the other hand, since the comfort of the patient is of paramount importance, opium derivatives or analogues and sedatives should not be withheld when other measures are no longer of avail. Recently demerol has been found to induce satisfactory pain relief, in some instances, without many of the well-known physiologic disadvantages of the opiates. For oropharyngeal lesions, local anesthetics, such as orthoform or cocaine, are helpful. Numerous medicaments have been sponsored as panaceas for the pain of advanced malignancies, the majority of which are the subjects of conflicting descriptions concerning their usefulness. Cobra venom falls into this class of substances which cannot be said to offer uniform palliation. Other preparations which have had considerable vogue but seemingly fail in the majority of cases are colloidal lead and gold solutions and Coley toxin. Recent trial of H 11 and heptaldehyde has been relatively fruitless.".

A. W. F.


"The etiology of the so-called 'ether convulsions' has been the subject of much speculation since the first description of this condition in 1927.

In two cases, practically all the factors which have been considered as predisposing to ether convulsions were present, namely: a young patient; a septic condition; high atmospheric temperature; pre-anaesthetic medication with atropine, and impurities in the ether. What part these impurities in the anaesthetic played in precipitating the convulsions cannot be determined with certainty, but we are inclined to attribute a major share to this factor in view of the rare occurrence of convulsions in the large number of operations performed in the [Glasgow Royal Infirmary where the other factors have been present. If this hypothesis be accepted, the results of the fractional distillation of the impure ether suggest that warming the ether with hot water was responsible for the convulsions in these two cases. Undoubtedly ether containers on Boyle machines should be cleaned out frequently." 2 references.

J. C. M. C.


"One relatively neglected aspect of respiratory activity is the study of the changes which occur in the nature of expiration and particularly the force of expiration during anaesthesia. Inspiration is an active process depending, chiefly, on the activity of the intercostals and diaphragm. With each inspiratory movement the muscles of the anterior abdominal wall relax sufficiently to provide room for the displaced viscera as the diaphragm descends. 'Passive' expiration is effected by a combination of the 'elastic recoil' of the thoracic walls and actual muscular control. Increasingly 'active' expiration involves increasingly powerful contractions of the abdominal muscles. The force of expiration is clearly a very variable quantity. How may this force be measured and what is the significance of changes which occur in it during anaesthesia? . . . The maximum expiratory pressure which can be achieved by voluntary effort depends on vital capacity, physique, and physical fitness. Here one may deal with figures well in excess of 100 mm. Hg. Pressures of this high order, naturally, do not occur during anaesthesia, and it is more relevant to inquire what kind of pressure develops when opposition is offered to merely 'passive' expiration.
I obtained information on this point by repeating on normal conscious subject experiments similar to those described by Haldane and Mavrogordato (1916) but using an anaesthetic face-piece connected to spirometer and manometer. . . . Even when expiration is passive, the force of expiration increases proportionately with increasing tidal volume. The larger the volume of air drawn into the lungs the larger the initial expiratory pressure developed. During quiet respiration tidal volume is in the neighbourhood of 500 cc. Under these conditions I found an average initial expiratory pressure to be 8 cm. H₂O (5 observations were made on each of 10 normal subjects). . . .

"With closed circuit methods the problem of assessing expiratory force during anaesthesia is simplified. By palpation of the breathing bag the anaesthetist may obtain a measure of the force and volume of a patient's expirations at any time. When making such a test it is an advantage, for purposes of comparison, to adopt some standard technique. I have found it useful to make a practice of applying a small 'basal' positive pressure, comparable to that developed when quiet passive expiration is opposed, i.e., 8 cm. H₂O, by gently squeezing the breathing bag during inspiration, and then holding the fingers fixed in the position the bag occupies when inspiration has reached its maximum. It can then be estimated with one's fingers the force with which the patient exhales against this standard resistance. This manoeuvre I have called the Expiratory Pressure Test (E.P.T.). . . . Both tidal volume and expiratory 'activity' vary with the depth of anaesthesia. Also in any given patient established in the third stage all other relevant factors except operative trauma can be regarded as constants. Since at any particular moment the nature of operative trauma can be observed and taken into account, the force of expiration becomes related to the depth of anaesthesia. In a general way, whether expiration be active or passive, the deeper the anaesthesia the weaker the expiratory pressure and the converse is equally true. . . . As the result of observations over a period of years I would say that the greater a patient's expiratory pressure under light anaesthesia the easier it is to assess any subsequent depth of anaesthesia by this sign. . . . Certainly one occasionally meets abnormalities of response which tempt one to diagnose an abnormal physiological personality, but misleading results are almost invariably due to a non-airtight circuit or failure to take into account the presence or absence of respiratory drives from the operative site. . . .

