

## Part Second.

### REVIEWS.

*Debate on Anæsthetics. Journal of the British Dental Association, September 1889, London.*

THE number of this Journal under review contains the report of a discussion upon Anæsthetics before the annual meeting of the British Dental Association, August 22, noteworthy as one of the most generally important of all the debates which have ever occurred in the history of that scientific body. Four papers, followed by a long and exhaustive discussion, were submitted to the Association: one on "The Use of Sulphuric Ether," by Dr Cruise of Dublin; another, "On Chloroform," by Mr W. B. Macleod of Edinburgh; a third, "On Certain Anæsthetic Mixtures," by Dr Frederick Hewitt, M.A. Cantab.; and a fourth, "On Recent Researches upon Nitrous Oxide Narcosis," by Dr Dudley Wilmot Buxton, B.S. and M.R.C.P. London.

Much that is of a purely scientific nature has been written upon all forms of anæsthetics. Their nature, their mode of action, their respective toxic effects, have all been subjected to exhaustive research, and been thoughtfully set forth over and over again. The practical teachings, however, of every-day experience are of more immediate value to the operator; and it is to these that the report under notice is more particularly directed. As the nature of the Association in which the discussion was carried on will imply, it was to anæsthesia in the more rapid and less severe forms of operation that the remarks applied, and in which cases certain anæsthetics necessarily entail less risk than if they were employed in the more protracted and serious operations of general surgery. Many of the operations of dentistry where anæsthetics are administered are frequently of so trivial and momentary a nature as scarcely to warrant their exhibition at all; while those of a more extensive, painful, and tedious description have been shown to demand the same anæsthetics as are found best fitted for the major operations of surgery. Of all the anæsthetics most suitably adapted in many ways for the first class of cases, Nitrous Oxide is perhaps the most convenient and satisfactory, since, not to speak of being sufficient to allay a patient's apprehension of suffering, it is in a brief operation comparatively safe, generally obtunding pain, and if judiciously given, in a healthy individual usually followed by no disagreeable effects. For the latter class of operations again—those involving considerable time and the risks of exhaustion or collapse—it seems to be admittedly unsuitable. Dr Buxton is well known as an authority on the subject of nitrous oxide, and much might be conceded to his judgment and experience; but even he, along

with other partisans of this anæsthetic, somewhat overshoots the mark in estimating its superiority and the range of its services. Their remarks appear to be one of those instances of special pleading suggestive of the weak side. They failed to elicit what they seem to desire—an approval of the all but universal applicability and absolute safety of nitrous oxide anæsthesia in all cases. "Extreme rarity" of any untoward symptoms occurring under "Gas" is a conclusion which they assume to be on all hands accepted by dentists. Dr Buxton considers that his medical colleagues in pronouncing any patient as not strong enough to take gas, exhibit what he denominates "a curious dread of nitrous oxide," and he complains "that the average medical mind regards nitrous oxide narcosis as a modified form of asphyxia, and is prone to communicate this idea to the patient, who very properly translates asphyxia as being smothered or choked." He denies that the gas acts as an asphyxiant, and on this ground, with the exception of some cases such as where the heart is displaced mechanically, as by tumours or effusions, or is suffering from functional irrespectiveness of organic disease, he finds little or no reason at all to interfere with its administration. He admits, however, in reference to the insensibility it leads to, that the "action of this substance, if any, must depend upon itself or upon the deprivation of oxygen," and allows that if it were a member of the class of asphyxiants "it would be most detrimental in every form of heart and pulmonary disease." Now, in reference to these statements it may at once be safely said, that untoward symptoms are not rare after the use of gas; that they do occur, and that they are and have been met with by the majority of dentists, death in some cases supervening, and being as clearly traceable to this agent as death is traceable to any other anæsthetic. The condition of a large number of persons quite warrants the dread or warning of a medical attendant that they are precarious subjects for nitrous oxide administration. The effect of nitrous oxide really is beyond all controversy a modified form of asphyxia, as whatever other action it may possess, all the causes and all the phenomena of asphyxia accompany its use, and could scarcely fail to do so, seeing it is conceded that "it does not split up in the organism" so as to yield oxygen to the blood, and that no atmospheric air is admitted to the lungs during its exhibition, which was elsewhere also stated to be the danger when adding ether to this gas. And lastly, it has been proved by direct experiment that it is beyond all question powerfully destructive to life, as warm-blooded animals immersed in an atmosphere of it very speedily die. It may here, of course, be said, as one of the speakers remarked, that death in the human subject, when it occurs, is due to some error in its administration; but the same argument equally applies to all other anæsthetics as well, and calls for no remark.

