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THE HISTORY OF ANAESTHESIA SOCIETY PROCEEDINGS

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23rd and 24th October 1998

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THE HISTORY OF ANAESTHESIA SOCIETY

Paris Meeting - October 1998

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HISTORY OF ANAESTHESIA SOCIETY

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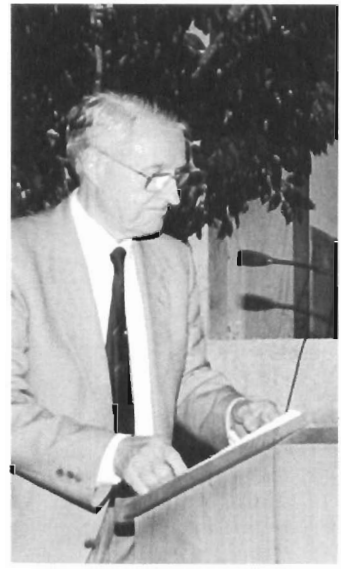

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Dr J A Bennett and Jean Horton

Dr J-J Ferrandis and Dr Marguerite Zimmer

Visit to the Musée de l'Assistance Publique

EDITORIAL

Paris in the autumn was a delight. Those who attended had many reasons to thank Marguerite Zimmer for choosing the splendid Salons Hoche as the venue, for arranging genuinely Parisian social outings, and for setting the convivial style of the meeting with her canapés, and wines from Alsace.

It was a pleasure to welcome Professor Lassner, our Honorary Member, who very kindly entertained the Officers of the Society. Non-attenders may be reassured that food and drink, although consumed in impressive quantity, were not the major part of the programme. The academic sessions were nicely judged to provide interest for all while maintaining the French connection. We were privileged to hear distinguished local speakers and to have specially escorted visits to the Musée de l'Assistance Publique and the Musée de Service de Santé des Armées at the Val de Grâce. Much was learned in an all too brief time.

It is perhaps regrettable that this has been only our second meeting outside the British Isles. The Society has grown remarkably since its successful visit to Rotterdam in 1991, and we should surely become more adventurous. Included in this volume are some items of European and of world wide interest. The Department and Society Histories feature contributions from Belgium and the United States as well as from Britain. Dr Joseph Rupreht kindly provided the appended list of societies over 50 years old, which may act as a stimulus to further recorders of the development of our specialty. Aileen Adams, in her amusing piece on the Tunis meeting, urges more of us to at least attend, if not to organise, meetings in foreign climes. Most British anaesthetists would agree that we are woefully ignorant about activities beyond our own shores.

I take the opportunity to commend the Catalogue of Anaesthetic Equipment from the Museum in Hamburg. Dr Zimmer's paper mentions her important find in the University Museum at Utrecht, while the Paris museums we visited were truly eye-openers. Travel does broaden one's mind, but it can also be used to enlighten and to entertain, as contributors to this volume demonstrate. We should all visit more, observe more and communicate more.

AMB

HISTORY OF ANAESTHESIA SOCIETY

Annual Meeting, Paris 22-24 October 1998

Academic Programme

OBSTETRIC HAZARDS AND ANAESTHESIA IN THE ROMAN EMPIRE

Pr Danielle Gourevitch (EPHE, Paris)

In the Roman Empire, what happened when a pregnant woman came to her time and the child could not be delivered? To help answer this question we have several different sources: general and technical Graeco-Roman literature, Roman law and archaeology.

1. **The Caesarian birth** is documented in law and general literature, but neither in medical literature, nor in archaeology, of course. Roman law contemplates the case when the child is due to be born but cannot come into the world because the mother is dead: then a Caesarian section is supposed to be performed on the dead body. Several passages in the legal compilation ordered by Emperor Justinian insist that the baby should be taken out of the mother's womb. The practice is supposed to date back to the the regal period: *negat lex regia mulierem, quae praegnas mortua sit, humari, antequam partus ei excidatur* (Marcellus, *Digesta* 11.8.2). Julius Paulus insists on the matter when he comments on the Augustan laws on the family and especially on the *jus trium liberorum*, making it quite clear that a woman has not really given birth if her child has been removed from her dead body (*falsum est eam peperisse, cui* ***mortuae filius exsectus est***, *Digesta* 50.16.132.1).

Ulpian commenting in his turn on this same *jus* takes the opposite view (*Digesta* 50.16.141): *etiam ea mulier cum* ***moriretur***, *creditur filium habere, quae* ***exciso utero*** *edere possit*. And writing about problems of property he insists several times on the fact (*Digesta* 5.2.6): *eum qui post testamentum matris factum* ***exsecto ventre*** *extractus est, posse queri dico*, and the same phrase appears in *Digesta* 5.2.6: also in *Digesta* 38.8.1.9: *si qua praegnas* ***decesserit*** *et* ***utero exsecto*** *partus sit editus*, and in *Digesta* 38.17.1.5: *sed si* ***matris exsecto ventre*** *filius editus sit*. Last but not least, and still with Ulpian, let us imagine the birth of a posthumous son, born after the death of his father, and by a Caesarian section, which is quite an unlikely possibility (*Digesta* 28.2.12): *natum accipe et si* ***exsecto ventre*** *editus sit*. Our interest is not in such problems of property, but it is striking that no concrete example is offered in the *Digesta* or in Gellius' *Noctes Atticae*, although they otherwise provide an abundance of special cases. Therefore, I do not believe such a situation did happen; it is only a scholarly hypothesis, to make the legal framewok complete.

Let us now consider Pliny's book VII where a series of strange facts about man is detailed, including specifically, in chapter 47, the various types of birth, the most propitious one being the Caesarian section: *auspicatius e* ***necata parente*** *gignuntur, sicut Scipio Africanus prior natus primusque Caesarum* ***a caeso matris utero*** *dictus, qua de causa et caesones appellati. Simili modo natus et Manilius qui Carthaginem cum exercitu intravit*. Three great men are supposed to have been thus born against natural law: Julius Caesar, Scipio Africanus I, and Manilius. But this is not true: Aurelia brought up Caesar and Pomponia brought up Scipio. From our knowledge of ancient surgery, it is unbelievable that women thus operated on might have survived the surgery; therefore these family stories are but legends.

The story associated with the name Caesar is the easiest to explain. Commenting upon Virgil's *Eneid* 1.286 (ed.Thilo-Hagen), Servius writes: '..... *Caesar vel quod* ***caeso matris ventre*** *natus est, vel quod auus eius in Africa manu propria occidit elephantem, qui* ***caesa*** *dicitur lingua Poenorum*'. He thus thinks of two possible explanations for Caesar"s name,

which might come from *caedere*, 'to cut' (the mother's womb), or from the Punic name of the elephant, 'caesa', Caesar''s grandfather having killed one with his own hand. The first etymology is repeated in X.316: '*... qui primus de eorum familia fuit,* ***exsecto matris ventre*** *natus est, unde etiam caesar dictus est...*', followed with the right conclusion: *'licet varia de etymologia huius nominis dicantur...'* Isidor of Sevilla propounds a third etymology (IX.3. 12): *'Caesar autem dictus, quod* ***caeso mortuae matris utero*** *prolatus eductusque fuerit, vel quia cum* ***caesarie*** *natus sit'*. Caesar's name might come from *caesaries*, 'hair'. The amusing thing is that Caesar became bald early in his life and was most unhappy about it!

But let us go back to Servius, who will take us into the wonderland of myth, that of Apollo and Asclepius; *Ad Aen* VII.761. He writes: *'Aesculapium... qui natus erat exsecto matris ventre... Et exsecto ventre Coronidis produxit ita Aesculapium'*. In fact, Apollo had a lover, Coronis, a nymph. She was bold enough to be unfaithful to him, therefore he killed her, then decided to cut the dead body and to take out of it the baby who was to become the god of medicine. And there is the explanation: Caesar has been born exactly like Asclepius. He always proclaimed he was of divine lineage, Venus being his great-great-grandmother by Aeneas. The two together provided incontestable reasons why Caesar was (almost) a god!

No medical text considers the possibility of such a birth. How should we explain this omission? Some say the operation was so common that it was not necessary for a doctor to describe the process. Others consider that it is not strictly a medical act since it takes place only if the woman is dead; others again, that it is a religious practice, which has nothing to do with the art of medicine. My definite opinion is that there was no Caesarian section before the XVIth century: a pretty play on Latin words and a Greek legend put together simply kindled imaginations.

2. **Version of the foetus** was actually practised: this is suggested in a few funerary inscriptions and documented in medical literature. Some inscriptions do tell us about fatal parturitions for lack of a competent intervention: for instance in Salona, Candida died when she was 30; she was in the pangs of labour for 4 days, but she could not be delivered, and therefore she left this world (*Corpus Inscriptionum Latinarum* III:2267). Apparently nobody was there to help. The most vivid and detailed picture of childbearing and childbirth in the Roman world is that given by Soranus of Ephesus, a medical author who wrote in Greek but lived and practised in Rome under the emperors Trajan and Adrian. In the 4th book of his *Gynaecology*, he writes that the doctor, knowing the best position for the child to be born is on the head, can diagnose abnormal positions of the fetus by touching the mother's abdomen and by inserting the fingers. In such a case it is his duty to make that position normal: the child's body has to be pushed up inside, driven into the uterus, and then hopefully a version can be done. Things are still more difficult if deviation is combined with impaction.

Archaeology gives further evidence. We know of at least two archaeological cases of obstructed labour of the Roman period when version was not done: one in Israel, when the confinement ended with two deaths; one in Great Britain, when a deformed child was born. In Giv'at ha-Mivtar, a woman aged about 30-35 and therefore probably already multiparous, could not, due to a malposition in utero in an antero-posterior position, expel her baby, although the head was already engaged. A version could probably have saved mother and child. In Norfolk, a well-preserved skeleton of a man aged about 25 years, found decapitated, dated back to the 4th century AD, since it was buried with a coin of emperor Constans

(333-350). In addition to the unexplained decapitation, several skeletal abnormalities were present, the most important of which were a shoulder injury, shortening of the left upper and lower limbs, and chronic infectious lesions of the left leg and right foot. According to Calvin Wells the most likely diagnosis is that of an obstetrical shoulder trauma (and later tuberculous infection). This lesion is often due to too vigorous traction during an unskilled attempt to expedite a difficult birth, and is especially common in cases where extended arms complicate the after-coming head of a breech presentation. This might in turn have produced a moderate hemiplegic condition, later followed during childhood by fractures and infective destruction of several joints.

3. **Instrumental foetal mutilation: embryotomy and embryulcia**. Philosophers and Christian writers were against that surgical process which consisted in cutting a fetus *in utero* into several pieces, to be extracted with special hooks, when it was impossible to do otherwise in order to save the unhappy mother. Doctors considered it had to be done sometimes: if manual traction did not work, one had to proceed to more forceful methods. Soranus is extremely precise when he describes the details of the surgery, according to the position and state of the fetus, usually already dead or soon to die. For instance, (the translation is Drabkin's): 'if a hand has prolapsed and cannot be turned back because of the severe impaction, or if the fetus is already dead, ... one should throw a piece of cloth over it to prevent slipping and draw it forward slightly. Then depressing it in order that the parts lying above may become more visible, one should amputate at the shoulder joint... Then one should turn the rest of the body with the fingers and deliver by inserting the hooks.' Once this horrible surgery is over, it is time to take care of the woman, and 'after extraction by hooks and embryotomy, since the region is already inflamed and because of the ensuing irritation, one should induce relaxation and soothe by means of embrocations'.

A full-term fetus with fractures and bones cut with a surgical knife has been discovered in a IVth century necropolis in Poundbury (Dorset). A thorough morphological and biometric study of its skeleton allowed piecing together details of the labour in a case of an unduly large baby (macrosomia, more than 5 kilos) and embryotomy of the fetus in a neglected right shoulder presentation, with the back anterior. The head had to be severed, and the right leg and arm, and during the process two fractures occurred, in the left leg. The mother was probably multiparous and hypotonic. The midwife or the neighbour had waited too long before calling the doctor, and it was too late for the child. This unique case demonstrates that Roman medical techniques were used in the furthermost parts of the empire, and that in a small Romano-British village, a country practitioner, or maybe a military doctor, was familiar enough with the rules of sophisticated obstetrics to perform this very long, difficult and distressing surgery. Apparently the mother did not die at the time since she was not buried with the child, which was the custom when both mother and child died together.

4. **Anaesthesia and analgesia**. The medical literature is very sparse regarding anaesthetic plants and soothing drugs; wine is often chosen. In Soranus (our edition, III 12 = p. 44) in case of a severe pain due to genital haemorrhage, whatever its cause might be, poppy juice (opium) will be diluted in vinegar and applied to the private parts, and (our edition, III 14 = p. 51), a decoction of grains of kavnabi is given to drink in case of a gonorrhea. Both are listed among other medicinal herbs, without any special comment.

Archaeology is more exciting on the matter. In fact, at the other end of the Empire eastwards, about the same time, another obstetrical drama happened. The skeletal remains of a young woman, about 14, were found in an undisturbed family tomb in Beit-Shemesh near Jerusalem. In the last stages of pregnancy, or at the the time of giving birth, she still bore in her pelvic area the bones of her baby (aged at least 40 weeks). She was obviously immature and this makes us remember the outbursts of Soranus against precocious marriage and pregnancy. The internal dimensions of her pelvis made it unlikely that a normal vaginal delivery might take place. Apparently there was no physician to perform an embryotomy and the attendant or attendants decided to administer a drug as an inhalant to facilitate the birth process. A few grams of a carbonised grey material found in the abdominal region of the girl were analysed by the Police and by the Hebrew University and might be a constituent, obtained during the process of burning of *Cannabis sativa*, a drug which was still to be used in centuries to come for its power of increasing the force of uterine contractions and alleviating pain.

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Appendix kindly provided by Professor Gourevitch for HAS readers

ALCOHOL AND DRUGS IN THE ANCIENT WORLD
compiled by Danielle Gourevitch (EPHE, Paris)[1]

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[1] Part of this bibliography has been already published in *Centre Jean Palerne. Lettre d'information*, 18, 1991, 11-13

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A HISTORY OF FRENCH MILITARY ANAESTHESIA

Le médecin en chef Jean-Jacques Ferrandis
Conservateur du Musée du Service de santé des armées

Although I hope I know a little about the history of medicine, I am neither a surgeon nor an anaesthetist. For these reasons, I should really not have accepted the invitation to give a presentation on the history of French military anaesthesia to such a prestigious and specialised group. When the médecin général inspecteur de Saint-Julien, Director of the training school of the Service de santé des armées at Val-de-Grâce asked me to give this presentation I agreed to do so as I thought in the end that a historian's view had a good chance of being objective. It is interesting that the history of anaesthesia is often related by surgeons who seem not to have allowed any qualified anaesthetists to join their operating theatre staffs until October 1946.

