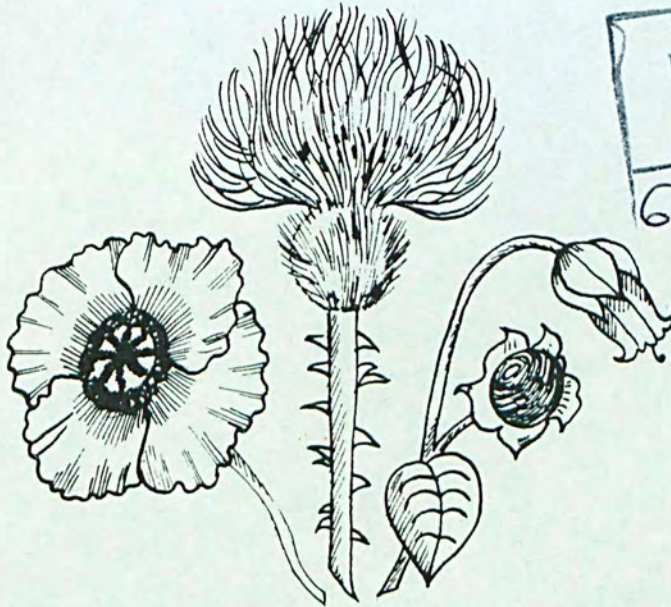


NEWS LETTER



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THE SCOTTISH SOCIETY
OF ANAESTHETISTS

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20th February, 1914

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SCOTTISH SOCIETY OF ANAESTHETISTS

COUNCIL FOR 1980-81

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<i>Editor of the Newsletter</i>	Dr. J.A.W. WILD SMITH, Dept. of Anaesthesia, Edinburgh Royal Infirmary.

Regional Representatives

		Retires
Aberdeen	Dr. J.McG. IMRAY	1981
Dundee	Dr. I. GROVE-WHITE	1983
Edinburgh	Dr. C.M. HOWIE Dr. J. WILSON	1981 1982
Glasgow	Dr. A.G. MacDONALD Dr. A. MELLON	1982 1983
Inverness and the North	Dr. J. MACHIN	1983

PROGRAMME FOR 1981

REGISTRAR'S PRIZE: Entries to be submitted to the Secretary by 28th February 1981.

ANNUAL GENERAL MEETING: Post House Hotel, Aviemore, 24th/26th April 1981.

REGISTRARS' MEETING: Edinburgh, June 1981.

SCIENTIFIC MEETING AND GILLIES LECTURE: Aberdeen, November 1981.

President's Newsletter



From time to time one hears doubts expressed as to the proper role for Societies such as ours nowadays and indeed whether they are needed at all. Part of the argument seems to be that there has been a mushrooming of sub-specialty groups of recent years which cater adequately in educational terms for their members' needs against the background of the more general national activities of the Faculty of Anaesthetists and the Association of Anaesthetists of Great Britain and Ireland, not to mention European and World Congresses. Of course, this ignores the fact that there is a danger of fragmentation of the specialty on the one hand and on the other that large professional bodies, though essential, are sometimes ill-informed and insensitive to more regional and local views and needs. Meetings held under their auspices also tend to be so vast that the opportunity for more intimate discussions on professional and political matters is not easily come by and even the development of new professional contacts and friendships is difficult. Big is certainly not always beautiful in this context.

The continuing existence of a Society such as ours has, I believe, never been more important and is therefore, readily justified. Its continuing sponsorship of scientific endeavour within the

whole specialty is important at a more local and less formal level and there is ample proof of the need for such an organisation in Scotland on the political front. As further evidence of the latter we have recently seen the efforts of the Society, to correct the grievous and long-standing anomaly in the reporting of the so-called anaesthetic deaths, crowned with success. Largely due to the persistence of successive Councils and in particular the efforts of one of our past Presidents, Dr. Masson, the constructive criticism and final proposals of this Society have been fully accepted by the Crown Office. In addition, our Society continues to provide a marvellous forum for the development of professional and social contacts between its members, who together represent the whole spectrum of specialist practice in Scotland. As in the past, your Council continues to encourage a thriving and lively membership and recruitment is currently healthy. So long as this is so, our Society will continue to flourish and be influential in professional matters of importance to the specialty in Scotland and further afield.

Finally, may I express my own and the members' gratitude to all those who willingly and generously devote a good deal of their valuable time to see to the business of the Society. We have been most fortunate in our office bearers over the years and are indebted to them all.