Nitrous oxide was, accordingly, not in every respect borne out as

constituting the summit of perfection as an anæsthetic, which some of its advocates would apparently make it out to be. The outcome of the discussion at the Association seems rather to have shown that it answers well enough in short and slight operations; that it produces, as a general rule, no unpleasant consequences when judiciously administered to healthy patients, who are neither too old nor too young to take it safely; but that it is quite capable under other circumstances of inducing symptoms which are equally distressing, equally alarming, and equally fraught with danger to life as either chloroform or ether. It was evidently granted that the physical symptoms so rapidly and so markedly produced by it could scarcely be denied to manifest its dangers; and, indeed, that only by its withdrawal, instinctively felt by any one administering it to be absolutely necessary and imperative on their appearance, did its safety in a great measure depend.

Anæsthetic Mixtures and the nature of their combined action is another interesting and important question, which has frequently engaged the attention both of the medical and dental profession, and their discussion was accorded a prominent place at the meeting. In the case of ether and chloroform being employed in conjunction, the anæsthetic effect produced is probably due in about an equal measure to both. This mixture is a very long known one, having been discussed in this the *Edinburgh Medical Journal* so far back as 1855. But in those more protracted instances where such a combination as nitrous oxide gas and ether is used, it appears not unlikely that the ether performs the lion's share of the work; while in those cases where nitrous oxide is employed merely as a preliminary step to exhibiting ether, the whole after maintenance of the insensibility may, from all that was adduced, be fairly set down to the ether alone. Dr Hewitt, whose paper originated this section of the discussion, also alluded favourably to two other mixtures, namely, that of ether and oxygen when given under increased pressure, and of alcohol, chloroform, and ether, the well-known A. C. E. mixture. With the first mixture Dr Hewitt describes the asphyxial phenomena as being considerably reduced; but with reference to the anæsthesia resulting he states, "I can only say it is *usually* of a very satisfactory kind," while the period of inhalation required is stated by him to be two or three times as long as when using nitrous oxide by itself. The A. C. E. mixture has been long known and considered to be less depressing to the heart's action on account of alcohol and ether being regarded as cardiac stimulants. Dr Hewitt seems to believe that the anæsthetic action of the mixture is mainly due to the chloroform. He is, however, of opinion that in many cases where chloroform or ether would be contra-indicated in certain bronchial or pulmonary or pleural affections, the A. C. E. mixture answers admirably, and that it is well fitted for either young children or persons over 60 or 65 years of age. Before departing from the

consideration of gas and its compounds, the observations of Mr Bailey are too remarkable to be passed over. He is evidently an ardent admirer of nitrous oxide anæsthesia, and no doubt has devoted considerable attention to it, and possesses experience in its use. He advises practitioners not to be afraid of it. It was, he assured them, a pure anæsthetic independent of asphyxia. Somebody might die of it, but it would not be by asphyxiation. Of course, says he, if any one did die it would be said it was the gas. (What about deaths under ether or chloroform?) No case of death from gas, he stated, had ever been recorded. With regard to examination of the heart he thought it should not take place. A patient came to be anæsthetized; what were they going to do, he asks, if they found the heart wrong? They still had to anæsthetize somehow, and if the operator examined the heart and found something wrong it was likely to make him nervous. He therefore thought they did not gain anything by examining the heart. Mr Bailey is a bold if not a rash man. No doubt, "where ignorance is bliss 'tis folly to be wise;" but were Mr Bailey or any other party dubious about his own heart's fitness for anæsthesia, a preliminary examination might not be deemed injudicious, and upon the whole would be satisfactory, even if it did reveal something calculated not only to make the operator nervous, but to lead to the exhibition of any anæsthetic, whether it killed by asphyxia or in any other way, being positively declined. Wherever it is practicable in the administration of anæsthetics by dentists, and certainly in all anxious or protracted operations, not only the opinion but the presence of a fully qualified medical practitioner should be secured. The Dental Act takes no cognizance of deaths or death risks, or death certificates, as appertaining to the practice of dentistry. The risk of death in ordinary dental operations is remote and infinitesimal in comparison to the immediate dangers possible in the use of anæsthetics; and it does not seem at all clear that either the Medical or the Dental Act ever contemplated the certificate of fitness to practise dentistry to confer the privilege of undertaking single-handed any contingencies where life and death are imminently in the balance.