Two instrument cases in the Museum

History reminds us that progress in military surgery, so often dependent on the conflicts of the time, advanced spectacularly in the 19th century after the discovery of anaesthesia. Collections at the Museum of the Service de santé des armées, of which I am the conservateur, allow us to gain a better understanding of this, for instance by comparing two instrument cases.

Firstly we have an amputation instrument case from the time of Dominique Larrey, surgeon of the Garde impériale of Napoléon. Larrey was famed for his dexterity and speed, and was able to disarticulate a limb in thirty seconds. He was fast because he did not have the means to treat pain other than by keeping the patient still and by giving him laudanum, and more especially by many shots of brandy.

A second instrument case dating from the 1860s belonged to Hippolyte Larrey, the great surgeon's son. Hippolyte was also chirurgien en chef de l'armée, but to that of the Emperor Napoléon III. The instruments Hippolyte used allowed him to perform conservative surgery of greater duration. Within a generation, military surgery which consisted of little other than amputations during the Revolutionary and First Empire wars, gave way to modern surgery with the discovery of anaesthesia.

Early use of anaesthesia

Was anaesthesia taken on board by the French army as soon as it was discovered? The answer to this question has to be 'yes', as made clear by the advanced types of surgery performed by the senior army surgeons of the time. The *Bulletin de l'Académie de Médecine* of 1848 tells us that Simpson sent a copy of his publication directly to Sédillot.

Charles Emmanuel Sédillot, the inventor of the word 'microbe', was the author of many presentations to the Academies of Medicine and Surgery. Let us consider two of these. In January 1848 he gave a dissertation: *Loss of sensation produced by chloroform and ether and pain-free operations*, and in 1852: *Rules for the use of chloroform in surgical operations.* Sédillot was the first Director of the first French training school for army doctors at Strasbourg.

Turning to the Navy, Emile Roux, a surgeon in Cherbourg, published a paper: *Ethérisme hypochloreux* in 1848. In the same year Louis-Jacques Bégin investigated the hazards of chloroform anaesthesia before presiding over a study group on the subject.

In 1853 Lucien Jean-Baptiste Baudens, the renowned surgeon of the conquest of Algeria and professeur at the Val-de Grâce, gave a paper: *Rules to be observed during the use of chloroform*, and in the same year Hippolyte Larrey, Professor of Surgery at the Val-de-Grâce, presided over the commission organised by the Société de Chirurgie inquiring into a fatality which had occurred in Orléans.

The first use of anaesthesia by French military surgeons dates back to the Crimean War from 1854-6 and the pacification of Kabylie 1854-7. [Following revolt in Algeria, Ed.] In his paper: *Medical and surgical issues of the campaign in the east* Gaspard Scrive, médecin chef of the armée d'Orient in the Crimea wrote:

> 'Of all the therapeutic measures used in surgery to relieve the severe pain of war injuries, none has been as effective or so completely successful as chloroform; the benefits of the use of this marvellous anaesthetic agent to the armée d'Orient have been immense; never, in any circumstances, has its use caused any serious adverse effects in the thousands of injured soldiers treated; not only has it always been used to obtain complete loss of sensation in all major operations - a practice proved by long experience - but with greater knowledge and because of its great safety, we have been able to extend its use to injuries which are beyond normal treatment and for painful dressings in distressed or agitated patients.'

Scrive drew up rules for the use of chloroform and reserved it for:

- Treatment of hopeless terminal cases after major multiple trauma, to abolish severe pain and to allow some relief in the final moments (palliative chloroform)
- For amputations, resections and other long painful procedures (necessary chloroform)
- For dressings for complicated and painful wounds in patients who would otherwise be distressed (advisable chloroform)

> 'Chloroform is administered using the Charrière apparatus which provides all the assurances we would wish for by giving precisely measured doses and by producing a mixture of chloroform and air in the right proportions; I give it in such a way as to anaesthetise the patient beyond loss of sensation but never to the point of complete muscular relaxation. In contrast, if the crude funnel-dressing administration method is used, it is not clear how deeply the patient is anaesthetised and it is possible to go beyond the limit of safe anaesthesia and cause serious problems. We have never had a fatality in our hospital department with this method.'

Without naming it, Scrive referred to the Reynaud mask, called after the naval surgeon, the use of which was standard in the Navy. Initially made simply from a cardboard cone, it was modified in 1895 by the grand chirurgien, de la Marine Jules Fontan, who performed the first successful suture of a cardiac injury at the start of the century.

Speaking in 1862 about the Algerian conquest and the Kabylie pacification campaigns of 1854-7, A Bertherand, médecin principal de l'Armée, Director of the Algiers School of Medicine and corresponding member of the Académie de médecine said :

> 'The issue of chloroform for the bloody procedures of military surgery has not been satisfactorily resolved. The wide experience gained by the army in the Crimea when, according to Monsieur l'Inspecteur Baudens in his presentation to the Institute, more than 25,000 chloroform administrations were carried out without a single accident, may be set against the doubts raised about anaesthetics during the Rome campaign and the siege of El Agouath.'

In Rome, chirurgien en chef, Pasquier, considered that the initial inhalation period was associated with excessive excitation and was always dangerous. All 15 or so surgical patients of Dr Ancinelle at El Agouath in December 1852 died.

During the Kabylie campaign, Bertherand therefore began by taking many precautions. Although successful with a patient who had an amputation at the thigh, he wrote:

> 'The virtues of chloroform have become so well-known in the camp that all our injured soldiers ask for it for the smallest of operations. We are now giving anaesthetics for all types of amputations, for painful débridements and when looking for projectiles.'

Bertherand disagreed with Scrive about the method of administering chloroform:

> 'About 80 chloroform administrations have been carried out uneventfully using a conical rolled bandage cut off at the apex to enable easy access for air. I would certainly not agree with the criticism directed at this type of use, nor with the assurances proposed for the mechanical inhalers which appear to have the advantage of precise measurement of the dose given. Very little thought is needed to see that they do not measure the actual amounts taken into the respiratory tract and that, in reality, they only allow an approximation of the amounts vaporised in the air passing through a valve. In any event, the harmful effects of chloroform are almost invariably produced at the start of inhalation. We chloroform our patients when they are supine and after ensuring that the stomach is empty and there is no external constriction of breathing or circulation.'

The major interest of these early surveys of military anaesthesia lies in their assessments of large homogeneous series of cases.

The First World War

The next stage in development of military anaesthesia was during the Great War of 1914-18. Before it began, Ferraton, professeur de chirurgie d'Armée at the training school of the Service de santé militaire at the Val-de-Grâce, pointed out in his lecture series of 1913:

> 'Anaesthesia may be local or general; cocaine, Novocain, Stovaine for local anaesthesia and chloroform, ether or ethyl chloride for general anaesthesia. Some people are not in favour of lumbar spinal anaesthesia. We consider that until fresh evidence appears,

> local anaesthesia with cocaine - or one of its successors - and general anaesthesia with chloroform are the most practical methods.'

This type of anaesthesia was usually administered by the surgeon who would put his patient to sleep and then operate.

The spectacular advances in war surgery during the 1914-18 war represented a true revolution. We should remember that experience from previous wars, particularly the Russo-Japanese war of 1905 and the Balkan war of 1912-13, led to the development of strategies for patient evacuation. Surgery was performed far from the field of combat, in hospitals behind the lines. Edmond Delorme, le Grand Maître of military surgery, referred to 'balles humanitaires' - a rapid humanitarian response to sudden injury - when speaking at the Académie de médecine in April 1914.

We know that the predominance of artillery warfare and stabilisation of the front line on the Western Front completely changed the treatment strategy for injured troops. As in the past, the Service de santé had to adapt. Delorme spoke again, this time to the Institute, recommending that injuries be treated closer to the front line. Mobile surgical units were created. From 1915, the Field Ambulance, the famous 'auto-chir' appeared on the scene.

Combat surgery of earlier times, performed unscientifically and far from the field of battle, gave way to early intervention; wounds being debrided within 12 hours of infliction. The lone surgeon of older days became surrounded by trained co-workers. Technological advances became valuable assets during the 1st Great War; radiologists guided surgeons by locating foreign bodies and detailing bony damage. Drainage methods under bacteriological control (Alexis Carrel) gradually led to sterile wounds and enabled secondary suturing, helped by anti-tetanus and anti-gas gangrene immune serum treatment. But above all however, we saw, beside the surgeon, the appearance of an anaesthetically trained assistant.

Thanks to the new organisation and techniques, amputations, which had been commonplace in the past, became rare. Similarly the success rate for the early operative treatment of abdominal wounds rose to 53% whereas up to this time it had hardly been attempted. The greatest advances appeared in the field of chest surgery, and in the sub-specialties. Maxillo-facial surgery became important, particularly in Dr Morestin's department at the Val-de Grâce, as shown by the 1200 casts held in the museum of the Service de santé des armées.

General anaesthesia was usually administered using the Ombrédanne apparatus which had first appeared in 1908. This enabled ethyl chloride or a mixture of ether and chloroform to be inhaled. It was a relatively safe method which was well-suited to the simple requirements of field anaesthesia and was used in subsequent conflicts. There were, however, contraindications to inhalation anaesthesia, particularly in patients who had been gassed. Henri Rouvillois, the well-known chirurgien chef of 'Auto-chir 2', became director of the training school at the Val-de-Grâce and President of the Académie de Chirurgie. While President of the Congrès Français de Chirurgie he reviewed these problems in his inaugural speech on 5 October 1936:

> 'Inhalation anaesthesia in patients who are in shock and have been gassed does not provide immobility or respiratory sedation. It exposes chemically burned patients to the risk of acute asphyxia while those suffering from the effects of pulmonary irritants may develop acute pulmonary oedema.'

Rouvillois was also against hypotensive techniques, particularly spinal anaesthesia, which he nevertheless thought would have been an ideal method:

> 'Because of the contraindications to inhalation anaesthetics and to other methods of anaesthesia, there is still, in our experience, a considerable place for rectal, or even better, intravenous anaesthetics.' (In 1918 Richet had performed intravenous anaesthesia using chloralose [chloral]).

Rouvillois continued:

> 'If we want to free the surgeon from concern over anaesthesia and allow him to operate safely, surgical teams must have access to an experienced anaesthetist.'

He recalled that during the 1914-18 war, in each surgical team directed by a surgeon of standing, the number of assistants was increased from one to three. He stressed the need for one of the assistants to know about all accepted methods of anaesthesia, and particularly those suitable for patients who had been gassed. From this time on, the anaesthetist was no longer considered to be an auxiliary, but as someone who was as essential as the surgeon's own assistant.

Between the two wars chloroform became considered too dangerous and was gradually replaced by ether, nitrous oxide and rectal Avertin. Use of tongue forceps and mouth gags, combined with monitoring for signs of shock by the anaesthetic assistant, allowed inhalation anaesthesia with divinyl ether and other agents to be used more generally.

World War II and modern anaesthesia

There was still no official position for the anaesthetic assistant at the outbreak of war in 1939. Anaesthesia was administered by dentists using ether or the Schleich mixture via an Ombrédanne inhaler. At the Lyon training centre Professor Patel stressed the risks of intravenous anaesthesia. The situation in civil hospitals was identical.

Modern anaesthesia in France, or what Professor Marie Thérèse Cousin called 'the rebirth of anaesthesia', owes a lot to the First Army formed after the American landings in Algeria. This army later found glory in Italy before landing in Provence in August 1944, and pursuing its victorious campaign in France and then Germany.

Much influenced by Professor Benhamou, médecin commandant Curtillet and médecin capitaine Laverhne established a course in anaesthesia at the Hôpital Maillot in Algiers. Laverhne was appointed anesthésiste principal de l'armée in 1943. He then put into practice the experience and considerable advances made by English and American anaesthetists. General anaesthesia, using intravenous Pentothal or by inhalation of nitrous oxide via closed

circuit machines - particularly the American Heidbrink McKesson and Foregger - was administered in mobile evacuation surgical hospitals deployed in tents in Italy.

Military doctors also brought into use resuscitation with tracheal intubation and blood transfusion. The French Army Transfusion Centre at Clamart was named after médecin commandant Juillard, head of the transfusion service at Fez, Morocco.

An Army school of anaesthesia was set up in Besançon as the front line widened during the campaign in France. Professor Cousin also reminded us that French anaesthetists were trained in America and in England. Ernest Kern, who arrived in London in 1943, was attached to an English military hospital and successfully completed a training course at the Royal College of Surgeons. After landing in France and serving in a British field ambulance surgical unit during the battle of Normandy, he rejoined the First French Army in Alsace where he met Curtillet. After the war, Kern was appointed to the Hôpital Foch department of restorative surgery. He bought a closed circuit machine himself as this was refused by the management who would not agree to purchasing expensive and extravagant apparatus made abroad and needing foreign currency. He then taught the use of thiopentone and curare. We should remember that at this time the Hôpital Foch was under military administration.

Talbot, Professor of Army Surgery at Val-de-Grâce, pointed out that :

> 'An anaesthetic machine for wartime service cannot be the perfect gleaming museum piece owned by some English departments. In addition to being able to provide good anaesthetics it must be robust, stable, portable and relatively simple to use. As well as being of the right weight and size, it must be well-integrated and capable of universal use, with standard means of attachment of gas tubing and packaging, and reasonably inexpensive. This is a difficult but not insoluble problem, provided, of course, that all self-interest and rivalry are overcome so that a standard piece of apparatus, acceptable to everyone, may be developed.'

Conflicts after the Second World War

During the war in Indo-China, closed circuit machines were used in military hospitals. In addition to local anaesthesia with Xylocaine, surgical units continued to use the Ombrédanne vaporiser and Pentothal in general anaesthesia. Grauwin and Gendret used ether and Pentothal. This war allowed wider experimentation and a new approach to premedication with a view to lessening the risks of high doses of anaesthetic agents. The pethidine-promezathine (Phenergan)-chlorpromazine (Largactil) 'lytic cocktail' came about as a result of research performed at Val-de-Grâce by the Naval surgeon André Laborit and the pharmacist Velluz. We should remember that, with Paraire, these workers were in 1952, world innovators of the use of chlorpromazine, the first really effective drug in the treatment of mental illness.

