agree with these results. Underhill, Peterman, Gross and Krause (*Am. J. Physiol.* **90:**72 [Sept.] 1929) analyzed numerous common foods and obtained a similar outcome. The presence of aluminum in a large variety of plant and animal tissue is upheld by several investigators. McCollum, Rask and Becker (*J. Biol. Chem.* **77:**753 [May] 1928), Myers and Mull (*ibid.* **78:**605 [Aug.] 1928) and Winter and Bird (*J. Am. Chem. Soc.* **51:**2964, 1929) present authori-