The discussion on the able papers of Dr Cruise and Mr W. B. Macleod on Ether and Chloroform respectively will be found peculiarly interesting and full of valuable information. It is customary in the south of these dominions for medical practitioners of all kinds, as well as dentists, to regard chloroform and even ether with fear and abhorrence. A considerable number of unfortunate cases, selected and tabulated among minor operations where these agents have been employed, may so far account for this. Another explanation may be, that the administration of anæsthetics is fought shy of by the general practitioners there, and handed over as a specialty to experts. In this way the training and experience of the general body of the profession in their use is restricted, with the

consequent lack of any familiarity or facility in their administration. This creates a want of confidence on the part of the medical man, while a terror of them spreads as a natural result among his patients. The dangers ascribed to these dreaded anæsthetics seem, however, to be immensely exaggerated, if not unfounded. It need scarcely be said that no anæsthetic as yet known is capable of producing such a condition, either in man or any other animal, as insensibility to suffering and unconsciousness of existence—analgesia and anæsthesia—so complete that all cognizance of anything whatever should be entirely abolished, and the severest operation be enabled to be commenced and finished unknown to the patient, without incurring any danger. The condition induced is one much too unnatural ever to expect this, and it is indisputable that all such conditions may occasionally tend to fatal results. But every death which occurs during anæsthesia, as Mr Bailey observes in regard to gas, is not to be set down as due to the anæsthetic employed. If, as Mr Macleod justly argues, the use of every anæsthetic which might possibly be a cause of death were to be interdicted, it would amount to excluding every general anæsthetic whatever. The answer to all this, no doubt, will be that the object sought for is to employ the anæsthetic showing the smallest amount of danger to life in the record of its use. And this seems to be precisely the dilemma on which the whole contention rests. Nitrous oxide might be, in one view, as safe, or, as some argued, safer than chloroform, but its comparative safety altogether depends upon the duration of the operation performed. It seems hopeless to maintain that it was possible efficaciously, and without danger to life, to keep up the anæsthesia produced by it for the same length of time as in the case of ether or chloroform, so that any extra safety attributed to it becomes altogether conditional. In very short operations only was it generally considered fit to be used. Yet in this manner, upon the evidence afforded in these short operations, its safety is proclaimed. The number of dentists registered in Great Britain is considerably over 5000, but the number of medical practitioners registered is as much over 27,000. The operations for which these 5000 exhibit anæsthetics are almost invariably confined to extraction or some operation equally brief and simple, connected exclusively with teeth. In the cases in which the 27,000 exhibit anæsthetics, there is embraced, on the other hand, all those occurring in the whole range of medicine, surgery, and obstetrics. Yet it is not unfrequently found that the comparison between the absolute, not the relative deaths, occurring in the one and the other set of anæsthetics is employed in arguing as to their safety. The fallacy here need not be pointed out. That grave responsibilities attend the use of chloroform was admitted by Mr Macleod, and has been already long ago pointed out in these pages to attach to every general anæsthetic. But the causes and methods of death, as he says, have now been well ascertained,