During the war in Algeria the long distances to well-equipped hospital centres and mastery of the air meant that helicopters were used for casualty evacuation. Surgical units became progressively equipped with closed circuit machines such as the Heidbrink, Duban and Sabourin, and later with those of Robert and Carrière.

Fluothane, which had undergone experimentation at Val-de-Grâce in open systems in 1963 by Picard and Radiguet de la Bastaie, was used for the first time in field surgery in Jordan during an EMMIR mission. These workers pointed out the need to adapt anaesthesia and resuscitation equipment to meet the extreme climatic conditions likely to be encountered in different parts of the world. It should be capable of withstanding dropping by parachute and suitable for use at each stage of the evacuation chain to a hospital.

Summary

The history of French military anaesthesia is intertwined with that of civil anaesthesia as its protagonists often worked from time to time in either sector. Overall, anaesthesia has permitted spectacular progress in war surgery, the father of all surgery. This progress - the unfortunate result of warfare - with the development of asepsis and antisepsis, has also led to the abolition of wound-infection, more accurate assessment of injuries by radiology, and to the effective resuscitation of the injured patient by blood transfusion.

FRENCH AND BRITISH ANAESTHESIA IN THE CRIMEA - A COMPARISON

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Dr Henry Connor devoted three paragraphs on the subject of French anaesthesia in the Crimea in his paper in the journal *Medical History*,[1] a shortened version of which he presented to our meeting in Plymouth two years ago. Much of the material about the British use of chloroform is taken from it.

Differences between the two armies

I want to enlarge on the differences between the two armies in their employment of anaesthesia, but first there are some general facts to be borne in mind. We have heard much of the poor conditions under which the British troops lived during their encampments in Bulgaria before crossing to the Crimea and afterwards. The French suffered in the same way, although in some cases they were able to establish better sites for their camps and, on one occasion, before Sebastopol, even arranged for purer water to be piped to them from the hills. Nevertheless, both armies suffered greatly from cholera, dysentery and other diseases so dirty were the conditions and so poor was the country through which they passed.

Little was known at that time about how such diseases were transmitted. Snow's work on the spread of cholera in 1854 had made no impression on the army medical services. He wrote an article which appeared in the *Medical Times and Gazette* in April 1855 on cholera in the Crimea in which he pointed out that much of the water drunk by the soldiers was polluted by the excreta of men and animals, and even their dead bodies,[2] but this appears to have gone unregarded by the army authorities.

In the very hot and dry spring of 1855, the French suffered from scurvy owing to the lack of fresh vegetables. They could not even find dandelions, which they had been in the habit of making into salads during the campaign.[3] The British also suffered, but to a lesser degree, for they were supplied some vegetables by the Navy. Lime juice was available in Constantinople but, by some oversight, was not released for at least two months after its arrival.[4]

The French army was considerably bigger than the British. It consisted of nearly 310,000 men, as opposed to the British 28,000. They suffered more casualties and more sickness. In their system of transport of the wounded, they were superior. They had trained ambulance personnel and light ambulances of the flying type, the 'ambulances volantes' which Baron Dominique Larrey had instituted at the beginning of the Napoleonic wars. They had also developed mule ambulances which could carry the wounded in rough country, having learnt their value during their engagements in Algeria.[5]

There were no ambulances in the British army. The Royal Waggoners Train which had been established in 1793 to become Wellington's main transport service in the Peninsular War, had been disbanded in 1833. Early in 1854, Dr Andrew Smith, the Director-General of Medical Services, designed two-wheeled vehicles drawn by two horses and accommodating sitting and

lying wounded and more cumbersome four-wheeled ambulances drawn by six horses. Both types arrived in Turkey, but in very small numbers. Unfortunately, the two-wheeled models were too light, and upset easily, while the four-wheeled waggons got bogged down in wet and rough terrain, because the War Office had insisted they should be fitted with artillery wheels. Smith had also advised the employment of a separate corps of ambulance drivers which he reckoned could be obtained from the Turks.[6] However, the authorities in England sent out pensioners, who could not do the heavy work needed, but readily succumbed to cholera and dysentery and were often drunk![7]

What was the reason for this maladministration? Basically, the fact that Britain had not been engaged in a major war for nearly forty years. The Duke of Wellington was Commander-in-Chief until his death in 1852 at the age of 84, and the senior generals were elderly; the Duke, who had been so clever and adaptable during the Napoleonic Wars, had become very conservative in outlook and his shadow still lay over the army. Raglan, the Commander-in-Chief in the Crimea, who had lost an arm at Waterloo, died in 1856.[8] William Filder, the man in charge of the Commissariat, was appointed at the age of 68. After Waterloo, the army had been allowed to run down. All these factors contributed to the mismanagement of the war.[9]

At the same time, it should not be forgotten that the British army was basically an army of volunteers; it also had a heavy commitment in the Indian subcontinent. The French, on the other hand, had introduced conscription in 1792 and maintained a large standing army. Connor has described how the use of chloroform was somewhat inhibited by the Principal Medical Officer, Dr John Hall, who had warned against its use in very shocked patients. This led some of the army surgeons, particularly the older ones, to hesitate to use it. Hall's caution seems reasonable from what we know of the agent, but the last sentence of his memorandum was unfortunate and caused a public outcry at home when it was published:

> 'For however barbarous it may appear, the smart of the knife is a powerful stimulant: and it is much better to hear a man bawl lustily than to see him sink silently into the grave.'[10]

Chloroform in the British army

How was chloroform adminstered? In the field, it was dropped on to a folded towel or handkerchief until the patient no longer responded to pinching the skin or to the spoken word. In 1855 some Snow inhalers were made available, particularly in the base hospitals. It was recognised that chloroform could not be used so readily in the field, because of the lack of personnel sufficiently trained to administer it when another surgeon could not be spared for the purpose.

One surgeon in the artillery reported that the use of chloroform reduced the number of doctors available for surgical duties; he stated:

> 'It would be simply murder to leave the administration of it to any but educated hands, and seldom can you get more than one doctor to assist at an operation; for instance, I had to amputate a leg and an arm with only my servant as an assistant.'

He added that there were many in the same situation.[11]

The British were rather slow in adopting the use of chloroform. There is no evidence that the army employed general anaesthesia after the introduction of ether in 1846 although, soon afterwards, Thomas Spencer Wells used it in the Royal Navy when he was stationed in Malta.[12] There seems to have been a feeling in Britain that soldiers should suffer pain without complaint. However, opinion changed quickly after Simpson introduced chloroform in 1847; a large section of the surgeons in the army consisted of Scots trained in Scotland. It was therefore not surprising that ether was not used, quite apart from the facts that induction with it was more difficult and that it is flammable.

French use of chloroform

The French appear to have used chloroform from the beginning of the war, having had experience of it in the Algerian wars.[12] However, Connor suggests that they were shy of it at first. Perhaps some surgeons were influenced by Alfred Velpeau, who had had considerable experience of the treatment of gunshot wounds during the February revolution in Paris in 1848. In a lecture he gave in that year he described two cases with gangrene on whom he performed amputations: 'because the chloroform evidently depresses the nervous system, and as great prostration always exists in patients who have received gunshot wounds, it is advisable to refrain from any anaesthetic means.'[14]

One Paris surgeon, Mounier, who worked for six months in the hospital of Dolma-Bagtché in Constantinople, always used a paper cone. At its base, which covered the mouth and nose, was a piece of lint on to which chloroform was dripped, while its apex was open to admit air. He described how the wounded man was laid supine in the horizontal position, a compress put over his eyes, and all the assistants were made to keep absolutely silent. An intelligent aide monitored the pulse rate and respirations with the aid of a watch with a second hand. Twenty to thirty drops of chloroform were dripped on to the lint, and the mask was alternately lowered and raised on to the face until the patient did not respond to pinching of the skin or to repeated questioning. This was taken as the time to start operating, further similar doses being given in the same way if the operation lasted for some time. With this technique he had no accidents.[15] In October 1854, the doctor in charge of medical services of the French army in the Crimea, Dr Gérard-Léonard Scrive, wrote the following:

> 'After new trials, we were not slow to establish that, used with caution and prudence up to the onset of unconsciousness and not beyond, chloroform, far from adding to the general stupor of the patient, favourably stimulates the depressed nervous system, improves the circulation slowed and enfeebled by the general upset, while destroying the harmful sensation of pain.'[16]

Most surgeons at this time were using some variant of a 'rag-and-bottle' technique. In a report sent on 6 March 1855, Scrive stated that experience had shown that an apparatus was preferable; it ensured that sufficient air was admitted to the patient, reduced the amount of agent used, benefited the patient as well as being cheaper, and made it safer for use by an inexperienced aide, so allowing the surgeon to concentrate on the operation, as well as permitting a more rapid induction. He had noticed that his young surgeons often argued about who should have the only apparatus available, and felt it woud be a great service to the army

to have one or two made available in every field hospital. The one he considered the most convenient and least likely to deteriorate was Charrière's inhaler,[17] which Dr Marguerite Zimmer described in Plymouth in 1996.

Joseph-Frédéric Charrière was a surgical instrument maker. He was born in Switzerland in 1803 and at the age of thirteen went to Paris as an apprentice cutler. At the age of seventeen, he bought his employer's business and specialised in the production of high quality steel, rivalling that of Sheffield. The surgeon Dupuytren took him to visit his hospital and persuaded him to make his instruments.[18] Charrière's apparatus, though not as compact as Snow's, was portable and therefore well suited to military use.

There was natural concern that chloroform might be dangerous to use in severely shocked and traumatised patients. Scrive points out that the French surgeons were taught to use it with great care. He claimed that there were no deaths referable to its use in the Crimea, though this is rather difficult to believe.[19] One sudden death reported by the British was in a patient requiring amputation of a finger; it was probably due to cardiac arrest.[20] As time went on, it was appreciated that recently wounded soliders, even when suffering from primary shock, did not suffer as much depression of the circulation as had been expected. Also, the wounded obviously welcomed the onset of anaesthesia, unlike many nervous patients in civilian life. Secondary shock from haemorrhage, fluid loss and sepsis were not recognised at that time.

How safe was chloroform in the Crimea?

I have not found any figures for deaths attributable to chloroform in the British army. Deaths did occur, usually attributed to its use in so-called 'shocked' patients. Some gave stimulants in the form of rum, some gave opiates before inducing anaesthesia, in the hope of reversing 'depression' of the nervous system. Neither have I found any detailed description of the induction and maintenance of anaesthesia, such as Mounier gave of the use of chloroform in the Dolma-Bagtché hospital in Constantinople.

Probably those soldiers who were operated upon in the field hospitals soon after they had received their wounds stood a better chance of surviving the anaesthetic than those who were transported by ship to the base hospitals, when they had developed secondary shock due to haemorrhage, fluid loss or infection.

The Inspector-General of the French medical services, Jean-Baptiste Bauden, reported in 1855 that Scrive had confirmed that chloroform had been successfully used in more than 25,000 wounded (over 8% of the total force).[21] The figure in the British army at that time was just over 1,500 (about 5.4% of the total).[22] This lower figure was only partly due to the reluctance of some surgeons to use the agent. There is no doubt that at first the supplies available were very much less, due to the incompetence of the Commissariat.

The Russians appeared to have used chloroform in every case, and the surgeon Nikolai Pirigoff, who was working in Sebastopol, gave it for examinations, even when there was no question of an operation.[23] Certainly, Scrive reported that the wounded Russian prisoners would beg by signs to be given chloroform before operation and were obviously pathetically grateful when they received it.

This 'unnecessary war', as it has been called, had the effect of producing a public outcry about the conditions in the British army, which resulted in a long overdue modernisation, including the improvement in the care of the wounded and diseased soldiers in which Florence Nightingale played such a notable part.

However, it would be wrong to assume that the treatment of the wounded was better by French surgeons than by the British. Many of our surgeons were wounded, killed, or died of cholera in their dedication to their duty. They were let down by the authorities.

A postscript: In 1857, Jean-Baptiste Bauden, the French Inspector-General of Medical Services, died and the post was filled by Félix-Hippolyte Larrey, the son of the famous Baron Larrey whose reforms in the treatment of the wounded were still in force 40 years later.[24]

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THE FRENCH VERSION OF FRANCIS SIBSON'S INHALER

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As reported in 1881 by William M Ord[1] in the *Collected works of Francis Sibson* (1814-1876), the thoughts of Sibson, a Resident Surgeon and Apothecary at Nottingham General Hospital, were particularly turned towards the study of chest diseases,[2,3] but he was also very concerned with pain.

On 26 February 1847, the *London Medical Gazette*[4] published Sibson's observations on the treatment of facial neuralgia by the inhalation of ether. Sibson was not the first to apply the procedure of ether inhalation to cut short the paroxysms of neuralgia. In France, as early as 1821, Jean-Marc Itard[5] (1775-1838), the physician of the deaf and dumb in Paris, stimulated the auditory apparatus by letting ether vapour penetrate the eardrum. Eight years before Sibson's publication, Prosper Menière[6] (1799-1862) had used ether vapour in 500 cases, either for migraine which had lasted for several weeks and had induced nervous deafness, or in cases of facial nerve paralysis. Another French physician, Nicolas Charles Chailly-Honoré[7] (1805-1866), had used the same method in two cases, one for an obstinate facial neuralgia and the other for neuralgic attacks with temporary disturbance of the circulation and general disorders. In England, as early as 12 January 1847, the surgeon to the Bristol General Hospital, J G Lansdown,[8] (not Lonsdale as written in Sibson's communication[9]), successfully treated a young lady after three weeks of day and night suffering with neuralgia, all her teeth being sound. Of course, facial neuralgia or violent paroxysms resulting from uterine, skin, or digestive troubles could not be definitively cured by ether inhalation, but pain could be interrupted.

