CENTENARY OF CHLOROFORM ANAESTHESIA

BY

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A year ago the birthday of ether anaesthesia was duly and fitly celebrated the world over. The discovery in 1846 of ether as an anaesthetic was the climax of an age-long search. That it was so long delayed is truly remarkable. Many a time down the ages it had been so nearly found. There had been the nepenthe of Helen of Troy, which brought forgetfulness of every sorrow; the mandragora of Dioscorides, which remained in use until the Renaissance; the physical methods, such as pressure on nerves or freezing, which have been strangely revived in modern times; and the mesmerism for which John Elliotson fought so hard and which was the favoured line of anaesthetic research at the time when ether appeared on the scene and, in the words of Robert Liston, "beat mesmerism hollow."

In a few days the birthday of chloroform anaesthesia will be celebrated, and some may wonder why we should not simply honour the American pioneers of ether anaesthesia, and leave it at that. Was not chloroform simply another anaesthetic? Yes, but it was more. Just as Lister discovered not carbolic acid but the antiseptic method, so did Simpson, eighteen years earlier, discover not only chloroform anaesthesia but an anaesthetic method. Anaesthesia became a science under Simpson's guidance.

James Young Simpson

It is advisable to, give some account of his life work, familiar as it must be to many readers. Born at Bathgate, Linlithgowshire, in 1811, James Simpson was the son of a baker whose family was large while his resources were small. Jamie seems to have been an unusually bright child, filled with that insatiable curiosity and desire for knowledge which marked the youth of John Hunter and many another genius. The family resolved that Jamie should have a good education, and from early boyhood he was marked for the medical profession. He was still a youth when his parents died, but the paternal care was continued by his elder brother Sandy, while his sister Mary became to him a second mother. When he entered Edinburgh University he was "very poor, very solitary, and almost friendless," but he soon showed his worth, graduating M.D. in 1832. An incident of his student days turned his attention to anaesthesia: it was during his attendance at an operation—and very little imagination is required to enable one to picture the horrors of surgery without anaesthesia and the agony endured by the central figure on the table. James Simpson's whole soul revolted at the sight as he left the Infirmary and sped towards Parliament House, resolved to exchange the profession of medicine for that of law. Success would have followed him there, or indeed anywhere. On second thoughts, however, he determined that he would try to relieve pain instead of running away from it. The opportunity was soon to come. It was John Thomson, the professor of pathology, whom he assisted,

who suggested to Simpson that he might do well to specialize in obstetrics. Thomson himself had tilled many fields—atomy, military surgery, and then pathology. He had been the first professor of each subject, and it is not surprising that Knox, the tragic anatomist, called him "the old chair-maker." A few years later the chair of midwifery fell vacant. Simpson had set his heart on it, and he was well prepared. Many thought him too young, and on hearing this he determined that he would indeed be young. On an impulse he sat down and signed his application James Young Simpson.

Appointed to the chair by the majority of a single vote, he now entered upon his duties with characteristic energy and enthusiasm. Soon he became recognized as the leading British obstetrician. His classroom attracted many students; his house was filled with those who came for healing and those who came to learn. To all of them he accorded generous hospitality.

David Waldie

All this time he was pre-occupied with the mystery of pain, for which as yet there was no remedy. When the news of the American discovery reached him, he told his brother that it was "a glorious thought" and that he "could think of naught else." In January, 1847, he was the first to use ether in obstetric practice. But before long it was apparent to Simpson, as to many others, that the ideal anaesthetic had not been found. Ether was slow and uncertain in action, it was often irritating to the air passages, and special apparatus was required for its administration. Something better might be discovered, and Simpson resolved to discover it. His method was the simple one of self-experiment, his assistants also lending their aid as subjects for the trial of various drugs. All Simpson's friends were aware of his quest, and many suggestions were offered. Dr. David Waldie, a Linlithgow lad who had become a chemist in Liverpool, thought that chloroform might be worth trying, and Simpson acknowledged this hint and acted upon it. There is no evidence to prove that Waldie made any experiments on his own account, and certainly he published no results, but he de-

serves honour for his suggestion. Another share of the credit is due to Simpson's assistants, Keith and Matthews Duncan. For several months before the discovery the trio used to meet in Simpson's dining-room at 52, Queen Street, after their day's work, in order to inhale, from no apparatus other than simple tumblers, all manner of likely and unlikely vapours. It was a bold venture, and it is not surprising to learn that Simpson's next-door neighbour, Prof. James Miller, would often look in at breakfast-time "just to inquire if everyone was still alive."