A patient under cyclopropane shows none of the stimulation of respiration which is a feature of many ether administrations. This is particularly noticeable when depressant premedication has been used. Nevertheless the E.P.T. can be used in the usual way as an aid to maintaining a uniform level of light anaesthesia when spontaneous respiration is adequate. . . . When a spinal block has been established, of sufficient height to cut off all nervous impulses originating from the site of operation, the chief variable factor which may adversely influence the reliability of the E.P.T., namely operative trauma, is removed. In these circumstances the E.P.T. may confidently be relied on to give an accurate measure of the depth of the supplementary anaesthesia. . . . Active expiration implies active contraction of the abdominal wall and a 'tight' abdomen. Under these circumstances the E.P.T. measures abdominal relaxation. . . . The E.P.T. cannot of course be made with open anaesthetics. . . . 'Open' ether as usually given
causes active expiration at the onset of anaesthesia. Careful observation of abdominal movements makes it clear that completely ‘passive’ expiration does not as a rule take place until considerable relaxation has been produced. It is not difficult to imagine the force of expiration corresponding with any particular degree of visible expiratory effort. . . . As a patient goes into a state of ‘shock’ changes take place which simulate in many ways the changes which occur with deepening anaesthesia. A sudden considerable haemorrhage will lower the plane of anaesthesia although no increased quantity of anaesthetic agent has been administered. In these circumstances expiratory force will become weaker and the E.P.T. may be used as a means of assessing the patient’s debilitation. . . . The inexperienced anaesthetist will find the E.P.T. of particular value in cases where the usual signs of anaesthesia are not readily discernible.” 7 references.

J. C. M. C.


"The stimulating effect of ether on glycogenolysis in muscle and liver is well established. Other anesthetic agents, pentothal, cyclopropane and procaine are considered to have little effect on carbohydrate metabolism since a significant variation in the fasting blood sugar was not noted during or after their administration. An investigation of carbohydrate metabolism during acute alcoholism in man revealed a markedly reduced blood sugar tolerance. To determine whether this phenomenon resulted from the specific action of alcohol or was due to anesthesia, the blood sugar tolerance in the same individuals was determined during other circumstances. Each subject was studied in the resting state without anesthesia and during surgical anesthesia with an intravenous barbiturate (pentothal), during inhalation anesthesia (cyclopropane) and during spinal anesthesia (procaine). Four volunteer normal adult males, who had been admitted in an acute alcoholic episode, served as subjects. All had completely recovered, were clear mentally and had no evidence of nutritional deficiency or other physical illness. Each subject received all of the anesthetic agents used but not in any particular order. The order of testing was carefully altered in each series and between every test there was an interval of at least seven days. No preanesthetic medication was given at any time. . . . Blood sugar tolerance was decreased during cyclopropane, pentothal sodium and procaine (spinal) anesthesia in each test. In contrast to anesthesia with pentothal and procaine, cyclopropane produced a slight elevation in blood sugar. This together with a rise in blood pyruvate might indicate that this anesthetic has an effect analogous to ether in stimulating glycogenolysis in liver and muscle. It should be noted particularly that cortical or brain stem depression alone cannot account for the decreased blood sugar tolerance since it was observed with spinal anesthesia at a high level. The same phenomenon was observed with alcohol anesthesia indicating that a general depression of carbohydrate metabolism takes place during anesthesia.” 3 references.

J. C. M. C.


"The main difficulty in anesthesia for tonsillectomy arises from the necessity for the anaesthetic agent to pass