Francis Sibson and John Snow's spiral inhaler

From 30 January 1847 onwards, as recorded in his observations on six cases,[10] Sibson used John Snow's (1813-1858) round spiral inhaler,[11] a device catalogued by Richard Ellis[12] as Mark I (Figure 1). He attached to the round box a chamber to hold warm water (Figure 2). The principle of the tube entering the spiral chamber containing sponges to increase the evaporation of ether, derived from Attenburrow's inhaler. Sibson was very soon confronted with patients who did not breathe properly, or who were affected by convulsive movements of the jaws. He followed the idea of a Nottingham surgeon, White, by creating a mouthpiece which might help to calm nervous reaction. The result was the construction of the now well-known facepiece (Figure 3). The medical literature of the year 1847 shows that John Snow[13] used Sibson's mask for the first time on 3 May, at University College Hospital, in a case of lithotomy operated on by Robert Liston (1794-1847). Snow again used Sibson's mask on 6 May at St George's Hospital[14] for an amputation of the thigh performed by Robert Keate (1777-1857). That information is important, because it shows that from 26 January to 3 May Snow had used a facepiece which covered only the mouth, and when it was always necessary to pinch the nose. In his pamphlet *Inhalation of the Vapour of Ether in Surgical Operations*, John Snow[15] acknowledged that for some time he used Sibson's facepiece, and that 'it was the foundation for what he used' afterwards. This mask had 'been altered, however, considerably from it in form' by the addition of valves, resulting in its final form as described in Snow's September 1847 monograph. John Snow[16] also mentioned Sibson's invention in

an address delivered to the medical members of the United Service Institution on 12 May 1847.

Francis Sibson and Charles Waterton

As quoted by Claude Bernard[17] (1813-1878), it was as early as 1812 that Charles Waterton (1782-1865) brought to England the wourali, known today as curare. Waterton assumed that this poison would have sufficient potency to cure hydrophobia[18] or rabies. It is fascinating that thirty-five years later, the French physician, Carron du Villards[19] (1800-1860), suggested using ether inhalations for the same disease. During the year 1847, Sibson met Waterton, and his acquaintance with the naturalist led him to study the action of narcotics and poisons[20] and to experiment with belladona, stramonium, henbane, and strychnine on animals' hearts. From these studies, Sibson inferred that the dilatation and contraction of the pupils indicate the transition from the safety stage of deep sleep to the dangerous comatose state.[21] He stated that in a case of syncope, one ought to be ready to perform artificial respiration. This was the reason why Sibson in January 1848 contrived a chloroform inhaler which was immediately convertible into an artificial respirator. This device is well described by Barbara Duncum[22] and by J R Maltby.[23] What is surprising is that we can find a description of Francis Sibson's inhaler in Joseph Charrière's catalogue[24] of 1848 (Figure 4). Of the 60 figures printed in this catalogue, five are English devices.

An inhaler that Charrière[25] and (Duncum[26]) attributed falsely to Coxeter,[27] of 23 Grafton Street, London is in reality an apparatus of J E Maddox, of University College, London (Figure 5). The mistake results from an accidental mix-up of samples sent to the Pharmaceutical Society, where similar inhalers were demonstrated in December 1847. The *Journal* of the Society published a correction[28] on 1st February 1848, in which the editor explained that there was a confusion between Maddox's model and an apparatus produced by a business in commercial opposition.

Charrière did not give the names of the inventors of the other three English inhalers, but I have identified them as being:

1) The surgeon-dentist, C Stokes,[29] of Lower Brook Street (Figure 6) who proposed that in cases where it became necessary to bring the patient under the influence of chloroform: 'It is advisable to place around the sponge-case pieces of lint or linen dipped in hot water. By the arrangement of the circular box, a channel is always preserved for the reception of any quantity of chloroform which may drop from the sponge, thus preventing, during the act of inhalation, the possibility of any portion of this liquid coming in contact with the skin of the face. The valves are so constructed that their action continues effective and complete in any position of the instrument.'

2) Stevens and Pratt,[30] of Gower Street North, London (Figure 7). Their apparatus is similar to the one described above.

3) William Hooper, whose portable chloroform inhaler[31] (Figure 8) was sold in a shop at 7 Pall Mall East. It could be set in a small metallic box and was presented with a bottle of chloroform.

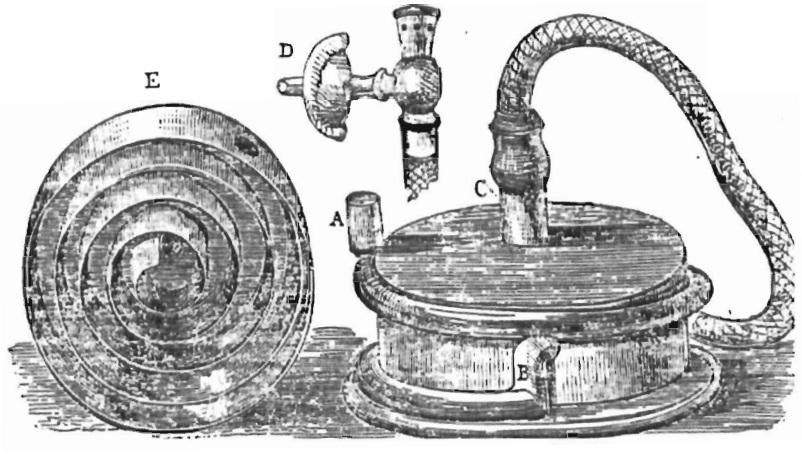

Figure 1 John Snow's spiral inhaler

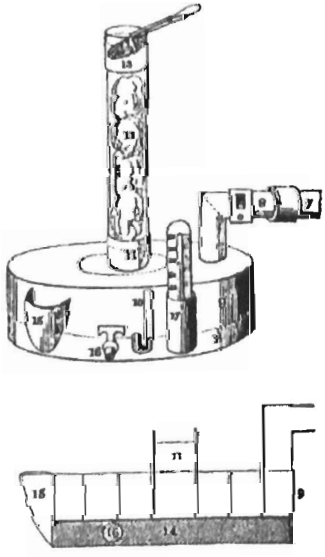

Figure 2 The spiral inhaler of Snow as modified by Francis Sibson

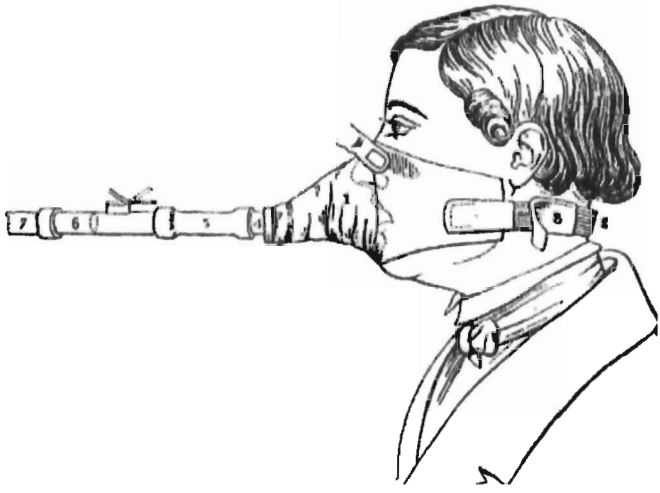

Figure 3 The mouthpiece of Francis Sibson

Figure 4 Francis Sibson's chloroform inhaler as shown in Joseph Charrière's catalogue 1848[24]

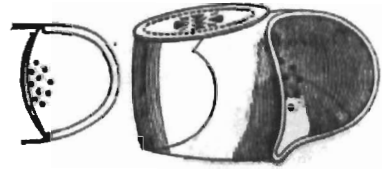

Figure 5 J E Maddox inhaler as shown in Charrière's 1848 catalogue

Figure 6 C Stokes chloroform inhaler in Charrière's 1848 catalogue[24] and *Pharmaceutical Journal & Transactions* 1847-8[29]

Figure 7 Stevens and Pratt inhaler

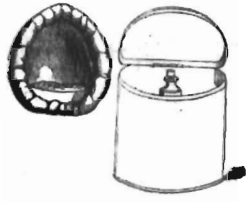

Figure 8
William Hooper's chloroform inhaler

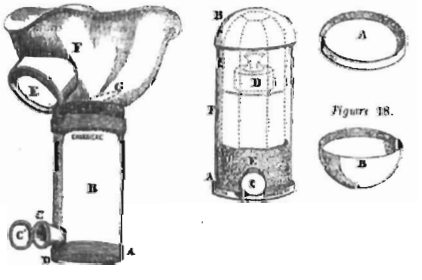

Figure 9
Alphonse Amussat's chloroform inhaler

in Charrière's catalogue[24] and *Pharmaceutical Journal & Transactions* 1847-8[29]

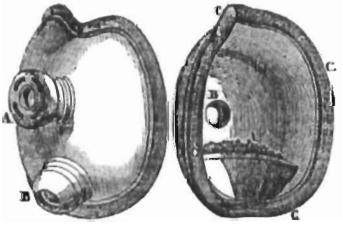

Figure 10
Joseph Charrière's chloroform inhaler in his 1848 catalogue[24]

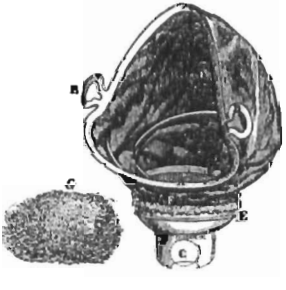

Figure 11
Joseph Charrière's chloroform inhaler with spherical valves fastened in a morocco leather pouch as shown in his 1848 catalogue[24]

Each of these four inhalers was provided with a sponge which could be soaked in chloroform. Charrière attests that a rubber cushion was usually inserted between the mouthpiece and the patient's nose and mouth. Charrière also built an ether inhaler based on the same principle for Alphonse Amussat (1821-1878).[32,33] This apparatus (Figure 9) was presented to the Academy of Medicine by Jules Cloquet (1790-1883) on 7 December 1847. At that time it had been used with success on five occasions. It had been particularly efficient in a case of lithotrity, an operation that Cloquet had witnessed.

Returning to Sibson's inhaler, Charrière wrote in the catalogue that:

> 'This apparatus, built in 1847 to be used as an ether inhaler, was published in *The Lancet*, May 1847, page 546. It was published again that year in the issue of 1st February 1848 of the *Pharmaceutical Journal*, in connection with chloroform'

But,

> 'Some time later, a French device[34] (Figure 10) was built on the same principle which, despite its new appearance, differed only from the former by the addition of the spherical valves of M Brisbart-Gobert, for whom I [Charrière][35] am substituted. Sibson's model or its copy, can, like almost all the others, be successful in producing insensibility, but they show a real disadvantage, which can be, in some circumstances, the lack of air. The apparatus is compelled to follow the patient's head movements, but the valves which are set in the right direction when the patient is sitting or standing, work in the opposite direction if the patient lies with the head backwards'.

Remarkably this inhaler still exists!

When the French History of Dentistry Society organized a visit to the University Museum of Utrecht in The Netherlands on 12 March 1998, its curator, Dr Willem J Mulder, showed us an apparatus, stowed in the museum's storerooms in an unidentified surgical box. By comparing the engravings of Badoureau in Joseph Charrière's catalogue with the photographs I was kindly allowed to take of that inhaler, I am sure that that ether-chloroform inhaler was an example of Joseph Charrière's apparatus. The inhaler can now be dated. Charrière did not make any comments on Sibson's inhaler either in the second edition of his catalogue,[36] on 27 March 1847, or in the additional one[37] of 29 May 1847. He mentions the publication of Sibson's inhaler in the *Pharmaceutical Journal*[38] of 1 February 1848 in his 5 April catalogue[39] of 1848, four months after the time at which chloroform appeared in medical practice. Consequently, we can estimate that the French version of Sibson's inhaler was manufactured between mid-February and the end of March 1848. If we look at the Utrecht model, we can distinctly see the famous spherical valves of Brisbart-Gobert. We can recognize the sponge, desiccated indeed, but absolutely clear. It might be that the inhaler was never really used ! Otherwise, how can we explain that the sponge survived after such a long time if it had been submitted to the effect of chloroform? The Utrecht inhaler is not lined with rubber or other material, either because the model was not sold with those options, or because they had to be added only when it was used. One would also understand if, having been used in one or two cases, the rubber cushion had been removed for hygienic purposes. Then the device might have been put in the box without renewing the rubber lining. Perhaps,

as Charrière's remarks would suggest, it was very soon given up by the surgeons due to the position of the valves.

After the appearance on the market of the Utrecht model, when elaborating inhalers, Charrière took the problem of the fixed valves into consideration.[40] He manufactured different devices in which spherical valves of large size were fastened in a morocco leather pouch (Figure 11). That modification allowed the mask to follow the angle of tilt. Nevertheless, Charrière recognized that an apparatus equipped with a mouthpiece made of metal and fixed to a flexible tube,[41] was much better than the device equipped with morocco pouches.

Two postscripts

For Francis Sibson, pain and neuralgia were themes of great importance. After the description of his chloroform inhaler, Sibson published several other papers - on death from chloroform,[42] on the use of chloroform in neuralgia[43] and on the narcotic poisons, in particular opium, and their antidotes.[44] Sibson concluded that chloroform should not be administered in the sitting posture, and that chloroform is not indicated in dental surgery. He also proposed that chloroform and belladona:

> '....in their therapeutic influence on neuralgia have a similar action; they neither of them remove the cause of neuralgia; they both often remove the pain by obliterating sensation... Ether and chloroform are contraindicated in persons labouring under cerebral disease, as both these agents act injuriously on the brain. The inhalation of chloroform is especially indicated in those cases of neuralgia that are due to the reflex morbid sensation excited by disordered stomach and bowels, exposure of the skin to cold and other like causes.'[45]

He thus answered the questions that arose in March 1848 on the use of chloroform in cases of madness, mental alienation, and epilepsy. In a Baltimore hospital[46] chloroform was administered to reduce the effects of a fit of madness. D M Ratier,[47] in a letter to the *Gazette des Hôpitaux Civils et Militaires* on 20 March 1848, asked if chloroform would not be a very helpful adjunct to divert the patient and to overcome his hallucinations. Jacques Joseph Moreau[48] (1804- ?), at Bicêtre Hospital, showed that chloroform inhalations were dangerous for epileptics. The question was again discussed at the meeting of the Academy of Medicine, on 4 July 1848, by Jules Gabriel François Baillarger (1806-1890) and Pierre Adolphe Piorry[49] (1794-1879). For Sibson, chloroform was contraindicated in cerebral disease.