The Experiment

On the evening of Nov. 4, 1847, after several useless efforts, there was produced from a waste-paper basket, so it is said, a little bottle of chloroform which had been prepared by Prof. William Gregory, as Waldie's promised sample had not arrived. It looked heavy and involatile, but Simpson poured a little into his tumbler. He was too well aware of the risks to permit a simultaneous experiment by all three observers. Very soon Keith and Duncan noted the effect on their chief. They too

James Young Simpson

sniffed the vapour from their tumblers, and soon all were unconscious, Duncan snoring loudly and Keith, having slipped from his chair in the stage of excitement, kicking at the table legs. Naturally, Simpson recovered first, fully aware that he had discovered something "far stronger and better than ether." And so indeed it proved. Within a short time chloroform had

"Anaesthesia" at the age of 17. The first child to be born while the mother was under the influence of chloroform administered by Prof. J. Y. Simpson.

displaced ether and had become the anaesthetic of choice all over the world, save perhaps in the northern States of America, the original home of ether.

Of course Simpson never claimed to have discovered chloroform, nor did he claim to be the first to use general anaesthesia. The substance chloroform was first produced about 1831 by Guthrie in America, Soubeiran in France, and Liebig in Germany, each chemist working independently of the others. Since then it had been used as an internal remedy; indeed it is so used to this day.

Simpson was, however, the first to demonstrate the anaesthetic properties of chloroform. Within a week of his discovery, on Nov. 10, he read a paper to the Medico-Chirurgical Society entitled "An Account of a New Anaesthetic Agent as a Substitute for Sulphuric Ether in Surgery and Midwifery." The contribution was printed and published on Nov. 15, by which time Simpson was able to add notes on the employment of chloroform anaesthesia in three cases at the Royal Infirmary. The first patient was a Highland boy who could speak only Gaelic. His name is unfortunately not known to us. From his arm Prof. Miller removed a large sequestrum of the radius, Simpson acting as anaesthetist. It was natural that Simpson should also introduce chloroform into obstetric practice. The first child whose mother enjoyed its beneficent influence was the daughter of a Dr. Carstairs, of Edinburgh, who was duly christened "Anaesthesia." Her career cannot be traced, but a photograph of her at the age of 17 stood on Simpson's desk and he called her his patron saint, "St. Anaesthesia."

John Snow

It now seemed as though chloroform would fulfil the anaesthetic ideals of efficiency and safety. "Never mind the pulse, but watch the breathing carefully," was the watchword of Simpson and his disciples. Lister wrote a most valuable paper on chloroform anaesthesia, which is still well worth reading, and he stated that Syme had performed five thousand operations under chloroform without a death which might be attributed to the anaesthetic. Lister's paper appeared in 1861. But long before that date a disquieting series of deaths had been reported from various quarters, and the safety of the new anaesthetic had been called in question. Attention was now turned to the need for accurate dosage to replace the somewhat haphazard "rag and bottle" method.

Among those who promoted the safety of chloroform administration by new dosimetric methods was John Snow, who had already won fame by proving that cholera was a water-borne disease. Turning his attention to anaesthetics, and especially to chloroform, he was the first in Britain to limit his practice to anaesthetics, and it was he who administered chloroform to Queen Victoria at the birth of Prince Leopold and subsequently of Princess Beatrice. The name of Snow well deserves to be linked with that of Simpson. Although chloroform lost some of its popularity when its safety was questioned, it retained its place as the principal anaesthetic until the turn of the century. Indeed, the words anaesthesia and chloroform became synonymous, and the verb "to chloroform" was in constant use. As time went on, the use of ether was revived. There was a contest between ether and chloroform; new mixtures, new sequences of other vapours and gases, were used; premedication by various narcotics came into fashion, and anaesthesia gradually became one of the most exact and precise of the medical specialties.