Editorial

With this issue the Newsletter of the Scottish Society of Anaesthetists comes of age, a matter I am sure of great pleasure to all those who have been responsible for its production from Dr. Malcolm Shaw onwards. While the content and style have evolved over the years the Newsletter has essentially always been an account and record of the years' activities. The President in his introduction to this Newsletter has affirmed his belief in the value of our Society, and indicated its (possibly increasingly) important role in the affairs of our speciality. Should the Newsletter further reflect this in some way?

Much of the last Editorial was concerned with money. However, the kindness (!) of the Review

Body to the profession as a whole, and of the Inland Revenue to the Society, means that it is a topic of less acute concern. The subscription increase approved at the last A.G.M. and the granting of charitable status will put the Society's financial affairs on a very firm basis. Subscription income alone should now cover the Society's running expenses inclusive, I hope, of production of the Newsletter. We will have in addition the income from the Trade Exhibition at the A.G.M. This money should work for the speciality in Scotland. Any suggestions?

Registrar's Prize

The Society annually awards a prize of £60 for the best original paper submitted by an anaesthetist in Scotland, holding the grade of Senior Registrar or under. A second prize of £30 or a third of £10 may be awarded for other papers of particular merit at the discretion of the assessors. It is not necessary that the Registrar be a member of the Society.

The conditions attaching to the award are as follows:—

1. The paper must be original, i.e., it should not have been read previously at any meeting or published in any journal. The winning of the prize is in no way a bar to the subsequent publication of the paper.

2. It is desirable that papers submitted show evidence of personal work, but papers consisting of surveys of the literature are eligible for consideration. The Council of the Society wishes to stress that intending competitors should not be discouraged through fear of their efforts being judged elementary. It is fully realised that junior anaesthetists in some peripheral hospitals may not have opportunities to deal with special

types of cases or to employ advanced anaesthetic techniques.

3. Papers for adjudication *must* reach the Secretary by the *end of February* at the latest.

4. The winner of the prize will be required to give a digest of the paper at the Annual General Meeting of the Society towards the end of April.

The Secretary places all entries in the hands of the Award Committee which consists of the President, Vice-President and Past President. The members of this Committee have expressed the desire to be able to adjudicate without knowing the name or hospital of the writer; it is requested therefore that the name, address, etc., of the entrant be submitted on a separate covering page. This will be retained by the Secretary, but otherwise the essay itself should give no indication as to its source: acknowledgement to colleagues, etc., should not be included.

The prize for 1980 was won by Dr. John McClure of Edinburgh Royal Infirmary for his paper "Carbonated Bupivacaine in Interscalene Brachial Plexus Block". Second was Dr. F. McGroarty and third Dr. R. Allison.

Annual General Meeting – Aviemore

25th – 27th April 1980

For the ninth year the Society's main meeting was held at the Post House, Aviemore. Both the academic and social sides of the meeting were to the usual high standard and the papers presented follow below. The trade exhibition continues to be an important part of the weekend, including their presentation of the prizes for the sporting activities. This year the golf competitions were won by Mrs. N.W. Lees and Dr. K. Grigor, and the fishing by Dr. D.H. Robertson.

We are returning to Aviemore in 1981 for the tenth successive year. While many still enjoy the visit there the attendance in 1980 was perhaps down a little and several people have voiced the opinion that we might do as well, or even better, at another hotel or another centre. You have all been circulated for your opinions in the recent past and at the next A.G.M. your Council will present the views received and describe some of the advantages and difficulties posed by any change.

PRESIDENTIAL ADDRESS

Professor D. CAMPBELL

PULMONARY INJURY IN THE BURNED PATIENT

Injury or death by fire is a particularly horrible form of accident. The annual toll in tragedy and suffering is quite appalling. In the United Kingdom there are some 6,000 fire injuries with no less than 900 deaths every year. In the Strathclyde Area newspaper reports of domestic fire tragedies are an almost weekly occurrence and Glasgow indeed has earned the title of 'Tinderbox City', there having been a threefold increase in fire deaths over the last 20 years. Those involved in the acute management of the pathetic survivors need no reminding of the difficult and demanding aspects of treatment and those involved in the prolonged attempt to repair the residual damage by plastic and reconstructive surgery must be among the most technically expert of all in our specialty. Another problem has become increasingly apparent with these patients, particularly since attention was focussed on it at the time of the Coconut Grove disaster in the United States of America some years ago. Then it was evident that the majority of deaths, both those occurring at the time of the accident and subsequent to hospital admission, were not due to burns but to the inhalation of smoke and toxic gases. Of the 774 fatalities due to fires in buildings, surveyed in the U.K. in 1976, 435 (56.2%) died from gas and smoke inhalation.