Finally, I would like to mention that the Utrecht Museum has on display an Otto Kappeler (1841-1909) anaesthetic apparatus, which the curator had not ticketed, and an example of K Schimmelbusch's mask.

The task of historians of anaesthesia is not only to summarise or report on historical events; they may also help curators to recognize forgotten devices, to clearly label them for public presentation, and to correctly integrate them in the historical background by establishing an accurate bibliography. This was my objective in November last year when I helped Dr Ferrandis to build the facsimile of Raynaud's chloroform inhaler, and I recognised the Guyon mask that the Museum of the Val-de-Grâce had recently bought. Members who attended the Paris meeting were able to admire both devices during their visit to the museum.

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HORACE WELLS - THE FRENCH CONNECTION

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The Place des États Unis lies in the 16th Arrondissement of Paris, off the Avenue d'Iéna about a kilometre south of the Arc de Triomphe. It is one of the smaller of the many leafy areas that give Paris so much of its charm, and it was developed to symbolise the relationship between France and the USA. Statuary adds to its charm, each denoting links between the two countries. There is a memorial to Washington and La Fayette, another to American volunteers who fought in the 1st World War, a third to the American Ambassador of that time (Myron T Herrick) and a fourth inscribed: *'Au Dentiste Americain Horace Wells Novateur de l'Anesthésie Chirurgicale 1844-1848'*. On one side of the plinth there is a profile and a name, Paul Bert. This paper outlines the background to this statue.

The story began when Horace Wells recognised the significance of the analgesic action of nitrous oxide during a demonstration in Hartford, Connecticut, by Gardner Quincy Colton, on 10 December 1844. After a cautious, and very successful experiment, Wells attempted to demonstrate (assisted by William Thomas Green Morton) the inhalation of nitrous oxide at the Harvard Medical School in January 1845. That demonstration was a near disaster and thereafter Horace Wells' professional and personal life became increasingly disrupted.

Figure 1 - HAS members admire the Horace Wells statue in Paris
Photograph courtesy of Dr David Zuck
(a close-up of the statue appears in Vol.16, p.21)

He gave up his dental practice and involved himself in a number of business schemes, which even his mother described as 'building castles in the air'. Matters were not helped by the news of Morton's success with ether, particularly because Morton claimed all the credit even though he had helped Wells with the nitrous oxide demonstration in Boston. Perhaps to escape the controversy that grew over the primacy of discovery, Wells decided to travel to Europe. Some reports state that he went to help establish his claim to be the 'discoverer' of anaesthesia, and others that he went to buy European paintings for resale in the USA. He certainly did both of these things, but the only record in his own hand says that the intention was 'recreation'.

Wells left Boston for Europe on 24 December 1846, obviously following the news of Morton's demonstration of ether to Europe by only a few weeks. A rough, but not a very long passage (24 days!) took him to Liverpool, a place he thought remarkable for nothing except its magnificent docks. He travelled to London at a somewhat faster speed (40 miles per hour) than he had crossed the Atlantic and arrived the day before the State Opening of Parliament. A good view of the Queen's procession to Westminster clearly impressed him, but seeing the Crown Jewels at the Tower of London made him think only of the 'painful' contrast with Her Majesty's starving subjects - clearly no monarchist he!

He then travelled to Paris, which he liked, and where he stayed longer than he had in London. In Paris he met C S Brewster, an American who was the doyen of Parisian dentists at the time. Brewster was obviously aware of the controversy over who 'discovered' anaesthesia in the USA and, on learning who Wells was, arranged for him to present his case at the Académie des Sciences and the Académie de Médecine. These events made Wells well-known in Paris and resulted, after his departure, in the Parisian Medical Society acknowledging him as the true 'discoverer'of anaesthesia by inhalation. Of course, by the time this news reached the USA, Wells was dead by his own hand. There were hints of financial reward to go with the acknowledgment, but it does not seem ever to have been followed through, later events in Paris in 1848 perhaps overtaking those involved.

Shortly after Wells returned to the USA, Brewster was joined in practice by another American dentist, Thomas Evans. Nearly twenty years later, when nitrous oxide had been rehabilitated, it was Evans who arranged for Colton to demonstrate its use at the World Fair held in Paris in the autumn of 1867. An interested observer was the great French physiologist, Paul Bert, then a relatively young man who had just taken over the classes of Claude Bernard at the University of Paris Bert's great interest was respiratory physiology and he recognised that the use of nitrous oxide was limited by asphyxia. He studied ways of safely extending the duration of nitrous oxide anaesthesia, developing techniques for its use under hyperbaric conditions, and at normal atmospheric pressure with limited oxygen supplementation.

Much later, the importance of these events as indicators of the links between France and the USA led to the choice of Wells as the subject for the statue (sculpted by René Bertrand-Boutée) which is the subject of this paper. The profile of Paul Bert (he was present at the unveiling) on the plinth recognises his rôle in the development of nitrous oxide anaesthesia, and indicates why the statue was chosen for this setting. Originally the statue was at the entrance to the square, but it was displaced to the interior by the memorial to American volunteers of the 1st World War. During the Nazi occupation of Paris it suffered

some desecration, but was hidden away until the liberation, being restored to its present position on 10 December 1994, the 100th anniversary of Wells' great insight.

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AN AMERICAN IN PARIS

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In 1892, a young American surgeon from Cleveland, Ohio, came to Paris as part of a tour of European medical centres. His itinerary included visiting Bilroth in Vienna, Kocher of Berne and some clinicians in Germany, as well as planned visits to several London medical schools. He found Paris disappointing due in great measure to his lack of any French clinical contacts and his ignorance of the language. This young 28-year-old was George Washington Crile (1864-1943), born of Scottish/Irish and Dutch farming stock. Unusually for this time, the family farming was carried out scientifically - a practice which perhaps sowed the seed of his later researches in clinical medicine and surgery. His interest in medicine was an early one - as was his desire to see the world. Crile commenced medical studies at the age of 22 in Wooster, Ohio. After graduation he took an early interest in the medical and surgical conditions associated with 'shock' and hypovolaemia. He sought to manage these from a physiological standpoint and was quick to realise the adverse effects of chloroform and deep anaesthesia in patients with such conditions.

In the summer of 1895, three years after his first visit, Crile again went to Paris. On this occasion he anticipated the language problem by advertising in advance in *Le Figaro* for lessons on his arrival. His professional time was spent in the laboratory of Charles Richet, the eminent physiologist and Nobel prizewinner in medicine. He took lodgings with a French couple overlooking the Ile de Cité and the cathedral of Notre Dame, only yards from the present day Musée de l'Assistance Publique (which was visited by HAS members during the meeting in Paris). His lodging room had no key and he regarded his security sufficiently at risk to warrant placing a six shooter revolver under his pillow. This was mobilised on one occasion when the over-dined husband stumbled into his room. Although attracted by the grandness of the Pasteur Institution and the laboratories there, he found the Paris hospitals 'a great disappointment and resembling musty old prisons'. He appeared to hold no more regard for his fellow compatriots who, attracted to the city by the haute couture and art nouveau movement, flocked to Paris. The city, he wrote: 'was so overrun by indigent Americans that I frequently visited the morgue as this was the only exhibition that did not attract them'.

A further 20 years were to elapse before Crile's next and most significant visit to Paris. During the intervening period, he had enlisted in the short-lived but bloody Spanish-American civil war in 1898 and witnessed at first hand the physiological and neurological effects of severe gunshot injuries, blood loss, stress and fear. These observations, together with research following demobilisation, resulted in a monograph on blood pressure in surgery and the investigation of methods for the protection of patients against shock and the trauma of surgical procedures. In the years prior to the Great War, Crile's professional status advanced. He became Clinic Chief in Cleveland and at the Lakeside Institute, Ohio.

War

Following the German declaration of hostilities on 1st August 1914, the whole of Europe was at war. The proposed attack against Belgium and France (planned as early as 1905 by the now deceased Chief of the German General Staff, Schlieffen) was immediately implemented.

Although the arc of attack was intended to include Paris, it was deflected and passed by to the east and south. Paris had, however, become an entrenched encampment under military rule - the government and Parliament having already re-located in Bordeaux. Among the population who stayed, there was a well-organised American community headed by its Ambassador, Myron Herrick (the sole remaining foreign ambassador) who negotiated with the French authorities for an enhanced American Hospital facility in Paris. This would serve a dual role, catering for the needs of the American community and, more importantly, providing for the expert surgical management of battle casualties brought from the allied front lines. Herrick looked to America for the funding of this venture and personally approached Crile, Chief of the Lakeside Surgical Unit, to head the medical team. Crile saw this as the opportunity for usefully applying his previous researches, which were of great relevance to war surgery and should now prove to be of benefit to many.

Civilian enterprise

Thus it was that Crile promoted an ingenious and accepted plan to staff the Paris Ambulance (as the hospital was to be known) with medical teams drawn from America's leading medical schools on a three-month rotational basis. This was entirely a civilian enterprise in accordance with the avowed political and military neutrality of the United States for the first two and three quarter years of the Great War. Lakeside Hospital raised the necessary 10,000 US dollars and the chief and assistant surgeons funded themselves. This plan was also accepted and implemented on a rotational basis by three other US medical schools, namely, Harvard (with Harvey Cushing as its clinic chief), Pennsylvania and Chicago.

Crile and some of his colleagues departed from New York on board the liner *Lusitania* setting sail on 31 December 1914. The vessel also carried as cargo much of the medical equipment including anaesthetic machines and gas cylinders for use in Paris. At disembarkation in Liverpool some five days later, and prior to onward rail transfer to London, administrative difficulties at customs delayed the landing of what were labelled as 'highly inflammable' nitrous oxide cylinders which were being supervised by one of Crile's resident staff - Edward F Keiger. This German-sounding name alerted the suspicion of the customs officer and, as Crile recounts, only after his personal intervention was 'the gas allowed to pass'. Transit from London was by way of rail and boat to Boulogne and thence to Paris where Crile arrived in time to commence duties on 11 January 1915.

The American Hospital in Paris, which had been established in 1912, was too small for the anticipated workload. Accordingly a newly constructed high school was requisitioned for Crile's use at Neuilly-sur-Seine in the northwest suburbs of Paris. It was quickly converted into a 250-bed surgical unit and was known as 'The American Ambulance'. Casualties and war wounded were transported thereto chiefly in cars, and later in ambulances, belonging to and driven by members of the Paris American community who drove to and from the Marne battlefield to the north east of Paris. Patients had begun to arrive as early as August 1914 so that Crile's team, on their arrival in January, were immediately engaged in the management of every type of battle injury. The high school was appropriately named the Lycée Pasteur. The building survives today in its original format and is still used as a school. Visitors may see the seminar rooms where Crile and Sir Berkeley Moynihan would meet to discuss interesting cases; there are contemporary paintings and memorial plaques recording the activities of the American Ambulance from 1914 to 1917. An interesting historical brochure

is also available at the reception office. Crile quickly established regular teaching seminars and case conferences. An early session was devoted to the demonstration of anoci-anesthesia. This technique, pioneered by Crile in 1905, provided neurological protection using local and narcotic analgesics and could be combined with the light general anaesthesia of nitrous oxide and oxygen only, to produce 'shockless surgery'. On the occasion of this demonstration many international visitors were present, including Sir Almroth Wright and Sir Berkeley (later Lord) Moynihan. Crile regarded Moynihan as 'the greatest surgeon in the British Empire' and had hosted him in Cleveland in 1903. Moynihan had reciprocated in Leeds in 1910. He was well acquainted with anoci-anesthesia and had promoted the method in the 1913 edition of his *Textbook of Abdominal Operations*. On the occasion of Crile's demonstration, Moynihan was accompanied by his assistant, James Braithwaite (also from Leeds). Anaesthesia was given by Agatha Hodgkin, Crile's nurse anesthetist, using the Ohio Monovalve nitrous oxide/oxygen apparatus. A photograph was taken immediately following the event. America was at this time politically neutral, and Crile and his volunteer team could have no direct influence on the conduct of allied military medicine at this time. Although Moynihan was nominally surgical advisor to the War Office, he was a civilian, and not classed as a regular serving officer and was liable to have recommendations rejected by the military machine. However Moynihan and his French counterparts sent their anaesthetists to Crile's unit for instruction in anoci-anesthesia.

When he returned on the *Lusitania* to the United States in February 1915, Crile realised that America would eventually be involved in the hostilities and that it was essential to impart his first hand medical knowledge to the highest military authority. This he duly did and the information gained from the experiences of the American Ambulance in Paris acted as a template for the establishment of the Medical Reserve Corps of the United States for service in European base hospitals.

First US military unit to France

The United States' formal declaration of war came on 6 April 1917. Crile's Ohio Unit was mobilised on 30 April to New York where, on 6 May, they departed from Pier No 54 on the Hudson River aboard the Cunard liner *Orduna*, now liveried in battleship grey. This event is significant on two counts. This was the very first US military contingent to serve in Europe, arriving ahead of and becoming functional before the arrival of the combatant troops. Secondly, they sailed two years to the day following the sinking of the *Lusitania* off the coast of Ireland, for which the Germans had struck a commemorative medal.

On 23 August 1917, Crile's unit was assigned to No 9 Hospital of the British Expeditionary Force near Rouen which had a bed capacity of 124 with a crisis capacity for a further 300. Crile himself frequently travelled to the forward lines and spent extended periods close to the Ypres front line, some 200 km distant. He did attend Paris for military and surgical conferences and, on one such occasion, was present during the bombardment of Paris by the German gun 'Big Bertha', some 55 miles away. The surgical work of the Paris American Ambulance continued right up to the end of 1918, by which time it had received and treated some 100,000 casualties of all nationalities.

The spirit of the Lycée Pasteur remains even after 85 years. In the main hall of this school are two plaques - one in French and one in English:

'In the first days of the war where justice and liberty were menaced, Americans residing in Paris, in a burst of fraternal enthusiasm which made them an elite vanguard of their armies, organised here with generous co-operation of their fellow citizens **THE AMERICAN AMBULANCE** where, as early as 1st September 1914 and until July 22nd 1917, 12,000 French soldiers were cared for with untiring devotion by volunteers. Thus was confirmed during the most strenuous of ordeals when the fortune of arms hung in the balance **THE BONDS OF EVERLASTING FRIENDSHIP**. On the 20th Anniversary France does not forget.'

