Mitchiner Memorial Lecture*

'Another Side of Mars'

Professor T Cecil Gray, CBE

"Be not afraid of greatness, some are born great, some achieve greatness and some have greatness thrust upon 'em." Thus quoted Malvolio on the 12th night when faced with an assignment with the delectable Lady Olivia. Faced with this formidable lectureship, a situation very different but no less daunting, I accept the advice given to Malvolio in that letter. I am not afraid, despite the distinction and remarkable eloquence of my predecessors and I can adapt that famous epigram further to my purpose. As an anaesthetist I might be expected to see the physicians and surgeons who have previously always given this lecture as born great: my speciality in my lifetime could be regarded as having achieved greatness and I, as a former practitioner in it, have had greatness thrust upon me by this invitation from the Director General. I am hugely honoured.

The man whom we are commemorating this evening (Fig. 1) was quite closely concerned with the evolution of my speciality during its "Great Leap Forward" in the years following the last war. As the profession braced itself to enter a National Health service it was by no means clear that every specialty would achieve equal recognition and anaesthesia was one at which the planners looked askance. Could its practitioners, the majority of whom were still engaged in general practice, they asked, be ranked in the hospital service with surgeons and physicians? The Royal College of Surgeons in discussions with the Association of Anaesthetists concluded that equality was desirable but, if it were to be given, it must be seen that the training and qualifications of those practising the speciality stood comparison with those of the specialties generally recognised as meriting consultant status. It is to me a pleasing coincidence that Philip Mitchiner achieved his Fellowship in surgery in 1913 the year of my birth. He was elected to the Council of the College in 1943 and became its Vice-President at the tender age of 40 years in 1928. He was, therefore, a senior member of the Council when discus-

Fig. 1 Major General P H Mitchiner, CB, CBE, MD, MS, FRCS (1888-1952)

sions were taking place which were to lead to changes in the Royal Charter in order to allow the establishment of the Faculties of Dentistry and Anaesthesia. I cannot claim to have known him as closely as have previous lecturers to whom he had been teacher and chief at St. Thomas' Hospital, but I was a member of the Foundation Board of the Faculty and I do remember him clearly, especially when, as Vice-President, he attended meetings of the Board of Faculty and was a welcome and convivial guest at its post-Board dinners.

I have been told innumerable stories of his exploits in surgery and many anecdotes exemplifying his wit and occasionally acidic humour, but I

*Lecture given at the Royal Army Medical College, Millbank, on Thursday 17th November 1983.

appreciate that it is as a medical teacher and as an able administrator that he is chiefly remembered. This evening, however, we remember him very especially as a marvellous example of the civilian soldier whose interest and affection for this Corps, as Territorial and as serving officer, was maintained until his premature death.

This devotion to things military in one who himself was so very unmilitary directed my attention towards non-destructive aspects of war: sides of Mars which might even be seen as good. This is not to glorify war. I cannot conceive that any civilised person would disagree with Freud, although he was an ardent pacifist, who wrote of war in these terms shortly after the last conflict: "We are constrained to believe that never has any event been destructive of so much that is valuable in the common wealth of humanity nor so misleading to many of the clearest intelligences, nor so debasing to the highest that we know".¹

Some good does seemingly accrue from war, sociological, technological and medical. Humanity has benefited enormously through advances in medicine which are frequently claimed as directly attributable to war and there is a considerable literature to this effect. John F Fulton, Sterling Professor of History of Medicine at Yale University, had no doubts about the effects of war on the development of medicine. I quote from his Smithsonian Lecture: "It is not commonly realised that many of the most significant advances in medical science have been made by medical officers in the armed services or by civilian physicians working under the stimulus of wartime exigency".² So, I wondered whether this was true of a comparatively recent development in medicine — anaesthesia. It is interesting that no one has looked at this although there are references to the anaesthesia used in wartime in historical treatise such as that of Barbara Duncum³ on the History of Inhalation Anaesthesia and Bryn Thomas⁴ superb volume on the "Development of Anaesthetic Apparatus." I shall attempt a review of wartime anaesthesia albeit of necessity somewhat cursorily and with the specific aim of determining whether the subject benefited in any way during times of war.