Simpson the Many-sided

Of the modern position of chloroform in anaesthetic practice I am not qualified to express an expert opinion. No doubt the Centenary Celebration to be held in Edinburgh next week will call forth opinions regarding chloroform as used to-day from expert anaesthetists who can speak with authority. But perhaps one may be allowed to conclude this note by a few further remarks on the discoverer, Sir James Young Simpson, who became the first Scottish medical baronet in 1866, four years before his death. Although chloroform anaesthesia was his greatest achievement, it was by no means his only claim to distinction. He wrote voluminously on homoeopathy, on "hospitalism"—his suggestions have quite a modern flavour—and on many another subject. In his promoter's address at the Edinburgh Graduation Ceremony of

Room at 52, Queen Street, Edinburgh, in which anaesthetic value of chloroform was discovered.

1868, he remarked that "by means of electric lights the human body might one day be rendered transparent." Thus he prophesied Roentgen's discovery. Simpson's greatest campaign, and one on which he laid much stress, was his advocacy of a means of controlling haemorrhage by means of needles, so as to avoid the silk ligature which promoted and perpetuated sepsis. Acupressure, as he called it, brought him into conflict with surgeons, who resented his encroachment upon their domain. The introduction of the antiseptic method, strangely enough, was opposed by Simpson, who asked Lister to show his "mythical germs." Nevertheless this method led Lister to introduce the catgut ligature. There was then no need for acupressure, and soon it was entirely forgotten. The versatile outlook and abounding energy of Simpson could not be limited by his own specialty of midwifery, although he advanced that science in no small way. Nor did he limit his investigations even to the wider field of medicine and surgery, although he contributed to both.

In some strange fashion, amid the claims of a huge practice and of many medical interests, he found time to establish himself as an authority on archaeology. His essays may still be read with interest—on Scottish charm stones, on medical officers in the Roman Army, on leprosy in Scotland, to mention only three, written with a conviction that reveals his wide and varied store of knowledge.

Simpson believed in living strenuously. But even his happy possession of the ability to fall asleep at any time or in any circumstances did not altogether relieve the heavy strain imposed upon his sturdy frame. He fell a victim to coronary thrombosis, "the doctors' disease," and died in his fifty-ninth year. He earned the gratitude of many a sufferer, and it is fitting that he should be remembered to-day and honoured for all that he did, especially in his great service to the science of anaesthesia one hundred years ago.

A METHOD OF ABDOMINAL PALPATION

BY

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The conventional method of abdominal palpation, with the patient supine with (or without) the legs drawn up and with (or without) a cushion under the shoulders, though generally sufficient, is sometimes difficult on account of the tonicity of the abdominal muscles, the amount of fatty tissue, or the inability of some patients fully to relax the abdominal wall. This inability may be the result of nervousness or misunderstanding, or even a desire to be helpful. Moreover, the placing of the hand beneath the lumbar region for palpation of the kidney often causes the patient to lift himself in a desire to help, though actually it makes palpation more difficult.

In tropical practice, where patients are more numerous, the time taken in explaining to an uneducated native that he must lie on the couch, on his back, and not keep lifting his head to see what is being done, is another disadvantage; besides which, a chair or table is not always available in itinerant practice, and the native bed is too low for convenience. The alternative—of laying patients on the ground—is tiring if there are many to examine.

Such considerations led to a search for a method which would assure complete relaxation of the abdominal wall, which would dispose of the need for a table or chair, and which would avoid the time spent in placing the patient suitably on a table for examination. The thick fatty abdominal wall common in European practice is relatively uncommon in Africa. The method to be described was suggested first by remarking the ease with which one can examine the spleen of a child if he is made to bend forward and hang the head down. Nicholson's method (of restraining thoracic respiration with one hand) has the disadvantage of maintaining one hand in a state of muscular tension while trying to palpate with the other. Marshall (1933) described a "dangle" method similar to that of the palpation of the spleen referred to, but with the patient seated and the surgeon standing behind.