The exact reasons for these changes in the distribution of fire deaths are not yet known but two of the principal ones are thought to be an increase in the optical density of smoke produced by fires, which hampers vision and ready escape from the scene, and secondly an increase in the toxicity of the fire gases resulting in a more rapid incapacitation of the victim. These two factors may be due to the widespread introduction of synthetic polymers into the environment as materials of construction, furnishing and decoration.

Research has been stimulated to elucidate the problem particularly at the fire research station at Boreham Wood. Almost a complete new applied science of Combustion Toxicology has developed and more recently the Department of Forensic Medicine and Science at Glasgow University has been involved in a study of fire fatalities. That department has been involved particularly in the identification of inhaled toxic products. The University Department of Anaesthesia at Glasgow Royal Infirmary became interested in what is now a collaborative study because of concern about a number of what seemed to be avoidable deaths occurring in immediate survivors with apparently trivial burns and few overt signs of impending disaster at the time of hospital admission and first

examination. There are therefore four complementary aspects to this investigation.

Combustion Toxicology Studies

Laboratory decomposition
Animal exposure
Human Pathology



A good deal of laboratory science has been brought into play to assist in the identification of the toxic substances which may be responsible for the pathophysiological disturbance which is observed in the victim and the methods of analysis employed include gas liquid chromatography, mass spectrometry and co-oximetry.

MECHANISMS OF INJURY

Let us then consider first of all the actual mechanisms of injury at the time of the accident. There are two distinct mechanisms of pulmonary injury following inhalation, carbon monoxide and smoke toxicity. Smoke toxicity is further divided into direct injury and smoke poisoning.

Direct Injury

Direct injury can be anticipated when burns are suffered around the upper trunk and head and neck, particularly in an infant where the airway is narrower. Diagnosis does not usually present a problem, although management can be technically very difficult. Inhalation of hot dry air at 300°F or higher does not seem to have much effect upon the lower respiratory tract. This hot air may lead to tissue damage in the upper airway and larynx by causing laryngeal spasm, oedema and possibly suffocation but since the heat capacity of air is small most of the heat is dissipated in the nasopharynx. In the presence of water or steam, however, thermal damage to the more distal lung tissues can occur since steam has a much higher heat capacity than does dry air. Progression of a fire in a closed space consumes oxygen and the heat at the ceiling of a room may reach 1,000°F or greater. Combustion is incomplete and considerable soot and particulate matter is formed.

Most of these particles as they are inhaled are filtered in the upper airway but some reach the

lower airway and cause direct damage to the mucosa since they are superheated. It is also highly likely that these particles contain some of the toxic agents responsible for smoke poisoning. In the presence of water some form corrosive acids and alkalis that are extremely toxic to the mucosa. The exact extent of the injury caused by this direct mechanism is not known but is greater than was once appreciated.

Carbon Monoxide

Carbon monoxide is probably the most common immediate cause of death in burned victims and is clearly a very distinct cause of inhalational injury and is quite different in its pathophysiology from either direct injury or smoke poisoning. Carbon monoxide is a colourless, odourless, tasteless, and non-irritating gas produced by the incomplete combustion of carbon-containing materials. The biologic effects are due to tissue hypoxia. Carbon monoxide combines with haemoglobin to form carboxyhaemoglobin and competes with oxygen for the available haemoglobin binding sites. Its affinity for haemoglobin is 200 times greater than that of oxygen so that carboxyhaemoglobin concentration is great even when the carbon monoxide concentration is less than 5% in inhaled gas. Toxicity will be dependent on the concentration of the gas in the inspired air at the time of exposure. Factors that potentiate the effects of carbon monoxide include the decrease in oxygen content in the burning room and the additional pulmonary effects of smoke poisoning.

Harland's study, as far as fire fatalities are concerned demonstrates that the deaths mainly fall into two groups — one where the carboxyhaemoglobin exceeds the supposed lethal level of 50% and the other where the carboxyhaemoglobin is less than 50% but the burns to the body surface exceed 35%, the accepted potentially lethal level. It would appear, therefore, that we are dealing with two kinds of fire, the very hot fire with little smoke and the fire producing much smoke with little flame. Attention, therefore, has been particularly directed to the initial carboxyhaemoglobin levels at the time of hospital admission and also to the initial levels of other toxic substances which result in smoke poisoning, for example cyanide.