It will be remembered that anaesthesia was first effectively demonstrated on 16th October 1846 at the Massachusetts General Hospital by a dental practitioner, Mr. William Thomas Green Morton, when he administered ether to a patient before an invited medical audience. Dr Charles Thomas Jackson, a chemist, who had tutored Morton afterwards claimed that he had suggested ether to Morton. In the story of anaesthesia such claims are not uncommon. For example, a Liverpool apothecary by the name of Waldie claimed he had suggested chloroform to Simpson and, in fact, it seems that he did;

and Dr Louis H Wright certainly suggested to Harold Griffiths that he try using curare in anaesthesia. But coming back to Morton, the Mexican War was terminated by treaty on the 15th June 1846, that is just four months before Morton's demonstration. But frequent skirmishes still continued across the border for many years. Morton who had patented his invention wrote to the Surgeon General of the Army and of the Navy recommending that ether be used to relieve the sufferings during surgical interventions on the wounded on the Mexican front. Indeed, he offered to send his agents with the necessary apparatus and to supply the ether at whole sale prices! Both Services refused. Nevertheless the surgeons of both Services appear to have used ether ignoring Morton's patent⁵ and this was the first occasion on which anaesthesia was used under war conditions.

It was in the Crimean War of 1855-57 that anaesthesia really came into its own. That same Charles Jackson reported that the French anaesthetised 30,000 cases with chloroform in the campaign without loss, whereas the British experience was less happy⁶. Chloroform had been introduced as anaesthetic in 1847 by Simpson and it is typical of unreliable and self-interested Jackson that he attributed the difference in the French and British experience to the fact that the French used a mixture of one part of chloroform to four of ether as he recommended, whereas the British used pure chloroform. If the report of the Surgeon General⁷ is to be relied upon, this is quite untrue for it refers to the use only of chloroform in the campaign and as far as I can determine, only chloroform was supplied. Duncum³ points out that for the first two decades of the use of anaesthesia the French were the pace-makers and that this was probably result of the high standing of French medicine at that time: among others Claude Bernard and Paul Bert were on the scene. Certainly the Surgeon-in-Chief of the French Army reported that chloroform had been given to more than 25,000 men without a single accident and numerous reports were given to the French Academy of Medicine acclaiming chloroform⁸. However, Jackson was right in claiming that the British experience was rather different. In the British army the mortality due to chloroform was high. One hundred and forty cases in the regiments of the line died of their wounds within 24 hours and 149 more within 48 hours: a very large majority of these was assessed as being due to chloroform which was rather quaintly described as "One of the great peculiarities of the practice of surgery in this war"⁹. Things became so bad that the Head of the Army Medical Department in Turkey issued a circular shortly after the expeditionary force left Verna in which he cautioned officers in the use of chloroform recommending the knife

as a powerful stimulant in the treatment of shock. The existence of this circular and its recommendation was leaked and medical officers were accused of brutality in withholding anaesthesia. Seemingly, however, the men themselves were frightened of having chloroform and not infrequently "begged . . . that it be not given." I quote from the official report the revealing case of Patrick Kelly of the 48th Regiment in whom amputation of the shoulder joint of the right side and of the middle third of the femur of the left were successfully performed within a few minutes of each other, with perfect success without chloroform at his own special desire.

In this case the immediate effect of the injury doubtless existed (or shock as ordinarily understood) and yet its effects were counterbalanced and its symptoms in great measure held in abeyance by the mental condition. Army surgeons at that time considered that "nervous tension" delayed shock and one of the reasons given for evacuation of the wounded as quickly as possible was so that the nervous tension would not subside and be, as they said, "replaced by the state of shock." This is to me reminiscent of the situation ninety years later when, at Pearl Harbour, so many died from the effects of an injection of thiopentone because it was not realised that thiopentone relieved the vasoconstriction which kept up the blood pressure in those who had suffered loss of blood volume. Of course, conditions in the Crimea were far from conducive to careful observation or research but it surprised me to find in the Official History a forward looking and percipient observation which in one form or another was repeated by writers on the subject right up to the Second World War. "Surgeons" it says "were in the habit of saying that men died of 'shock' without asking themselves very strictly what they meant by the term. It is, however, a convenient term although not, perhaps, a very philosophical one."