Although Crile had perforce to turn his back on the artistic and cultural facets of Paris, his and his colleagues' momentous pioneering service ensured that many of his compatriots and succeeding generations could do so. George Gershwin, whose centenary was celebrated in 1998, took inspiration from his visit to Paris ten years after the end of Great War. He little knew that a second World War would delay until 1951 the première of *An American in Paris*.

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THE BATTLE OF THE SOMME - 1916
ANAESTHETICS AT CASUALTY CLEARING STATIONS

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In November 1998 it was 80 years since the end of the First World War. 1998 was also the Centenary of the formation of the Royal Army Medical Corps. As the History of Anaesthesia Society met in Paris in October 1998 it was appropriate to reflect on one of the great battles fought in France during that war and remember the tragedy of the huge number of casualties that occurred.

The Battle of the Somme, commencing on 1 July 1916 and lasting until the end of November, was a succession of fierce battles fought on both the British and French fronts in the area of the river Somme and the river Ancre in Picardy in Northern France.[1] It should not be forgotten that the first day of the Somme offensive was also the 132nd day of the Battle of Verdun, which by then had already cost the French Army some 250,000 casualties.[2]

The medical services were faced with an unprecedented number of casualties. Lessons had been learnt from the earlier battles of the war of the severity of wounds caused by bombs and shells in trench warfare which were so different from those of previous conflicts, and medical preparations for the Somme Battle gave the first opportunity for surgery on a large scale.[3] The wounded were evacuated firstly to regimental aid posts, then dressing stations and by ambulance convoys to one of the 14 casualty clearing stations (CCS), before evacuation to base hospitals on the north-west coast of France.

Casualty Clearing Stations[4]

The Casualty Clearing Station (CCS) was the development of a unit first created in 1907 with the name Clearing Hospital, this name being retained until 1915. The CCS had not existed in any previous war and formed a link between the field ambulance, which was organised after the South African War by combining the old bearer companies and field hospitals into one medical unit. They were originally intended for the temporary reception and care of sick and wounded pending and during their evacuation from the front line. A CCS was the first medical unit a wounded man could reach where surgery and nursing could be provided. Serious cases were held as long as necessary, the rest being evacuated as quickly as possible to the base hospitals on the French coast.

The sites for the CCS had been selected and prepared prior to the battle. The site had to be close enough to the front to receive casualties by motor ambulance from the dressing stations, but far enough back to be safe from shell fire and near a broad gauge railway line so that those who could be moved could be quickly evacuated to base hospitals. Fourteen Casualty Clearing Stations were available to the 4th Army, which bore the brunt of the attack. The CCS were grouped in pairs at each site, receiving admissions in rotation so as to spread their work load. For example, No 36 (where the mother of the author served as a nursing sister) and No 38 CCS were along the Amiens-Albert line of the railway at Heilly. (Figure 1)

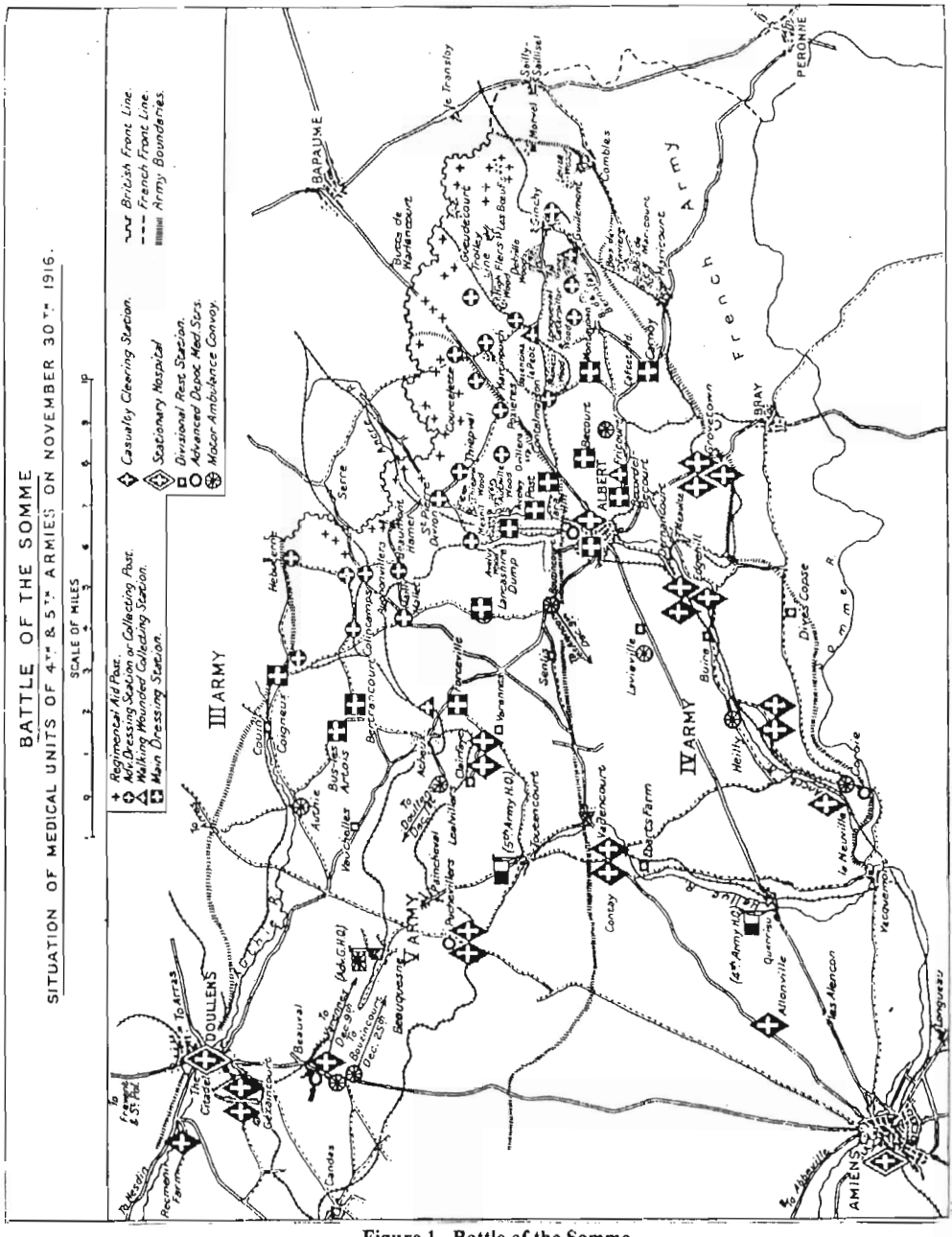

Figure 1. Battle of the Somme
Situation of Medical Units of 4th and 5th Armies in November 1916

The design of a Casualty Clearing Station

Many of the CCS were large enough to accommodate 1,000 patients. The wards were made up of marquees in pairs to make large wards of four marquees. The operating theatre was a wooden hut, 60ft x 10ft with four operating tables. In 1916, special anaesthetists were appointed to the CCS and a surgical team consisted of a surgeon, an assistant, an anaesthetist, and a nursing sister with operating theatre experience.[4] There is no indication in the official or unofficial histories of any particular training for the special anaesthetist.

The casualties

The appalling tragedy of 1 July 1916 is well known. Men carrying up to 60lbs of equipment climbed out of the trenches and went 'over the top'. Thirty thousand were killed or wounded in the first hour, 50,000 by noon. At the end of the first day, 21,000 were dead and 35,000 wounded. Fourteen thousand were taken to the CCS. No 36 CCS at Heilly received 1,050 wounded on 1 July, 1,533 on 2 July and 3,040 in the first three days of the battle. No 20 at Gézaincourt received 5,346 on 2 July and 11,186 in the first three days. The strain on the CCS was enormous. The total number admitted to the CCS from July to November 1916 was about 600,000, and 30,000 operations were performed. (Tables 1 and 2) The French Medical Services of the French 6th Army evacuated 105,672 wounded from their field medical units from July to November 1916.[1,4] The anaesthetists and surgeons were then faced with men covered in mud, with severe injuries and suffering from exposure. Theoretically, they were fit, as most were category A, but many had irritable chests due to smoking. The Australians, not being accustomed to the European climate, were particularly prone to chest problems.

No 36 Casualty Clearing Station

	July	August	September
Admissions	16,604	2,909	12,420
Operating in theatre	759	606	1,037
Penetrating skull wounds	105	111	100
Cmpound fracture femur	65	49	98
Penetrating abdominal wounds	167	64	124
Deaths	451	??	348

Table 1. The Battle of the Somme 1916

Wounded evacuated to casualty clearing stations			
July	113,957	1 July 14,000	2 July 16,672
August	40,162		
September	79,503		
October	37,327		
November	24,313		
TOTAL	**590,524**		

Table 2. The Battle of the Somme 1916

What anaesthetic agents were available?[4]

The ***general anaesthetics*** used for surgical operations were ether, chloroform, ethyl chloride and nitrous oxide. Ether and chloroform for anaesthetic purposes were required in such enormous quantities that special facilities were granted to the limited number of manufacturers of these drugs for augmenting their plants in order to increase the output to meet requirements. Nitrous oxide and oxygen required a large number of special cylinders which were difficult to supply because of demand for steel in munitions. Oxygen was supplied to home hospitals by the British Oxygen Company and in France, the cylinders were filled by French firms.

Local anaesthetics:

- 'Novocaine' - this was procaine with or without adrenaline
- 'Stovaine' - so named because 'stove' is the English translation of Fourneau, who was the French pharmacologist who discovered Stovaine. It was useless for local infiltration as it caused sloughing of the skin, but was widely used in a 5% solution in glucose for spinal anaesthesia.

What anaesthetic equipment was available?

Anaesthetic Equipment[4]

Each Military Hospital which included the Casualty Clearing Stations had the following Minimum Anaesthetic Outfit in an operating theatre:[4]

Bottles, drop (4 oz)	3
Forceps, tongue (Guy's)	1
Forceps or holders, sponge	2
Gags, mouth (Mason's and Doyen's)	2
Inhaler, ether, Clover's large bore, with two face-pieces, large and small, with nitrous oxide apparatus, combined set	1
Inhaler, chloroform, Junkers (Buxton's)	1
Masks, Schimmelbusch's	2
Oxygen cylinder and fittings set	1
Props, mouth	3

Nitrous oxide/oxygen apparatus:

Also available by 1916 in the CCS was the nitrous oxide/oxygen apparatus which was based on the Gwathmey apparatus and modified by both Marshall and Boyle.[7,8]

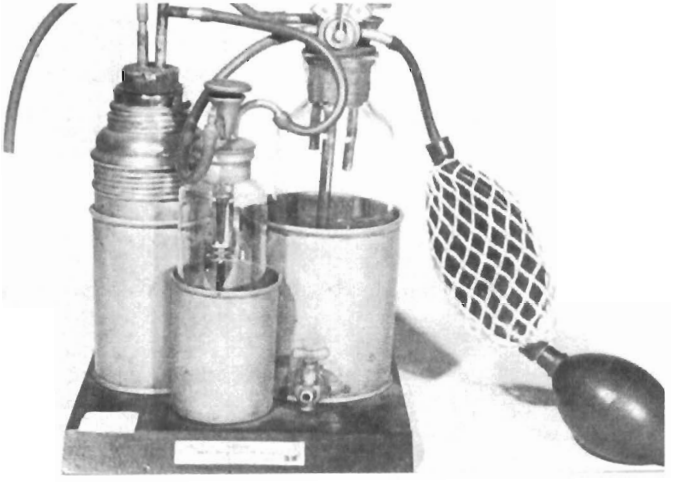

Figure 2. Shipway's warm Weather Inhaler:[9,10]
From the Charles King Collection,
Association of Anaesthetists of Great Britain and Ireland

Shipway's warm ether inhaler[9,10]

An apparatus designed by Dr (later, Sir Francis) Shipway to give warm ether vapour was issued to all the CCS in early 1916. (Figure 2) Shipway, an anaesthetist at Guy's Hospital, had been influenced by the work of the American anaesthetist, Gwathmey, as to the advantages to patients of warming anaesthetic vapours. Shipway's apparatus consisted of:

a) A small hand-bellows for the purpose of blowing air over the anaesthetic liquid. One squeeze of the bellows gave 60 ml of air. Oxygen could be used instead of air.

b) An ether bottle for the delivery of an air stream deeply into the liquid. The bottle stood in a metal container in which water at about 75°F was placed.

c) A 'Thermos' flask, containing a metal U-tube, was filled with water at 120°F. The air/ether mixture passed along this tube and picked up heat.

d) A mask over which a towel or gauze stretched. The rubber tube conducting the ether/air mixture was brought through the mask so as to deliver the anaesthetic vapour. A catheter could be attached to the tubing and passed into the trachea, which was useful for facial and head injuries.

e) A chloroform bottle was also usually attached, and a regulating tap was needed at the top of the ether bottle to divert the required proportion of air to the chloroform bottle.

The anaesthetists at the CCS noted that if oxygen was bubbled through ether for more than two hours, irritating substances formed and the ether bottle had to be changed.[6]

The advantages of the Shipway apparatus:

To the anaesthetists in a CCS:

- Fewer secretions
- Less hypotension and quicker recovery because less ether was used than with the open mask
- Less postoperative bronchial irritation. Marshall found that with open ether 54% of casualties developed bronchitis, but if warm ether was used only 5% did so.

To the surgeon:

- Less interference by the anaesthetist in operations of head and neck, because of the use of catheter.
- Less pollution of environment than with open ether

The value of the Shipway apparatus was recognised by Marshall,[12] Corfield[11] and also by Crampton[6] in his summary of anaesthetic practice in the Great War. In the war diary of No 36 CS the entry for 30 June 1916 noted that: 'the warm ether inhalers are in general use and are most satisfactory.[5]

The choice of anaesthetic technique

General anaesthesia:

- nitrous oxide (often without oxygen) and oxygen were widely used for operations of short duration. This technique was noted to be dangerous when administered by the inexperienced, but in skilled hands and supplemented with local anaesthesia was also used for abdominal operations and high leg amputations

- ether - the advantages of 'warm ether vapour' using Shipway's apparatus have already been described, but some anaesthetists found the apparatus cumbersome and preferred to administer 'open ether' on a mask[11]

- chloroform - by 1916 the dangers of hypotension with chloroform were appreciated, but if carefully used, chloroform provided a more rapid induction and provoked less secretions

- ethyl chloride was seldom used in the British Army as compared with the French and German.[13-15] If it was given, the closed method was used. 5 cc was sprayed into a suitable bag held over the patient's mouth. When anaesthesia had been established the patient was given an occasional breath of air and a further 2 cc of ethyl chloride sprayed into the bag from time to time. It could be sprayed on to a lint mask, but this was was considered extravagant. Using ethyl chloride for more than 3-5 minutes was not advisable.