Material	Use	Toxic Products of Combustion
Acrylic	Light diffusers	Acrolein*
Nylon	Carpets	Hydrogen cyanide; ammonia*
Acrilan	Carpets	Hydrogen cyanide; ammonia*
Polystyrene	Ubiquitous	Styrene; carbon monoxide
P.V.C.	Wall and Floor Covering; Insulation	Hydrogen chloride*; phosgene*; carbon monoxide
Polyurethane	Upholstery	Isocyanates*; hydrogen cyanide
Lacquers and Veneers	Wall Covering; Furniture	Acetaldehyde*; formaldehyde* oxides of nitrogen*; acetic acid

* Pulmonary irritant

Smoke Poisoning

In addition to carbon monoxide, the thermal degradation of both natural and man-made materials results in the production of noxious gases (Table I). In natural materials these substances include the oxides of sulphur, nitrogen and aldehydes. One of these aldehydes, acrolein, in a concentration of 5.5 parts per million, has been shown to cause irritation of the upper respiratory tract with pulmonary oedema occurring at 10 parts per million in exposure times of as little as a few seconds. Some of these plastics also produce large amounts of benzene and since this acts as an anaesthetic, it is possible that it allows the corrosive acids and alkalis to pass down the respiratory tract into the alveoli and be absorbed. More recently, it has been discovered that the well-intentioned addition of phosphorus fire retardant to plastics had had an unforeseen disastrous result in that there may be produced even more lethal noxious gases, including phosgene. Vaporised heavy metals such as antimony, lead and tin may also be inhaled.

PATHOPHYSIOLOGY

Carbon monoxide causes no pathophysiological changes to the tracheo-bronchial tree. The pathological picture following inhalation of soot particles and/or noxious gases is difficult to separate since there is considerable overlap and the soot particles may actually be carrying the great majority of the toxic substances. The immediate effect of inhalational smoke is loss of ciliary action and severe mucosal oedema. Within seconds surfactant activity in the lung is severely compromised, resulting in congestion with micro- and sometimes macro-atelectasis.

If the inhalation injury is severe there may be damage to alveolar and bronchiolar epithelium. This probably spares the capillaries. Within minutes there is a detectable bronchiolar and

perivascular oedema which may then lead to wheezing due to bronchiolar obstruction. Expectoration of carbonaceous sputum is common during this time. After several hours, sloughing of the tracheal-bronchial mucosa begins and a mucopurulent membrane develops. Following this, a necrotising bronchiolitis, hyaline membrane formation, intra-alveolar haemorrhage, fibrin thrombus formation and finally alveolar pulmonary oedema develop.

DIAGNOSIS

The history and physical examination are obviously essential in making the diagnosis of smoke inhalation. If the victim has been burned in a closed space, this should immediately cause the clinician to be very suspicious that smoke inhalation may have occurred. If possible, the clinician should ask the patient about the types of things that were burning in the room at the time of exposure such as the type of carpet, presence of vinyl furniture, flooring and the type of clothing the victim was wearing. If the patient cannot co-operate in this way, very important and helpful information can often be obtained from the fire services involved. Physical findings that support the diagnosis of inhalational injury include upper body burns, singed hairs in the nares, soot in the oropharynx and carbonaceous sputum. Cyanosis, hoarseness and râles may develop as the patient is resuscitated.

Confirmation of the diagnosis of smoke inhalation is possible with certain laboratory tests. The easiest tests to perform early in the course of illness are blood gases and carboxyhaemoglobin levels, although the blood gases are often of limited value in the initial stages. Hypoxaemia, hypercapnia and increased carboxyhaemoglobin levels are the hallmarks of fully developed smoke inhalation.