The American Civil War erupted five years after the Crimean. Chloroform remained the front line anaesthetic but at base hospitals — the so-called Hospitals of Comparative Permanence — it seems, from a column on the hospital charts which were in use and compulsorily completed, that a choice of anaesthetic was available⁸. This must have been limited at that time to ether and chloroform or a mixture of the two. Nitrous oxide was being pushed in America for use in dental practice by an organisation known as "The Colton Dental Association." This was the same Colton whom Horace Wells in 1844 had seen demonstrating the effects of laughing gas. That was two years before Morton's demonstration of ether. Wells obtained some of his

"gas" from the so-called "Dr." Colton — he was a travelling circus sort of chap, the equivalent of those hypnotists who still today can occasionally be found providing entertainment by demonstrations. Colton took some of his "gas" to Wells' surgery in bladders and Wells successfully tried it on his patients and actually had it administered to himself by his assistant for extraction of a tooth. Unhappily he then gave a demonstration at the Massachusetts General Hospital which was a complete fiasco and his disappointment and embitterment finally resulted in suicide. But not so Colton who started up in business giving nitrous oxide to dentists and so established this Association. Nevertheless, nitrous oxide was not available for the casualties of the Civil War. There were only ether and chloroform. Local and spinal anaesthesia were not to be introduced for another 30 years. Ether was at that time the favoured anaesthetic in the Northern States — after all it had been introduced in Boston; but in the Southern States chloroform was favoured. Duncum suggests that this was probably due to the influence of the New Orleans School. There medicine was dominated by Paris where chloroform remained the most popular agent. However, chloroform was still the most used agent in the war, even by the surgeons of the Northern (Union) forces. Eight thousand nine hundred cases were given anaesthesia: of these chloroform was used in 6,784, ether in 1,305 and the mixture of the two in 811⁹. Opium was given almost routinely to the severely wounded "and was found particularly useful in penetrating wounds of the chest, in quieting the nervous system"⁸. This reminded me of a salutary lesson I received in North Africa. When we were at Sousse awaiting the Sicilian invasion a small Arab boy was brought to the hospital having inhaled a peanut. He was very distressed fighting for breath and cyanosed — indeed, black. It seems astonishing now that apparently there were at that time no bronchoscopes available to the Army in North Africa. I struggled with oxygen, upending the lad, pummelling his chest and so on, but to no avail. Frank d'Abreu who was stationed in a neighbouring General Hospital and known to be interested in thoracic work was sent for in the hope that he at least would have a bronchoscope. He arrived without one and immediately ordered morphine. In my ignorance I enquired, I hope tactfully, what that would do, as the boy was struggling and using all his accessory muscles of respiration. I thought I knew! Frank simply said "You'll see" and I did, for the lad quietened down and as he did so, of course, his colour improved dramatically. Within an hour or so he had coughed up the peanut.

Lister had introduced antisepsis five years before the Franco-Prussian War and this dominated the military surgery of the campaign. Anaesthesia re-

ceived little attention. Indeed, the development of the use of nitrous oxide was possibly delayed by war¹⁰. Interest in its use had developed particularly in Germany, and in England an editorial in the British Journal of Dental Science suggested that the military should use the opportunity provided by the war to evaluate nitrous oxide anaesthesia in military surgery. A Dr J L W Thudichum, a Lecturer in Pathological Chemistry at St Thomas' Hospital, made an appeal for funds in the press to further this cause and The Times reported that £184.10s had already by the 26th September 1870 been donated to this fund. But still chloroform remained the anaesthetic most frequently used by both sides.

Nor was there any advance from this position in the Boer War. The Surgeon General's Report¹¹ states firmly that "The proper anaesthetic for the field and the only one desirable in hot climates is chloroform." Mounted doctors were provided with a bottle in their saddle bags and base hospitals with ten pounds of chloroform and five pounds of ether. Two drop bottles were supplied for same. Although a Mackenzie Laryngoscope is listed this was not for anaesthesia because, of course, endotracheal techniques were not in use at that time. "Stationary" hospitals were issued with six Burney-Yeo Inhalers and one pair of tongue forceps. Ethyl chloride was recommended as was a supply of Eucaïne but neither appears ever to have been issued. In fact, there was a chronic shortage of even the commonly used drugs during this campaign.

One must conclude that up to the Boer War anaesthesia had not been advanced in any way by war and it is possible that it may, on occasion, have delayed the progress.