and it seems quite within the power of the skilled administrator to avert fatalities, except in those few cases, such as fright or idiosyncrasy, which cannot be eliminated or detected. Its dangers, he pointed out, were above all others those of a respiratory nature, and its safety was enhanced according to the simplicity of the mode of its administration, and by making sure that the patient was thoroughly under its influence. No agent of the kind had been so well abused, so universally used, so misunderstood, and so carelessly handled. Yet after a fair and prolonged trial, as he also stated, and was supported by a very general voice in the meeting, chloroform appears to be of all others the anæsthetic which has best fulfilled its true purposes of immunity from pain, utter unconsciousness, relaxation of muscular tonicity, pleasant recovery, freedom from subsequent inconveniences, and last, though not least, extreme simplicity and pleasantness in its inhalations, and that not in minor alone, but in every form of operation. Dr Cruise speaks from a long and varied experience in both ether and chloroform, and his remarks are worthy of much attention and consideration; and while they apply to ether in very much the same manner as those of the other speakers do to chloroform, he considers ether, in dental operations of any duration, as the safest anæsthetic. Dr Stack also expressed his preference in certain cases for ether. Both chloroform and ether, however, he considered had their respective good qualities, and either he held to be vastly superior to nitrous oxide, both in respect to their immediate advantages in affording time to the operator, and also in their freedom from danger in several possible serious after effects upon the patient. He, however, considered that dentists ought to use all the anæsthetics according to circumstances, and with due care and circumspection, whether ether, chloroform, or nitrous oxide,—a position which seems to be the true and proper view of the whole question. Mr Hutchinson's judicious remarks on the precautions to be observed in administering anæsthetics are very much to the point. Not only does he uphold the propriety of patients being in the horizontal position—every article of dress being loose about them, and a proper interval having elapsed since last taking food—but he very properly commends to his fellow-practitioners that they should put themselves out of the way, and visit the patients at their own homes. This advice ought in every possible case to be followed, especially with chloroform or ether. Dr Bonwill's rapid respiration theory of anæsthesia was shortly discussed, but it seems as yet to be scarcely well enough worked out for much being said about it. He asked, however, that a fair trial should be given it, as he is convinced that it promises success.

History repeats itself. The conclusions arrived at by the British Dental Association's meeting might be summed up by quoting those of a paper appearing on the same subject some quarter of a century ago in these pages, and in which the teachings of the debate were

all inculcated. In the *Edinburgh Medical Journal* for March 1866 will be found that the risks of asphyxia are pointed out as predominant, and the modes of averting them shown to be clearing out the fauces and pulling forward the tongue, both to be effected by the finger—not by forceps or any other instrument requiring to be kept in the mouth; that by anything of the nature of a gag, swallowing is held to be not only prevented, but a free access to the larynx kept persistently open, not alone for air, but for the entry of blood, saliva, or whatever other fluids are lodging at the entrance and endangering suffocation; that the dangers of syncope are dwelt upon, and its causes in many cases ascribed to insufficient anæsthesia—a whiff or mere driblet of chloroform being set down as a practice fraught with danger; that the horizontal posture of the patient in dental as well as other operations during anæsthesia is enforced: while undue reclination of the head backwards is also demonstrated as productive of evil effects; and, lastly, that the discrepancy of the appearances on post-mortem examination of a number of cases where death ensued during anæsthesia, pointed to its occurrence as being more likely due, in many instances, to accidental causes rather than to any toxic properties inherent in the anæsthetic itself. The Association is much to be congratulated on the results of the meeting of August 1889—in the thoroughness with which the question of anæsthetization has been there approached from every point of view.

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*Cyclopædia of the Diseases of Children.* Vol. I. Edited by J. M. KEATING, M.D. Philadelphia: J. B. Lippincott Co. Edinburgh and London: Young J. Pentland: 1889.

THIS is the first instalment of a very large undertaking, which is to consist, when completed, of four volumes, and to embrace “not only the medicine and surgery of pædiatrics, but also all the specialties tributary to it, as well as collateral subjects of interest and importance.” It is, in fact, a collection of monographs arranged in the form of a systematic treatise, and devoted to the consideration of the anatomy, physiology, medicine, surgery, and hygiene of infancy, childhood, puberty, and adolescence; and even this broad scheme does not take in all the subjects treated of, as in the present volume, which contains almost 1000 pages, we find articles of considerable length on “Outlines of Practical Bacteriology,” “Maternal Impressions,” “Diseases of the Fœtus,” “Wet Nurses,” and “Embryology,” which do not usually come under the head of diseases of children.

The articles are written for the most part by authors, both American and British, whose names are well known in connexion with the subjects treated of; and if the remaining volumes are conceived and executed in the same broad spirit, and with the same general excellence, the cyclopædia will be a valuable addition to the physician’s library, as a storehouse of information in all