Initially, the chest X-ray is not very useful unless severe injury has occurred and there is obvious atelectasis. A reliable confirmatory test that can be performed in some instances to diagnose smoke inhalation is fiberoptic bronchoscopy but there is a problem in the conscious, restless patient who would have to be anaesthetised to permit examination and of course this is made even more difficult in small children. If it can be carried out, mucosal erythema, haemorrhage, ulceration, oedema and carbonaceous particles are common findings. The difficulties in making the diagnosis and the danger of missing it have directed attention to the possibilities of developing further confirmatory

laboratory tests. These tests are based on what has been learned from the fire fatality studies already referred to and carboxyhaemoglobin, cyanide and other substances are measured on admission and at intervals thereafter. An attempt is being made to determine threshold values which might give advance warning of the development of dangerous clinical deterioration and direct more precisely both the nature of therapy and its timing. This work is as yet at an early stage but 20 patients have been studied in some depth to date and some of the earlier results are perhaps of interest and would encourage us to continue our efforts.

CONCLUSION

This research project is not untypical of the kind of investigative work that anaesthetists involved in intensive care have become increasingly involved in and in many instances original and important contributions have been made to medical knowledge with direct benefit to patients.

GUEST LECTURE

Professor M.D. VICKERS

THE ROLE OF THE ROYAL COLLEGES

The Royal Colleges and Faculties occupy a pivotal position in the organisation of medicine in the United Kingdom. This is an attempt to analyse how this came about and to draw some lessons concerning the likely direction of their development and their importance to all of us.

Colleges were an Italian invention and were organizations of Physicians: The College of Physicians of Rome was established in the mid-1400's. Organizations of Surgeons already existed, but surgery being a craft rather than a learned subject of study, surgeons formed Guilds like those of Goldsmiths. This fundamental split can be traced back to Pope Innocent III who decreed in 1219 that the priestly physicians could not engage in the lucrative trade of the Barber/Surgeons who could draw blood.

Colleges spread to many cities in Europe and reached London in 1518 with the founding of the College of Physicians of London. Contemporaneously, a Guild of Surgeons of London, which had existed from the mid-1300's joined with the City Co. of Barbers to form the United Co. of Barbers and Surgeons in 1540. In Edinburgh, James IV of Scotland gave a charter to the Guild of Barber Surgeons in 1505.

It is also a good example of the way in which our horizons as specialists have been steadily enlarged over the past 20 years as a result of an involvement in intensive care, while never forgetting our primary function as anaesthetists.

Perhaps one final comment is appropriate which is in the nature of a warning for the present and not so distant future. There is a gravely misguided view among some of the profession that intensive care is a speciality in its own right, forgetting the importance of its origins and the need for continuing nourishment from the parent specialities, including anaesthesia. Some Frankenstein monster is possibly envisaged, sometimes indeed referred to as an "intensivist". Many now believe that any such separatist movement would be professionally stultifying, end the progress that has been seen to date, and have inevitably detrimental effects on patients. Such a misguided course should be most strenuously resisted.

Thus, during this period the ground was clearly ripe for the development of both Colleges and Barber/Surgeon Guilds. The motivations were broadly the same everywhere: they created a closed-shop, which, however, served the public interest, since the public was thereby protected from quackery. The organizations were given rights which ranged from teaching and issuing Diplomas to examining and licencing practice within limited geographical areas.

A comparable development in Glasgow came significantly later (1599) when a Faculty of Physicians *and* Surgeons was given a charter by James VI. This was much wider in scope: not only did it give the right to licence but required the Faculty to report on unnatural deaths and give free medical advice to the poor. One must assume that the distinction between a physician and surgeon had become less clear during the intervening years: the founder (Peter Lowe) had certainly been influenced by his years on the continent: Vesalius had published his "De Corporis Humani Fabrica". However, old habits die hard: this new Faculty was able to 'examine' surgeons like the Guilds but had to accept a physician who had a Degree or other 'testimonial

in Medicine' from a University which was 'well-regarded'. Initially this could not have been a common occurrence because there were only five Universities in the British Isles, none of which gave degrees in medicine.

Another sign of evolving thought was the original exclusion of Barbers in this Glasgow Charter: all the founding members were surgeons. However, because of their number and the overlap in practice they soon had to be included as "Pencildes of Chirurgerie".

The period from the early 1500's to well into the 1700's appears to have been one of fundamental stability for these organizations in the British Isles in their relationship with the public and Government. There were, to be sure, stormy times internally with every Barber-Surgeon Guild becoming fissiparous and the Surgeons then trying to emulate the Physicians in status whilst retaining their closed-shop privileges. The English Surgeons took 55 years and two abortive attempts at new Acts of Parliament before achieving Collegiate status.

However, this evolutionary change by surgeons from craft to profession did not disturb the fundamental stability of the organizations viz-a-viz society, for, in truth, they were performing a useful and necessary function.