By 1914 the better practice of anaesthesia had advanced beyond the open administration of ether and chloroform although in Britain, on the Continent and in the United States both continued to be used extensively. In Britain we tend to regard the pioneers of the immediate pre-war period as Dudley Buxton of University College Hospital, aged 59, at the outbreak of the war, Frederick William Hewitt of the London and Charing Cross Hospitals, aged 57, and the two youngsters, Henry Edmund Gaskin Boyle of St. Bartholomew's and Frederick Shipway of Guy's Hospital, both aged 39. But it was in the United States that most progress was made and among the important advances in the technique of gas and oxygen anaesthesia was the development of the water sight feed — the bubble bottle — for measuring the flow rate of the gases — by a surgeon and an anaesthetist at the Boston City Hospital¹². This idea was seized upon by James Taylor Gwathmey¹³, one of the great American pioneers who incorporated it in his machine.

The distinguished Guy's Hospital physician,

Geoffrey Marshall, as Captain Marshall, was posted early in 1915 to No. 17 CCS in France. There he designed a gas and oxygen machine using a bottle sight feed as suggested by Gwathmey adding another bubble bottle for the vapourisation of ether (Fig. 2). This machine was put into production by Coxeters, manufacturers of nitrous oxide and oxygen, and became the standard machine used by the RAMC. But Marshall did not write it up until after the war in 1920¹⁴. In the meantime, Captain Edmund Boyle who had seen Gwathmey at work, developed a similar machine but with the useful addition of reducing valves. These ensured a constant flow of gases regardless of the pressure in the cylinders and also avoided a build up of pressure in the circuit.

Fig. 2 Captain Geoffrey Marshall's Anaesthetic Apparatus for the Administration of gas and oxygen c. 1915. (Reproduced by kind permission of the J R Soc Med.)

He described this machine in 1919, a year before Marshall's address to the Royal Society of Medicine. Thus Boyle¹⁷ became the progenitor of anaesthetic machines in this country which bear his name right up to the present day. Captain Boyle seems to have served throughout the war at the 1st London General Hospital and he has described how at that hospital he personally gave 2000 gas and oxygen anaesthetics and a Captain Trewby and the residents had given a further 1600. He acknowledged the help he had had with its design from Geoffrey Marshall but it must be stated that the machines described by Gwathmey, Marshall and Boyle did not offer any real advance on the original designed in the Boston City Hospital by Cotton and Boothby.

We have a good deal of information about the anaesthetic service in the Army during the War.

J R Army Med Corps: first published as 10.1136/jramc-130-4-02 on 1 January 1984. Downloaded from <http://militaryhealth.bmj.com/> on April 26, 2023 by guest. Protected by copyright.

Only chloroform was originally made available and it continued to be used on all fronts and for induction. It was, however, discouraged in shocked patients and three months after the commencement of hostilities ether was issued¹⁶. For the most part the open method of administration was used, but Marshall, despite his interest in gas and oxygen, recommended ether and chloroform as given by Shipway's warmed ether apparatus as the most suitable technique for patients who had suffered abdominal injuries. At home and at base intratracheal insufflation methods using either the original machine described by Kelly in 1912 or its later version by Shipway were available. Local infiltration and spinal analgesia using Novocaine (procaine) were popular but Stovaine for spinal was discouraged because of the disastrous hypotension it was alleged to cause. Ethyl chloride, quite rightly, was discouraged. But there can be no dispute that the new feature of war-time anaesthesia was the extensive use of nitrous oxide. In the words of one writer¹⁷ "One of the greatest aids in the treatment of shocked patients during the later periods of the war was the advent of gas and oxygen as an anaesthetic: its introduction into general use was one of the most important and beneficial events of the campaign."

For historical accuracy, one must note a claim made by George Washington Crile, the distinguished American surgeon from Cleveland. In January 1915 an American Red Cross Unit founded by the American community in Paris had appointed Crile as its surgeon. It will be recalled that he had introduced the concept of anoci-association, originally for use in toxic patients undergoing thyroidectomy. He applied this to the treatment of war casualties using local block combined with gas-oxygen anaesthesia in the American unit and claimed that he "literally introduced gas-oxygen anaesthesia into war surgery in England and France¹⁸". Presumably he meant into the English and French forces in action and he could well have been right. Marshall could easily have visited the American unit which was conveniently situated just outside Paris at Neuilly-sur-Seine.