Spinal anaesthesia:

Early in the war 'Stovaine' caused such falls in blood pressure that its use was abandoned. It was especially detrimental in shocked patients with much blood loss. Later on, spinals were used for lower limb amputations, but most surgeons did not like the technique.

Procedures advised and used for resuscitation and perioperative care:[6]

1. Warmth. Wounded should not be stripped of all clothing.

2. Blood transfusion. This was not available at the time of the 1916 Somme battles. The first mention of a blood transfusion in the War Diary of No 36 CCS is in January 1917.

3. Intravenous gum acacia 6% in normal saline.

4. Oxygen given under a mask or through Shipway's apparatus.

5. Infusions. Subcutaneous or rectal saline. The effects were too long delayed to be of value.

6. Hypodermic medication, i.e. injections as stimulants. These were disappointing but included: camphor (camphor 1 part, ether 5 parts, olive oil 4 parts); 10-12 minims subcutaneously had a temporary stimulating effect, but digitalin, adrenaline, strychnine and brandy were of doubtful value.

7. Administration of too much morphia in forward areas to severely wounded men caused problems for anaesthetists - cyanosis, shallow breathing and a rigid abdominal wall.

8. Excessive postoperative secretions could be controlled with 1/50th grain of atropine followed by 4-hourly ammonium carbonate and digitalis.

9. Postoperative vomiting could be stopped with an intravenous injection of a pint of a 2% solution of bicarbonate of soda.

Conclusion

To conclude his chapter on 'Anaesthesia' in the *Official History of the Medical Services in the Great War*, Crampton made the following statement:[6]

'In conclusion, it may be noted that the art of administering anaesthetics was greatly developed during the war, with immense benefit to both the patient and the surgeon. The increased supply of special apparatus contributed very greatly to this result and the administration of warm ether vapour and of gas and oxygen instead of chloroform saved very many lives.

There is no doubt that these two methods should be mainly employed in all future warfare and that special training in the administration of gas and oxygen should be arranged so that experienced administrators may never be lacking.'

This advice was followed with the training of anaesthetists for the armed forces during the Second World War from 1939-1945. On demobilisation, these anaesthetists had a profound influence on the subsequent development of the specialty of anaesthesia in the United Kingdom.

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A VISIT TO TUNISIA

Perhaps the high quality of the History of Anaesthesia Society meetings is one reason why anaesthetists seldom attend congresses of general medical historical interest. Few have been seen at either the British or the International Societies for the History of Medicine. Because the HAS is a corporate member of BSHM (there are no individual members) any HAS member may attend these meetings and very pleasant and friendly occasions they are. The ISHM is by individual subscription and members are granted reduced registration fees at its Congresses as well as receiving the journal *Vesalius*.

Our visit to Tunisia was to the 36th Congress of the International Society for the History of Medicine and a distinctly unusual occasion it was. ISHM congresses started in 1920 and this was the first meeting held outside Europe. The Tunisians made the most of it, laying on tours of their country, offering a social programme of Arab hospitality and even striking a special postage stamp. The inaugural address was given by the Prime Minister, M Doctor Hamed El Karoui. About 300 people of some 55 nationalities from all over the world were listed as attending, including 20 from the *Royaume Uni*. Our party was mostly derived from the Section of the History of Medicine of the Royal Society of Medicine. It included an Honorary Fellow of the Society and six who had been History Section Presidents. We went forth to a country new to most of us, with high hopes and expectations.

Tunisia has always been a crossroads of the world. Its culture dates back at least to the 12th century BC. Many peoples came and went. First, Phoenicians and later Carthaginians mixed with the local tribes of Berber, one of which, the Ifriquia, gave its name to the whole of the African continent. Christians moved in during the 1st century AD, to be followed by the Romans who left conspicuous remains. Later, Tunisia was taken over by invading Arabs and it has remained Islamic ever since, with a period from 1881 as a French Protectorate before it gained independence in 1957.

Present day Tunisia is unusual amongst Islamic countries in being secular and multi-faith, with mosques, synagogues and churches all being active. The Jewish settlement on Djerba has an ancient synagogue housing what is claimed to be the oldest Torah in the world, whilst the official national rest day is Sunday. Women have full equality, although in the remoter places the women among us sometimes felt we were not very visible. Hotel standards are high, the people are friendly and helpful, the guides knowledgeable and transport is excellent. The country is attractive and both ancient and modern architecture extraordinarily beautiful - indeed, the Tunisians seem incapable of putting up a really ugly building. The Bardo Museum in Tunis must surely rank as one of the great museums of the world and it is only one of many.

Seven of us joined a pre-Congress tour led by a dynamic and knowledgeable local guide who happily extended our tour by a day and a night at no extra cost when we said we wanted to visit some more places.

After a short stay on Djerba we went south into the desert where daytime temperatures exceeded 40°C and even the swimming pools were too hot at midday. We saw beautiful emerald green oases and were told about how these were used for cultivation. We visited troglodyte homes where we had a memorable Berber meal of *brik* and *couscous*, amazed at

how much cooler it was just a few feet underground. We crossed a vast dry salt lake, the Chott of Jerid, blindingly white, in search of mirages and 'desert roses', fascinating sandstone sculptures that look artificial and are actually natural, being carved by the wind. Natural functions more difficult to provide for in such terrain were accommodated in a variety of places. Our 'Good Loo Guide' included the Museum of the Mareth Line, a troglodyte cave-dwelling equiped with *mod cons* that actually worked, a carpet shop and sundry wayside inns. It was not necessary to use the traditional 'ladies to the left of the coach, gentlemen to the right'.

An intrepid group, suitably clad in Arab garb, essayed forth by camel into the desert at sunset. The romance of the occasion was only slightly marred when at our furthest point our camels knelt for us to dismount and on cue several small boys emerged from behind the dunes flogging warm coca-cola, whilst a less intrepid member, who had eschewed camel-riding in favour of a horse-drawn calèche, popped out with his camera. Nothing, however, could destroy the peace and silence of the return by moonlight, the only sound the camels' padding feet. Back at the hotel we found an Italian lady who had had the misfortune to be rolled on by her camel, sustaining an ankle injury. This was treated in the restaurant by a medical committee consisting of an American gastro-enterologist, who supervised an Israeli specialist in metabolic bone disease applying a bandage, whilst in attendance was an Italian doctor, and an English historian who recited the history of the treatment of sprained ankles. Quite how the radiologist and the anaesthetist missed this episode I am not sure.

As well as the wilds of the desert, we saw magnificent remains of the extensive Roman settlements to be found in Tunisia and realised why the better-watered northern part of the country had become the granary for the Roman Empire. Ruins of stone and mosaic, overgrown with grass and flowers and replete with bird song, give far more 'sense of place' than the sterile manicured sites so common in Europe. In Sousse we saw a *ribat*, or fortified monastery, built at the beginning of the 9th century AD on the site of an early Christian basilica, its magnificent fortified and machicolated gatehouse having one of the earliest groin-vaulted roofs in the world. The gap in the city wall near here was made during the Second World War, but elsewhere it does not seem to have left any more traces than the Punic Wars of the 2nd and 1st centuries BC.

We visited Kairouan, the Muslims' fourth holiest city. Making seven pilgrimages here absolves the worshipper from a visit to Mecca. Its mosque was established in the 7th century and it is the only one where circumcisions are carried out by Imams. In the courtyard were boys of 8 to 10 years old, dressed in white and gold robes with henna-painted hands, waiting for and recovering from the procedure. Medicine was taught in Kairouan from the 8th century, though its greatest medical scholar was Ibn al Jazzar who practised in the latter half of the 10th century and to whom our Congress was dedicated.

Then, back to Tunis-Carthage for the serious purpose of our visit. The Congress hotel was palatial with willing but inexperienced personnel; breakfasts were lavish but became a treasure hunt to find dishes and cutlery - ever tried eating cereal from a plate with a knife and fork?

The Congress was a challenge to some of the dearest cultural assumptions of northern Europeans. Even Albert Einstein might have learned something. He is reputed never to have

accepted Heisenberg's *Principle of Uncertainty* which can be succinctly summarised as: 'if you know the time, you don't know the place: if you know the place, you don't know the time'. This principle was applied to all social functions and most of the lectures. These problems, however, were all smoothed out by our charming and efficient Congress President, Dr Ynez O'Neill of Los Angeles, a distinguished historian of medicine, whilst the local organiser, Pr Sleim Ammar, a psychiatrist, almost single-handedly kept the Congress moving along its course.

I was charged at short notice with deputising for Dr Selma Calmes (a HAS member) and giving her paper on 'The world-wide history of anaesthesia' at the opening session. Her faxed paper somehow did not arrive so I worked up a 20 minute talk based on her 100 word abstract. The previous speaker, Professor Metiri of Tunis, gave a most interesting talk on the influence of Arab-Islamic anatomy and surgery on western Christian medicine. He was allotted 35 minutes and was still going strong after an hour and a quarter. He was only stopped then, still talking, when the chairman, Pr Ammar, incited continuous applause from the audience and had the projector turned off. He appealed to me to shorten my paper and I think I endeared myself to the audience by congratulating the previous speaker on his eloquence and then giving the history of anaesthesia world-wide in 10 minutes flat.

One of the main themes of the Congress was, naturally, Arabic-Islamic medicine. Because of the destruction in 640 of the magnificant library in Alexandria, many of the classic Greek medical writings have survived only through their translations into Arabic. What is more problematical is how much of the latter relate to the original Greek and how much are Arabic additions or even adoptions. Discussion periods were lively, with claims and counter claims about who discovered what and when and arguments were carried on with great eloquence and vigour, sometimes throwing more heat than light on to the subject. A World Congress may not be the best place to appreciate the broad scope of Islamic medicine but lots of fascinating sidelines emerged. For example, we know that much of our medical language is derived from Greek and Latin, but Mr Al Fallouji, a consultant surgeon from Boston, Lincolnshire, who was accompanied by his anaesthetist wife, gave a fascinating paper showing how many of our terms, particularly in anatomy and pharmacy, derive from Arabic. To give only one example: Al-Kindi in the 9th century described the distillation of 'Alghoul' from which the term 'alcohol' is derived. Professor Dolev from Tel-Aviv gave convincing evidence that, at the time of the Crusades, Muslim medicine and surgery was well ahead of that of the Christian army doctors. Dr Shaikh of Manchester described William Hunter's interest in Arab-Islamic medicine. Dr Jazi of Tunis analysed early Arab pharmacopias and described, with considerable gusto, a suppository that produced Viagra-like effects that were 'vraiment étonnant'. Unfortunately, the NHS may not benefit because he flashed his slide on and off the screen too quickly to identify its ingredients!

Other topics were public health, pain, ethics and medical education and all produced some interesting papers. The pain sessions included a paper stressing that whilst there were undoubtedly cultural differences in attitudes to pain, there was no evidence that the experience of pain differed from one culture to another. It is certain that, in view of the great strength of pharmacy in early Islamic medicine, much of interest to anaesthetists and pain therapists remains to be unearthed from Arabic sources.

Unfortunately, Hannibal exerted his revenge on a number of Congress attenders and at one time it seemed that the currency of the Congress would be in Imodium tablets. Certainly, anyone inadvertently having an overdose of this could readily counteract it by taking a taxi ride with almost any driver; indeed, even the least religious amongst us was inclined to chant *Inshallahs* and *Ave Marias* throughout these rides. As A P Herbert said: 'the Englishman never enjoys himself except for a noble purpose'. We did enjoy ourselves and surely our purpose was noble.

The next Congress is to be held in 2000 on a hot, humid, hurricane-prone island in the Gulf of Mexico. I hope to see some of you there.

Aileen K Adams (et al)
Cambridge

Information regarding the 37th Congress of the ISBM from:

Professor Chester R Burns
University of Texas Medical Branch
Institute of Medical Humanities, Suite 2208
Ashbel Smith Building
Galveston TX 77555-1311
USA

Details of the International Society for the History of Medicine from:

Dr J S G Blair
143 Glasgow Road
Perth PH2 0LX

SOCIETY AND DEPARTMENT HISTORIES

This occasional feature commenced in Volume 22. Further reports will be most welcome.

oooOooo

The Antwerp Anaesthesia and Reanimation Society (VERANTARE)

This Society was founded in 1952 by the 14 anaesthesiologists then practising in the Antwerp region. It was registered as a Professional Society in 1985 and now has over 100 members.

The aims of the Society have always been to propagate social, official and friendly communication between the Antwerp anaesthesiologists. Regular scientific meetings, mainly in co-operation with the Departments of Anaesthesiology and Intensive Care of the University form a large part of the activities as do visits to Belgian and to foreign hospitals. Among many other initiatives, from 1955 to 1992 the Society organised 'on duty' lists for anaesthetists of the private hospitals in the Antwerp area. There were 5 lists, covering a total of 16 hospitals, and mutually agreed substitution was always possible. The hospitals equivalent to those of the British National Health Service had their own duty lists.

In 1963, the Society started a museum of anaesthetic apparatus, which has now gained the status of a registered 'Antwerp Provincial Museum' and has a reputation throughout Europe.*

Contributed by Dr Et Troch,
Hon President, VERANTERE

* The museum can be visited any day, by appointment with:

Dr Troch
Marcel de Backerstr 2
2180 Antwerp, Belgium
(tel: 03.664.33.44. Fax: 03.605.63.53)

or the Conservator:
Dr P M Desbarax
Alfred Coolsstr 13
2020 Antwerp
(tel: 03.238.38.78)

Wake Forest University School of Medicine (formerly the Bowman Gray School of Medicine), Winston-Salem, North Carolina.

The Department very kindly sent a copy of *A History of the Department of Anesthesiology 1942-1997* by Wilson Somerville for our Society's records. This is a well-researched and well-illustrated 90 page paperback from which these notes are taken.