Not so the Continental Colleges which one by one fell into desuetude or were incorporated into Universities. It seems likely that this difference in fate was due to the fact that they came to be in competition with Universities which were giving medical Degrees. From about 1750 onwards one can see similar changes in the environment developing in Britain and carrying the seeds of the same clash: these were an increase in mobility, growth of population – so that more doctors were involved – and the rise of Universities undertaking medical teaching outside the ambit of the established Colleges. Scotland was an exporter of doctors and the developing industrial towns of the U.K. were being 'doctored' by holders of papers from widely dissimilar institutions. Furthermore, University graduates in medicine from prestigious seats of learning objected to the need to obtain a licence from some lesser body in order to practice either in certain geographical areas, or the craft of surgery, which was coming to be seen to be a part of medicine. All the geographically-based Colleges were bound to face the same problem and it was the clash with the Universities around which the battle now centred. Glasgow's Joint Faculty had

the best legal basis for the fight: they had a specific Royal Charter which said that Surgery was a discipline separate from medicine and gave specific rights to the Faculty. Universities, however, were not impressed by what James VI had thought two hundred years earlier: surgery was now clearly part of medicine and University graduates needed no licence to practice a *part* of that art. So, to the three external pressures of population expansion, mobility and University competition, we must add the more subtle effect of changes in people's way of thinking. If, to practice surgery safely, a doctor needed something *more* than a medical degree, that something by implication had to be a postgraduate 'something' and the Collegiate idea was inevitably shifting away from the field of training and licencing doctors and creating a postgraduate arena where, incidentally, Colleges would not be in competition with Universities.

In Edinburgh, the different institutional structure led to different developments, although the result was the same in the end. The town contained a College of Physicians (founded much later in 1681) which lacked the Surgical Guild's privileges, a fact which they naturally resented. An early realignment of forces was an unnatural alliance between Surgeons and Apothecaries who objected to interference from the 'new' College of Physicians. (A Brotherhood of Apothecaries and Chirurgeons (1694) was followed within 25 years by the final rupture with the Barbers.) But having two Colleges – professors from which lectured at the embryo University in the town – gave a fundamental institutional strength which enabled them to combine to form an autonomous School of Medicine, running in tandem with the University; they were thus able to survive the great upheaval of 1858 and preserved their original function until 1950.

By the mid 1800's the pressures of expansion, mobility and rising University opposition had produced an unstable and unsatisfactory situation. It was war. The Colleges unsuccessfully attempted to combine so as to extend their existing local rights to cover the country and engaged in legal fights which they generally won. But these were pyrrhic victories for, in respect of the original purpose of Colleges, the Universities were the Victors when the General Medical Council (GMC) was set up by Act of Parliament in 1858.

Again, the reason that the battle went this way may be sought in the subtle effect of changing

attitudes. The Act marked the decisive recognition that medicine was predominantly a subject of learned study and only secondarily a craft learnt by apprenticeship.

The 1858 Act was, however, a typically British compromise. Both the Universities and Colleges were represented on the new body and although no individual College's diploma was recognised by the GMC, by combining together they were able to retain a foothold in Primary qualification with the Conjoint Board in London and the Edinburgh Double, (which later evolved into the Scottish Triple by taking in Glasgow) providing alternative methods of obtaining a registerable qualification. These are now chiefly a convenient way for overseas doctors to obtain a registerable qualification: if they didn't exist, the GMC would certainly have had to call into being a body to fulfil this need. A recent extension of their role has been testing the professional language competence of overseas graduates whose medical ability is assumed to be adequate. Thus we have had TRAB (Temporary Registration Assessment Board) and then PLAB (Professional Language Assessment Board) – offshoots of these vestigial functions of Conjoint College Boards. Again, the GMC has used *existing* tools rather than fashion its own.

1858 was a watershed in many ways: no more geographically-orientated Colleges developed because the local function was obsolete. To survive they had to diversify: they not only combined to form Conjoint Boards but also turned increasingly to postgraduate qualifications. The case for postgraduate specialization for surgeons was easily made because of their long historical separateness. With the increase in knowledge, the rise of specialization had become inevitable. If surgeons and physicians needed Colleges to handle this, status considerations meant that bodies for other specialities would have to develop and would be "Collejoid".