Anaesthetics for the greater part of the War were not administered by specialist anaesthetists but by officers in the medical units. Some specialist anaesthetists were appointed to casualty clearing stations in 1916 and towards the end of the War these were assisted by nurse anaesthetists, 200 of whom were appointed in 1918. It is reported that "they proved of great service and many of them became very skillful." But it seems that other than nurses also helped for an annotation in the *Lancet*, after drawing attention to a suggestion by a Captain Fryer that the use of air with nitrous oxide was more economical than oxygen and dispensed with one cylinder, proceeds to describe the

activities of a Fr. J A Gray who had administered several hundred anaesthetics for Majors Cook and Donaldson. He used an apparatus of his design employing inverted oil drums adapted to rise and fall "on the principle of the large gasometer"¹⁵. These functioned as reducing valves.

In the minds of many the development of modern endotracheal anaesthesia is associated with this war. This is because Rowbotham and Magill¹⁹ worked on war casualties at the Military Hospital in Sidcup where was situated Sir Harold Gillies' new plastic unit. But, although their patients were war casualties, the technique was developed quite a bit after the War. These two anaesthetists later to become so distinguished had to devise a satisfactory way of maintaining anaesthesia at a distance from the face and jaws of their patients. They did this by using two intratracheal tubes one for inspiration and one for expiration. Gillies and his associates did not take kindly to insufflation techniques as the exhaust ether, of course, accumulated around the surgical field. It was out of the two tube method that Magill eventually developed the one tube for both expiration and inspiration which we use today. In this sense, this is indeed an advance attributable to World War One. But, it is surprising to remember that Magill did not describe his method of blind intubation with the single tube until 1930²⁰. There is no doubt, however, that, in another way, the war contributed greatly to the development of anaesthesia, for Magill has related how he was drafted by his military surgical colleagues to be an anaesthetist although, in fact, he had no particular vocation for the work²¹.

In the twenty years between the two World Wars, of the developments in anaesthesia the majority, indeed, the important ones, originated in the States where the work of Beecher, Guedel, Lundy and Waters was setting new standards of teaching and research in the subject. In this country the flag was being flown by the new University Department at Oxford under its Nuffield Professor Robert Macintosh. But in the Army? Ashley Daly, the Adviser during the War, in his report on anaesthesia published in 1947²² wrote: "Little attention appears to have been given to anaesthesia in the Army during the period between the two wars, and the outbreak of war in 1939 found the Service ill-equipped both as regards skilled personnel and modern apparatus. Anaesthesia he continues "was under the control of the Consulting Surgeon and only five regular officers had obtained their Diploma in Anaesthetics." (This Diploma had been instituted in 1934.) "Two of whom" says Daly "were employed in their specialty at the outset of the War, and even these were transferred to administrative posts after a few months." It seems that things improved, for 16 MO's in the Corps passed their DA during the

War. Robert Macintosh who was the Adviser to the RAF showed his concern about the situation but he took a rather different attitude. In his opinion he wrote "It was considered better to have several medical officers capable of giving an anaesthetic than to have a few who were specialists in anaesthesia." He gave what he regarded as cogent reasons for this policy, namely, that it would be uneconomical to post experienced anaesthetists to every RAF hospital. Furthermore, the presence of a whole-time anaesthetist on establishment might discourage the interests of others in the subject and, finally, it was impossible to provide a career for those wholly employed in the specialty. I congratulate this Service on taking a different view point. Macintosh also explored the possibility of employing nurses as anaesthetists in the Service but the scheme was turned down by the DGMS and the Matron-in-Chief not, I regret to say, because of the hazards of the practice of anaesthesia or the skill needed to avoid them, but because of the shortage of nurses.

Improved anaesthesia apparatus used in Sicily by the 2nd Auxiliary Surg Group. The oxygen cylinder (a) oxygen flow regulator (b) and humidifier (c) standard hospital equipment. Other items improvised included the connection tubing ether vaporizer (e) breathing bag (f) soda-lime canister (g) and face mask (h).

Fig. 3 Extemporised anaesthetic apparatus World War II from the 'History of the Second World War'²²

The apparatus available in forward areas was certainly not sophisticated and very often extemporised (Fig. 3). The Oxford department however produced the only real novelties to come direct from the War. These were the Epstein Macintosh Oxford Apparatus (EMO) designed to give known and constant proportions of ether with air, and its sister which was designed for parachuting doctors with which they would be able to give measured concentrations of chloroform. This latter never really took off — I am not sure that that is not literally so. The EMO, on the other hand, was a splendid piece of equipment used extensively in all three Services throughout the War and for very many years afterwards especially in developing countries.