The history starts with Roscoe Wall arriving in the area as a GP anaesthetist in 1913. By 1918 he had become the first full-time anesthesiologist in North Carolina. He eventually became Head of the Medical School's new Section of Anesthesiology in 1942, and retired as

Professor in 1956. Wall introduced the Nurse Anesthesia Program in 1942 and the Residency Program in 1953. D LeRoy Crandell came as Instructor in 1953 from Cornell University Medical College where he had worked under Joseph E Artusio. He brought expertise and enthusiasm for regional blocks, plus a dedication to work and administrative talent which led to his appointment as Section Head in 1957. He developed the School for Inhalational Therapy and in 1964 a purpose-designed ICU. Crandell made no concessions to his diabetes. The disruption which followed his death in 1966 at the age of 41 was repaired by Thomas H Irving. When he arrived in 1967 the sole MD left in the section announced: 'Now things are going to be easy. There are two of us'.

Irving's emphasis was on a strong clinical base, but he recruited wisely to boost teaching and research. In 1970 the section was given full departmental status with Irving as Chairman, succeeded in 1983 by Frank James. The department has flourished, developing sub-sections in obstetric, paediatric, neuro and cardiothoracic anaesthesia, critical care and pain management. It has become nationally recognised, maintaining a high calibre of resident staff in the 1990s despite the nationwide fall in enrolments. An outstanding feature of the department, and a major factor in its success has been the spirit of collaboration between the nurse anaesthetists and the anaesthesiologists.

AMB

A History of the Liverpool University Department of Anaesthesia

The University Department of Anaesthesia opened in October 1947 and Dr T C Gray was appointed as its head, with the title of Reader. The original proposal was that Anaesthesia should be a sub-department within the Department of Surgery, but the Professor of Surgery, C A Wells, made accommodation available and allocated Gray his own budget, so that to all intents and purposes it was an independent department. The award of a personal chair to Gray in 1959 confirmed this status.

There were some significant events preceding the establishment of the Department. In 1944, the Goodenough Committee, reporting on the future of medical education, proposed that Universities should set up departments, headed by a Professor, in clinical subjects and Anaesthesia was included in this. The Association of Anaesthetists chose the greatly respected Liverpool anaesthetist, Dr R J Minnitt, to report to this committee on their behalf. Minnitt, who had been awarded an MD in 1925, and an honorary FRCOG in 1934 (for his work on self-administration of nitrous oxide in obstetrics), was an Honorary Lecturer in Anaesthesia from 1932, and the first anaesthetist to become a member of the Board of the Faculty of Medicine. Further, as Honorary Secretary of the Liverpool Society of Anaesthetists, he was a member of a committee (Gray and R P Harbord were also members) to represent the views of Liverpool anaesthetists. He had also received a letter from the Medical Students Society requesting an improvement in the teaching of anaesthesia. The setting up of Departments in other Universities, and the departure of Harbord to Leeds, may have been further nudges to progress.

Gray's early priorities were to reorganise undergraduate and postgraduate education. Innovations in the former included performance of ten supervised endotracheal intubations, and an interview system with presentation of records, which would have to be re-taken if it

was not satisfactory. Undergraduate education continues to be a major departmental activity, since many topics including applied physiology and pharmacology, peri-operative care, fluid balance, and resuscitation are not always covered elsewhere. With the adoption of a radically new undergraduate curriculum in 1996, medical students are exposed to anaesthesia earlier in their career.

One of Gray's special interests was postgraduate education, and the course which was such an outstanding feature of the Department for over 20 years grew out of small informal teaching groups. The newly formed Faculty of Anaesthetists set up a two part Diploma in Anaesthetics Examination in 1948, and with anaesthetists gaining Consultant status in the new National Health Service, their training assumed an increasing importance. By patient negotiation, Gray created a situation whereby course members had Senior House Officer posts, attended lectures every morning, and were not expected in their hospitals until 11am - a far-sighted system which remained unique for many years. The course, which settled down to a five term pattern for both parts of the FFARCS (1953), was always oversubscribed, and included supernumeraries, usually from overseas, who did not require hospital posts. When day release became the norm in the 70s, the Department organised study days and some two or three week intensive courses.
In 1948, Miss Isabella Forshall, the senior paediatric surgeon in Liverpool, approached the Department for assistance in the evolving field of neonatal surgery. Dr G Jackson Rees was allocated to this task, and thus began Liverpool's association with this branch of anaesthesia, which grew to international status. Jackson Rees was successively Demonstrator, Lecturer, and Director of Studies in Paediatric Anaesthesia until his retirement in 1983. Single-handed at first, he was joined by Dr A L Stead as Demonstrator in 1955, and by Dr G H Bush as Lecturer in 1962. Together they published much on the use of neuromuscular blocking agents in children, particularly on the response of the neonate to these drugs. Other pioneering work was done in long term ventilation in infants and the development of tubes for this purpose. Many senior postgraduates sought experience at Alder Hey by taking SHO posts. The post of Senior Lecturer in Paediatric Anaesthesia is maintained and currently held by Dr P D Booker.

The Liverpool Department has been thought to be synonymous with relaxants, and certainly Gray's name became established following the publication of *Curare - a milestone in Anaesthesia?* (Gray & Halton 1946). But in the early days work was done on cardiac output (with Dr F J Prime) and hypothermia. Departmental publications confirm the emphasis on relaxants. Members were early in the work on atracurium (Hunter & Parker, 1982), and have contributed to the understanding of its action and that of newer relaxants in hepatic and renal dysfunction, in the surgical department and the intensive therapy unit. One of the most frequently cited papers is that on the train of four (Ali, Gray and Utting), universally accepted in the assessment of neuromuscular block. Another early achievement of Gray was to resuscitate an almost moribund *British Journal of Anaesthesia*. He was succeeded as Editor by Dr J E Riding who, as Demonstrator and Lecturer, had been associated with the Department for over 20 years. The tradition has been maintained by the appointment of the present Reader (Dr Jennifer M Hunter) as Editor-in-Chief.

In 1970, Gray became Dean of the Medical School and Dr I C Geddes became Acting Head of Department with the status of Reader. He was particularly interested in educational techniques, local anaesthetics, and metabolism of anaesthetic agents. In 1976, on Gray's retirement, Dr J E Utting was appointed Professor. He had been associated with the

Department as Lecturer and Senior Lecturer since 1965. He supervised the move into the Royal Liverpool Hospital in 1978, which had the advantage of more space and a closer physical connection with the main hospital. He had conducted a very thorough investigation into awareness and he reviewed the problem of postoperative pain at a time when it was a neglected subject. He jointly edited (with Gray and J F Nunn) a new two volume edition of Butterworths *General Anaesthesia*. The University honoured him by appointing him a Pro-Vice-Chancellor.

Utting retired in 1994; no successor was appointed and the chair remains vacant (May 1998). The acting Head of Department is Professor R S Jones, a Veterinary Surgeon. He has been associated with the Department for over 30 years and has made a considerable contribution to the research programme. He is a former President of the Royal College of Veterinary Surgeons, and was elected to a personal chair in 1990.

The expanding roles of research and training continue. At Lecturer level, there are now associations with the Cardiothoracic Centre at Broadgreen and the Pain Clinic. Specialist Registrars have the opportunity to rotate into the department for research experience.

P M E Drury

A list of overseas Anaesthesia Societies over 50 years old:

1905 - American Society of Anesthesiologists. USA

1919 - National Anesthesia Research Society. USA

1920 - Canadian Society of Anaesthetists

1934 - Australian Society of Anaesthetists

1934 - Société Francaise d'Études sur l'Anesthésie et l'Analgésie

1934 - Societa Italiana di Anestesiologia

1934 - Sociedad de Anestistas de Mexico

1943 - The South African Society of Anaesthetists

1944 - Associacion Argentina de Anestesiologia

1946 - Narkoslikar Klubben. Sweden

1947 - Section d'Anesthésiologie de la Société Belge de Chirurgie

1947 - Sociedad de Anestesiologia de Chile

1947 - Indian Society of Anaesthetists

1948 - Sociedade Brasileira de Anestesiologia

1948 - Nederlandse Anaesthesisten Vereniging

1948 - New Zealand Society of Anaesthetists

1948 - Sociedad de Anestesiologia del Uruguay

1949 - Dansk Anaesthesiologisk Selskab. Denmark

1949 - Norwegian Association of Anaesthesiologists

1949 - Turkish Society of Anesthesiology

THE ASSOCIATION OF ANAESTHETISTS AND THE HAS

We are happy to report that the contributions of three members of the History of Anaesthesia Society have been recognised by the Association of Anaesthetists of Great Britain and Ireland. Dr David Zuck, an ex-president of the HAS, was awarded the Pask Certificate of Honour for services to the Association and for promotion of the history of the specialty. The presentation was made by the President of the Association, Dr Leslie Baird, in September 1998 at the Annual General Meeting in Glasgow. Dr Geoff Hall-Davies has been appointed Curator of the Association's BOC Museum and Charles King Collection. Dr Neil Adams has been appointed Librarian of the Association.

During January 1999 these three were very busily engaged in setting up the current exhibition in the Association's Museum. This is devoted to the history of spinal and epidural anaesthesia, and to the life of Charles King, using a film and scrapbook items of his travels donated by his family.

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IMPROVING THE PUBLIC IMAGE OF ANAESTHESIA

Adrian Padfield has written with two excellent suggestions for helping to educate the public on anaesthesia and its history.

Recognition of our heroes

Many years ago, Dr Padfield protested to the publishers that the only Snow mentioned in the 1984 edition of *Chambers Biographical Dictionary* was the novelist C P Snow, and that the entry for Simpson could give the erroneous impression that it was Simpson who gave chloroform to Queen Victoria. He subsequently has noted that many other printed and CD-ROM reference works have similar omissions of important names in the history of anaesthesia. Perhaps as a result of his letter, the latest edition of *Chambers* does have an entry for John Snow. Adrian suggests we should all check reference works, and then write or e-mail all who omit our heroes.

Information for the media

The Public Affairs Officer of the Association of Anaesthetists of Great Britain and Ireland has suggested the compilation of a list of dates of notable births, deaths and innovations in the history of anaesthesia. These can be widely distributed particularly as '*On this day in history*' press releases which can provide good fillers for news editors. Dr Padfield has volunteered to act as the conduit for this information. Please send information on your favourite dates to:

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OBITUARY

DR GWENIFER ('GWEN') WILSON - 1916-1998

Dr Gwenifer Wilson, internationally known for her research and publications on anaesthesia history, passed away peacefully on 31 October 1998. 'Gwen' was born in Broken Hill on 12 October 1916, the daughter of two teachers. She was a brilliant student and gained an Exhibition to attend Sydney University and study medicine, graduating in 1939.

As a resident medical officer at Balmain Hospital in Sydney, she was soon involved in administering anaesthetics, encountering encouragement from some, and opposition from others, this being an era when women in medicine were subject to considerable discrimination from a male-dominated profession. The experience undoubtedly set the mould for a determined and forthright personality which, with her innate gentleness and humour, made her a household name in Australian anaesthesia.

Gwen was one of 35 to enrol in the second Diploma of Anaesthesia course held at the University of Sydney in 1945. Although only four completed the course, Gwen was not only the first woman to complete the course, she finished top of the year! In the following year, she joined the Australian Society of Anaesthetists which had been formed only 12 years before. She thus came to know and earn the respect of many of the pioneers of modern Australian anaesthesia.

Despite a busy practice and a young family, she became actively involved in Society affairs, becoming chairman of the New South Wales State Section from 1951 to 1954, and Secretary of the Society from 1954 to 1956. Concern over inadequately documented records at this time sowed the seed for her future passion, and a period of illness in 1961, when she was persuaded to tape some interviews with pioneers, provided the stimulus for the making of an amateur historian.

This was no amateur, though. Gwen pursued her quest for the knowledge and documentation of anaesthetic history with the same vigour and exactitude that she applied to everything else. Those who have read *One Grand Chain. The History of Anaesthesia in Australia 1846-1962, Volume 1, 1846-1934*, will agree with the critical acclaim the book has received. This is no dry historical text, it is a living example of Gwen's commitment to her chosen fields of endeavour - anaesthesia and history.

Of course, this was not Gwen's only publication. She also published *Fifty Years: The History of the Australian Society of Anaesthetists* in 1987 and *A Bibliography of References to Anaesthesia and Related Subjects in Australian Medical Publications 1846-1962*, published in 1988. The latter work, which entailed a detailed reading of every medical publication since 1846, is an invaluable aid to anyone researching early Australian anaesthesia. Gwen also published many papers and delivered countless lectures, always in her own inimitable style, sprinkled with anecdotes and humorous asides.

Gwen became Honorary Historian to the Faculty of Anaesthetists, Royal Australasian College of Surgeons in 1966, and later to the newly formed Australian and New Zealand College of Anaesthetists until 1992, when she was made Emeritus Historian. She was the Honorary

Archivist for the Australian Society of Anaesthetists, whose archives are named in her honour. Gwen was also an active participant on many committees in the College and the Society.

Gwen received many honours in recent years, including the highest awards bestowed by both Society and College, the Gilbert Brown Award (ASA) in 1987, the Faculty Medal in 1988, and the Robert Orton Medal (College) in 1990. In 1995, Gwen was awarded a Doctorate of Medicine by the University of Sydney, shortly before being internationally acclaimed as the first Laureate in the History of Anaesthesia by the Wood Library-Museum of the American Society of Anesthesiologists.

Until her last illness, Gwen remained a passionate advocate for the specialty, for the rôle of women in medicine, and for the preservation of history. All who follow in her footsteps will be indebted to her dogged determination.

Rod Westhorpe
President, Australian Society of Anaesthetists
Honorary Curator, Geoffrey Kaye Museum, Australian and New Zealand College of Anaesthetists.

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A REMARKABLE CATALOGUE

In keeping with the European flavour of this volume, I direct attention to the splendid catalogue of the Exhibition held in the Museum für Kunst und Gewerbe, Hamburg, on the occasion of the 1997 German Congress of Anaesthesia and the Fourth International Symposium on the History of Anaesthesia. The great range of items from private collectors and museums is presented in full colour in a chronology from Sertürner to servo-anaesthesia. The English text is edited by Jochen Schulte am Esch and Michael Goerig, who have provided a scholarly and coherent commentary on the developments in equipment and the personalities involved.

With a comprehensive bibliography, plus index of people and of topics, this is excellent value at DM50. Contact Michael Goerig at Universitäts-Krankenhaus Eppendorf, Martinistr.52, 20246 Hamburg.

AMB