The following method is recommended because of the complete relaxation afforded, the fact that neither chair nor table is essential, though a chair is useful, and because an uncooperative patient, breathing normally, cannot contract his abdominal muscles in this position and thus frustrate the examination.

Details of Procedure

The examiner stands on the patient's right, and instructs him to bend forward with his arms and head dangling down. The patient may be standing or sitting. The examining hand (the right) is passed between the hanging right arm of the patient and his abdominal wall, then right across the abdomen until the left anterior superior iliac spine is felt. It is much easier in palpating to pull the hand back than push it forward. The left hand is placed on the patient's back opposite the palpating hand and its position changed with that of the latter. This hand serves to steady the patient and also to act as counter-palpation to the hand on the abdominal wall.

The routine examination is as follows: Starting at the left anterior superior iliac spine, the hand is drawn inwards and upwards along the iliac fossa to palpate the iliac colon and iliac glands. The ureter is sought (and is often palpable in thin patients) at the pelvic brim (Tournoux's point). Returning then to the iliac colon, its course is followed upwards to the subcostal region. The left hand then pushes forward in the left costo-vertebral angle to facilitate palpation of a kidney. One then feels for the spleen. Crossing the upper abdomen, the right lobe of the liver is palpated beneath the costal margin, and often one can flip it across the fingers and so estimate its consistency, size, and surface. This examination is made easier if the fingers are hooked under the costal margin. The region of the gall-bladder is also palpated. The left hand, which has followed the right across to the patient's right, now presses forward with a view to palpation of a kidney, and the right colon is then followed down to the caecum, and the right ureter is also sought. Finally the examining hand is replaced across the lower abdomen and the suprapubic and the inguinal regions palpated. In a lax abdomen with thin walls it is often possible to pass the fingers into the pelvis from above, giving the sensation of putting the hand into a basin covered with a blanket. If necessary, the examination can be completed with a bimanual examination of the prostate.

Comment

The advantage of this method, apart from those stated above, is that the whole abdominal palpation is bimanual, allowing thus for a more definite impression of the consistency and extent of any palpable structure. The simple downward palpation of the conventional method fails somewhat to assure this, in that the counter-pressure is made by the inert couch.

REFERENCE

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DEAF-MUTISM IN SWITZERLAND

Prof. Ernst Hanhart, of the University of Zurich, who has been working for many years on problems of genetics in certain selected Swiss populations, paid his first visit to England on Oct. 7 to deliver the Galton lecture—the first for eight years—at University College, London. His subject was human genetics, with special reference to deaf-mutism and other abnormalities.

In Switzerland the average number of deaf-mutes has been given as 24 per 10,000 population, as compared with only 8 per 10,000 in Europe as a whole. Prof. Hanhart said that Switzerland was an excellent theatre for genetic study because of the many villages which had been virtually isolated for centuries. He had a number of family histories going back to 1600, and the standard of observation by general practitioners and hospitals was so high that few important cases of variation were missed. Even now, in a time of change, very few movements of population disturbed these quiet valleys, and complete family pedigrees could be collected without much difficulty. In almost every region of Switzerland records of family histories were available, and fortunately there was very little venereal disease to complicate the picture. The frequency of pathological mutations was relatively high among these inbred communities, where the marriage of cousins and incestuous unions were not infrequent. At the same time there were inbred communities which showed almost no pathological mutations.

Prof. Hanhart's lecture was illustrated by some elaborate diagrams showing pedigrees in which cases of deaf-mutism and of diabetes mellitus occurred sporadically. His investigations had extended over twenty-five years, and he had endeavoured to consider not one character or condition alone but all the accompanying constitutional features. In one village with 2,400 inhabitants near the eastern end of the Lake of Geneva there were 49 deaf-mutes. Deaf-mutism might appear in an ancestor and not be repeated for two successive generations, then reappearing. In one instance a man in this region married a woman