When the heat was on at the RAF Hospital, Hal-

ton, after the Normandy invasion, one anaesthetist dealt with 38 cases in 10 hours using the apparatus helped by trained orderlies. Four operating tables were kept busy continuously and there were no mishaps. It is unlikely that in those days and under those circumstances the Medical Defence Union would have been involved even if there had been! In the words of Robert Macintosh in the official report: "It was policy to interest everybody in the theatre staff in this work as far as possible. This reminds one of Fr Gray in the First World War.

One effect the War had on both surgeons and anaesthetists was to remove any mystique that may have remained about the untouchability of the heart, at one time considered the centre of all emotions if not of life itself! I well remember the thrill experienced during the Liverpool blitz when I anaesthetised a young man for removal of 'shrapnel' from the myocardium. It seemed a new era had dawned, for although pulmonary surgery before the war was growing apace, the surgery of the heart was still not developed. But familiarity breeds contempt and Figure 4 taken from the US official medical report on the War shows the experience of one American unit. I believe that this familiarity hastened the development of cardiac surgery in the War.

One group of Units was equipped splendidly for anaesthesia. The Consultant Neurosurgeon to the Army — Hugh Cairns — had his base hospital for the treatment of head injuries at St. Hugh's College, Oxford. There were formed over the years six mobile Neurosurgical Units which were to revolutionise the treatment of head injuries during this war. Being mobile they could move forward to any position which was judged best to allow the quick arrival of the wounded and although forward to be sufficiently secure for their treatment. On the establishment of each unit was a neurosurgeon, who usually acted as CO., a neurologist, an anaesthetist, two GDO's, two nursing sisters and four OR's — two from the RAMC who acted as theatre orderly, batman and general factotums — splendid fellows — and two from the RASC as drivers for the 3 ton and 30 cwt lorries with which the units were supplied as transport. Each unit was almost self-contained with two operating tables, two beautiful sets of neurosurgical instruments and one of instruments for general surgery, diathermy, motorised suction and its own generator. The anaesthetic equipment was indeed luxurious. It was based upon an excellent Boyle's machine equipped with rotameters, quite advanced for those days, closed circuit, and, I think uniquely in the field, cyclopropane. After the War the official report remarks on the high standard of the equipment issued to these units, attributing this, in part, to the fact

Gross location of foreign bodies removed from cardiac and vascular structures at 160th General Hospital. Stippled: missiles impinging on structures. Black: intra-structural missiles. Crosshatching: embolic missiles.

Fig. 4 Sites from which shrapnel was removed in various patients in one American Surgical Unit in World War II. Taken from the Surgeon General's Report

that it was indented for before the War just after Munich and so before industry was geared up for mass production. There were six of these units formed during the War and I, probably because I had just got a DA, was fortunate enough to be posted to No. 5 for the North Africa invasion. The units were parasitic on the hospitals to which they were attached for nursing, linen and messing and so, I fear, were not always very popular. We were under the ultimate command of the CO of the hospital but we had a deal of independence and could move on if we did not deem the situation suitable for our work — and I suspect if we didn't like the CO. No. 5 moved forward with the action as the Germans were driven back from Algeria towards

Tunis and was situated in turn in Oued Athmenia, near Constantine, where we dealt with cases from the battle of the Kasserine Pass, then to Soukh Arras, the birthplace of St. Augustine, and so to Thibar. There we were billeted in a monastery which brewed its own delicious liqueurs. After the collapse of the Germans we went first to Philipville and then, finally, in North Africa to Sousse to await the invasion of Sicily. From there I came home. After the War the personnel of the No. 5 of my time provided two consultant neurosurgeons, a consultant neurologist and two professors as well as one of the best ORA's ever to grace an operating theatre. I confess that I found the companionship engendered in that small unit and experiences in it a very acceptable face of Mars. Incidentally, No. 4 MNSU was associated with what I regard as one of the real advances to come out of the war. A better understanding of traumatic shock and its patho-physiological basis. Major R P Harbord — a fellow student with me in Liverpool — was the anaesthetist and in Italy he was drafted to assist Grant and Reeve and contributed materially to their epoch-making report written under the aegis of the Medical Research Council. His work on the contribution of anaesthesia to shock remains valid today²³.

