thetics tested. Evidence has been obtained in rabbits that those deflation-reflexes which produce acceleration of breathing are briefly stimulated but then paralyzed by ether, whereas they are stimulated throughout exposure to trichlorethylene. The increased rate of respiration during administration of trichlorethylene is therefore probably due to the cutting short of expiration as well as of inspiration. As the normal pattern of respiration is determined by the coordinated activity of both the stretch-reflexes and the deflation-reflexes, the sensitization of both is believed to account for the clinically familiar disturbances of respiration during anaesthesia, and in particular for the rapid and shallow breathing which is so conspicuous with trichlorethylene."

J. C. M. C.

HEWER, C. L.: *Trichlorethylene as an Anaesthetic Agent.* Brit. M. Bull. 4: 108–110, 1946.

"Trichlorethylene was introduced as a general anaesthetic in a somewhat unusual manner. In 1939, the secretary of the joint Anaesthetics Committee of the Medical Research Council and the Royal Society of Medicine was approached by a chemist, Mr. Chalmers, of Muswell Hill, who stated that trichlorethylene appeared to be an excellent general anaesthetic and suggested that it might be used by anaesthetists. This he did as the result of experiments with the drug which he had made upon himself. On looking into the matter, the Committee found that the only published work on the use of trichlorethylene in human anaesthesia was a paper by Stricker, Goldblatt, Warm and Jackson in America, describing a series of 300 short administrations for minor operations. The results were inconclusive as in the following year the Council on Pharmacy and Chemistry of the American Medical Association considered that 'the case had not been completely made out' for the usefulness of the drug.

"In these circumstances, it was considered worth while to investigate the effects of trichlorethylene fully with a view to finding out whether it had any place in anaesthesia, and the writer was asked to carry out this work. The investigation was done in the department of anaesthesia of St. Bartholomew's Hospital, and the results were embodied in three papers. . . . Since then the use of the drug has spread rapidly, and it is now generally recognized to have a definite place in anaesthesia in spite of certain disadvantages. . . . Purified trichlorethylene has been shown to be an excellent inhalant drug for producing general analgesia. It is also useful for light general anaesthesia, preferably given with nitrous-oxide-and-oxygen especially if an ignition risk is present. Trichlorethylene should not be used to produce profound narcosis and should not be given in a closed-circuit apparatus with soda-lime." 9 references.

J. C. M. C.

MORTON, H. J. V.: *Controlled-respiration Anaesthesia.* Brit. M. Bull. 4: 111–114, 1946.

"Controlled respiration 'involves the consideration of apnoea and artificial respiration by rhythmic pressure on the breathing bag. Actually it means that the anaesthetist deliberately takes the function of pulmonary respiration from the patient into his own hands.' In accordance with the fundamental concepts of the physiology of respiration, apnoea during anaesthesia will occur when the carbon-dioxide tension in the blood is insufficient to stimulate the centre. This results when the carbon-dioxide tension is lowered by artificial hyperventilation, or when the respiratory centre is sufficiently depressed by narcotics or anaesthetic drugs, e.g. opiates, short-acting barbiturates, cy-

cloprópane, or by a combination of these causes. Controlled respiration, which implies the occurrence of apnoea in accordance with these principles, has been developed in recent years mainly as a solution to two problems in inhalation anaesthesia: the production of relaxation with cyclopropane, and the control of the respiratory disabilities which complicate thoracic surgery. . . .

"The controlled-respiration technique greatly enlarges the clinical usefulness of cyclopropane, but this does not justify the use of this agent in cases more satisfactorily dealt with by non-inhalation methods, e.g. in the muscular patient requiring profound relaxation over a long period and for whom local or spinal analgesia is not contra-indicated. Crafoord has pointed out that the muscles of respiration are put completely at rest during this type of anaesthesia. This is in complete contrast to the laboured movements and active expiration usually associated with semi-closed methods. The possible influence of each of these factors on the occurrence of post-operative pulmonary complications is worthy of investigation. Further blood-carbon-dioxide studies during controlled respiration would also be of interest. In the present state of our knowledge it would seem that the minimal amount of anaesthetic which will produce satisfactory operating conditions is, in the majority of cases, the best amount to use. This is true for controlled-respiration anaesthesia, and inadvertent overdosage through failure to estimate depth correctly may be one of the causes of some of the untoward post-operative circulatory effects. . . . There can be no doubt that efficient controlled respiration is wholly preferable to inadequate spontaneous ventilation, and offers an effective solution to difficulties which often arise from this cause during inhalation anaesthesia." 13 references.

J. C. M. C.

BEARD, JOHN: *The Anaesthetist and the Care of the Surgical Case.* Brit. M. Bull. 4: 114–120, 1946.

"To-day there is an increasing emphasis on the rehabilitation of the patient after operation. . . . At the outset of his career, the attention of the anaesthetist is focused almost entirely on the actual administration during operation. With increasing experience he should be able not only to provide satisfactory operating conditions for the surgeon, but also to keep constantly in mind the convalescent period and end-result. A prophylactic attitude can do much to prevent or minimize complications, and its cultivation is of the first importance. The application by the anaesthetist of a special knowledge of post-operative complications should benefit the patient, help the surgeon, and bring a wider interest to the specialty." 22 references.

J. C. M. C.

DUNCUM, BARBARA M.: *An Outline of the History of Anaesthesia, 1846–1900.* Brit. M. Bull. 4: 120–128, 1946.

"The discovery and final establishment of inhalation anaesthesia as an integral part of surgical practice was partly the inevitable outcome of scientific research, partly the result of vagaries of circumstances. Researches on pneumatic chemistry and the physiology of respiration during the seventeenth and eighteenth centuries prepared the way for Joseph Priestley's discovery of oxygen (1744) and for Lavoisier's elucidation of the nature of the respiratory process (1774–85). . . . Therapeutic inhalation was principally studied by the brilliant circle of men whom Priestley had drawn around him at Birmingham. In 1792 Thomas Beddoes . . . decided that pneumatic medicine ought to be systematically and intensively studied. . . . In 1798 Beddoes was looking for a superin-