In 1942 in Montreal curare had been used for the first time in anaesthesia by Harold Griffiths²⁴. It was in fact, used by one American unit during the Italian Campaign by special permission before it was on the approved list of drugs. But supplies were very scanty. Curare featured as a result of the War in another way. There was an American bomber base situated in Burtonwood, near Warrington outside Liverpool. My friend, Dr John Halton, was at first in the RAF, but in 1943 he was released to work with Morriston Davies being one of the few who were capable of giving an anaesthetic for pulmonary surgery. Through the RAF he became friendly with the American Medical Officers at Burtonwood; indeed, knowing his very sociable nature, I am sure he was an honorary member of their mess. They brought over for him some Intocostin which was the preparation of curare used by Griffiths and he gave some to me. The supply was limited and he used his in thoracic cases and I mine in abdominal work. Supplies soon became difficult, so we turned to "curarine" produced by Burroughs Wellcome and listed in that famous book Martindale. We obtained this first from the Physiology Department in the University where we had all used it in undergraduate practical classes and so, I believe, we were probably the first to use the pure alkaloid tubocurarine chloride in anaesthesia²⁵. It was a great advance on Intocostin, which was a purified and biologically standardised extract of the bark of the chondodendron tomentosum.

But that is by the way: the EMO, nitrous oxide,

oxygen and ether, open ether, local anaesthesia and, in the Royal Navy particularly, spinal techniques were the mainstays of the anaesthetic service on all fronts. As with World War One by far the greatest advance arising out of the war accrued from the number of officers in the Services who had perforce gained enormous experience as anaesthetists and considerable facility in practice. In World War One most of these were GDO's and part-time anaesthetists in the Service many of whom returned to civilian practice after the War to become part-time anaesthetists and the basis of the hospital anaesthetic service between the Wars. On the other hand in World War Two the majority of those giving anaesthetics in the Army were to all intents and purposes full-time in the speciality. A large number of these on demobilization decided to continue in it. Some joined teaching hospital departments to improve their training and experience but many obtained posts again as part-time anaesthetists continuing in general practice. The difference in their situation to that facing the men after the First World War was that the Beveridge Report had been written and a Labour Government elected and so was born in 1946 the National Health Service. In 1946, too, was formed the Faculty of Anaesthetists of the Royal College of Surgeons and this was to set standards of training and to institute a Fellowship as a requisite for those aspiring to consultant status in the new service. Very wisely the Faculty handed out its Fellowship generously to those who could be seen to have been reasonably trained either by extensive practice before or during the War or afterwards for a time in a reputable department. This established a corps of teachers who were able to continue recruitment to the specialty and to lead it forward in research.

This brings me back to Philip Mitchiner. He saw the part the College had to play in providing for its Fellows in surgery the excellent anaesthetic service to which so many of them had become accustomed in the Services during the War. The result has been an anaesthetic service of a calibre envied by other countries. I do not believe we could have achieved that without the experience provided by the War to so many officers of this Corps who did valiant and tremendous work during the years 1939-46. I find that a pretty acceptable side of Mars.

Now perhaps I would be wise to end this lecture with such an appropriate thought, but we are living in troubled times — times of great anxiety for every thinking person and I am going to give way to the temptation to end on an optimistic note. I am a convinced evolutionist: evolution moves forward; revolution, on the other hand, disrupts that which is good in the existing order, destroying it together with the evil it hopes to eradicate. History shows that revolution results in regression.

I believe fervently that the evolution of this universe is not completed but continues and that mankind is part of that continuing evolution. This theory was expounded in "The Phenomenon of Man" which Julian Huxley in his introduction called "a very remarkable book by a very remarkable human being"²⁶. The author, S J Teilhard de Chardin, was a priest, scientist and throughout the First World War a soldier stretcher bearer and he gained for his valour under fire the Croix de Guerre, the Military Medal and the Legion d'Honneur. Huxley suggested that his genius "has both clarified and unified our vision of reality" (Fig. 5).

Teilhard sees the species "man" evolving ever upwards and describes him in a remarkable phrase as "the ascending arrow of the whole biologic system". But he acknowledges that man could take

Fig. 5 Teilhard de Chardin S J—during World War I. (Reproduced by kind permission of the publishers Messrs William Collins & Sons Co Ltd.)

a wrong turn and destroy himself, as have so many phyla throughout the aeons. That, however, is not so likely, for no other species but man has had that intellect and self-conscious awareness which can influence its own evolution. Now, *a priori*, it has to be admitted that any future evolution of man must involve the outlawing of war. I come back to Freud who in his essay on "Civilisation, War and Death" wrote "Perhaps our hope is not chimerical that man's cultural disposition and a well founded dread of the form that future wars will take may serve to put an end to war in the near future. But by what ways or by-ways this will come about, we cannot guess. Meanwhile we may rest on the assurance that whatever makes for cultural development is working against war." So, I suggest, despite any side of Mars which may seem attractive, our intelligence must tell us in the words of the old Latin tag "Dulce bellum inexpertis" — "War is pleasant to those who have not tried it."

Acknowledgements

I would like to thank Colonel R Scott and his assistant in the College Library, the Library Staff of the Royal Society of Medicine and the Library Staff of the Liverpool Medical Institution for invaluable help in researching material for this address.

BIBLIOGRAPHY

- 1 FREUD S. Civilisation, War and Death. John Rickman (ed). Hogarth Press and Institute of Psychoanalysis. London 1953.
- 2 FULTON J F. Medicine, Warfare and History. JAMA 1953; **153**: 482-488.
- 3 DUNCUM B M. The Development of Inhalation Anaesthesia with Special Reference to the Years 1846-1900. Oxford University Press. London 1947.
- 4 THOMAS B K. The Development of Anaesthetic Apparatus. Blackwell. Oxford. 1975.
- 5 DUNCUM B M. v. Pp 126. 1947.
- 6 SYKES W S. Essays on the First Hundred Years of Anaesthesia. Vol II, p. 129. Churchill Livingstone. Harlow. 1961.
- 7 Medical and Surgical History of the British Army in the War Against Russia 1854-56. Vol I, Pp 256 *et. seq.* Harrisons and Sons. London. 1858.
- 8 The Medical and Surgical History of the War of the Rebellion (1861-68) Prepared in accordance with Acts of Congress under the direction of General Joseph K Barnes. US Army. 1870.
- 9 DUNCUM B M. v. Pp 12. 1947.
- 10 IBID. Pp. 308.
- 11 Medical arrangements in the South African War. Report by the Surgeon General. HMSO. London. 1904.
- 12 COTTON F G, BOOTHBY W M and GWATHMEY J T. Anaesthesia. D Appleton and Co. New York and London; 1914: 161.
- 13 GWATHMEY J T. Anaesthesia. D Appleton and Co. New York and London; 1914: 170.
- 14 MARSHALL G. Two Types of Portable Gas-Oxygen Apparatus. *Proc Roy Soc Med* 1920; **13**: Pt I (Anaesth Sect) 16-19.
- 15 BOYLE H E G. Nitrous-Oxide-Oxygen-Ether Outfit. *Lancet* 1919; **1**: 226. (v also Annotation, 232).
- 16 Official History of the War. Medicine. HMSO; London: 1921: 179.
- 17 SAINT C F M. The Influence of the Great War in Medicine and Surgery. *Lancet* 1920; **2**: 1130.
- 18 CRILE G W. George Crile An Autobiography. Grace Crile (ed.) J B Lippincott Co. Philadelphia and New York. 1947; **1**: 199.
- 19 ROWBOTHAM E S and MAGILL I W. Anaesthetics in Plastic Surgery of the Face and Jaws. *Proc Roy Soc Med* 1921; **14**: 17.
- 20 MAGILL I W. Technique in Endotracheal Anaesthesia. *Brit Med J* 1930; **2**: 817.
- 21 MAGILL I W. Lecture to the Liverpool Medical Institution. Oct 19th, 1973.
- 22 DALY A S. Anaesthesia in the Army. 1957; Pp 220. MACINTOSH R R. Anaesthesia in the Royal Navy. Pp 217, in History of the Second World War. Arthur S MacNalty (ed in chief), Vol Surgery. Zachary Cope (ed), HMSO London. 1957.
- 23 GRANT A T and REEVE E B. Observations on the General Effects of Injury in Man. Med Res Council Special Report. HMSO; London. 1951.
- 24 GRIFFITHS H R and JOHNSTON G E. The use of Curare in General Anaesthesia. *Anesthesiology* 1942; **3**: 418.
- 25 GRAY T C and HALTON J. A. Milestone in Anaesthesia? (d-Tubocurarine Chloride). *Proc Roy Soc Med* 1946; **39**: No 7 400-408.
- 26 TEILHARD DE CHARDIN S J. The Phenomenon of Man. Collins. London. 1959.