The first through the hoop were the obstetricians who saw that the need for a specialized form of postgraduate education for obstetricians was not adequately catered for by the traditional surgical Fellowships. The College of Obstetricians and Gynaecologists was, however, merely a harbinger: when the next great watershed arrived – the 1948 Act setting up the NHS – it virtually ensured that all other major groups would follow. Because of their changed function it was essential for these new branches to be

specialty-orientated, and all newer Colleges and Faculties have therefore sought to represent their speciality throughout the United Kingdom.

Irrespective of the 1948 Act, the growing importance of postgraduate standards was bound to lead to other evolutionary changes. With the loss of their local "raison-d'etre" and the acquisition of a speciality-orientated one, there were clearly too many Colleges of physicians and surgeons: the *entré* which a higher qualification in, say, surgery gave throughout an expanding Empire in the late nineteenth century meant that the *relative* merits of the different higher qualifications became a matter of importance. Such pressures forced the Edinburgh College of Surgeons to introduce an examination for the Fellowship (instead of merely awarding it), and then a Primary in basic science to match the English and Irish practice. This however was not a total solution. The next evolutionary step was the notion of reciprocity, particularly of Primary examinations, but the final step has only, as yet, been taken by the physicians with the introduction of a single-unified examination, the MRCP (U.K.).

The coming of the NHS was a blessing for the Colleges since organizing specialist diplomas would have hardly been sufficient as a sole justification for their existence. Indeed, as the U.S.A. has shown, this function doesn't need anything resembling a College to perform satisfactorily. Indeed in the years immediately preceding the war, there was something of a doldrum: the N.H.S. changed that. To quote Sir Charles Illingworth on the Glasgow College: "Only the most perfervid of adherents could claim that it made any great contribution to medical art or science. The two world wars and the intervening phase of irresolution seem to have no impact on its affairs and only since 1948 etc."

Two inter-dependent strands can now be seen to have emerged from this second watershed. Colleges with a predominantly local sphere of influence seized on the organisation of postgraduate training in their regions. This was, however, too big a bite for speciality-orientated National Colleges and this development has been only partial, with central initiatives which required considerable supplementation by local effort. The other strand that has developed is their role in setting standards of hospital medical practice.

As throughout the whole of their history, one can again see a balance being struck, with public

need balancing the granting of privileges to bodies which then have to accept the responsibility of meeting that public need. This interaction gave Lord Smith, former P.R.C.S. (Eng.) the title of his Syme oration, but he appears to over-simplify and overstate the matter when he says:

"Acting separately or together, Colleges, through the original intent of their foundation, have in some way translated the individual privileges and responsibilities of doctors in their treatment of patients into a joint responsibility to protect the interest of the community".

On the face of it, this is a function of the General Medical Council and indeed the 1978 Act reforming the GMC now specifically lays a duty on it to take this responsibility. I predict, therefore that the Colleges will soon need to develop machinery to satisfy the GMC that they are doing this satisfactorily and that the GMC need to do more than delegate this function to them.

But what does professional responsibility to the community as a whole, mean? Merrison believed that the essential characteristic of a profession is that the members of it have specialised knowledge and skills which the public wish to use. The public, therefore, has an interest in being able to recognise a qualified practitioner and will wish to be provided with a register of the qualified. This is really no further forward than the Medical Act of 1858, "It is expedient that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners." After a hundred years of evolution in practice, there is now a public need for primary physicians to be able to distinguish properly qualified specialists. This suggested to Merrison the need for indicative specialist registration to supplement the general register.

Another essential qualification that defines a profession (given by Lord Wolfenden) is that it is an occupation, or way of life in which the existing practitioners are the persons who determine admission to it. Put more curtly, nobody can be admitted to the brotherhood except by the brothers. This, of course, puts a responsibility on the brethren both individually and corporately. Their objective is to preserve the integrity and public reputation of the profession. If any person were allowed to join it who either in skill or personal qualities fell short of existing standards, he would, by these shortcomings, damage the reputation of the brotherhood as a whole and each member of it. Thus, a profession is in one sense a

self-perpetuating body of people with a common interest.

However, there are obviously other bodies in which the members have a common interest and which are self-perpetuating, such as dining clubs, rotary clubs, etc. and the way a profession is distinguished from these is their purpose. Here, one can see again the same point that Merrison is making. The prime purpose of a professional skill is to provide a specialised *personal* service, within the recognised boundaries of a particular profession to an *individual* who needs them.

But there is another sense in which we use the word professional. There are professional soliders, civil servants, local government officers, etc in the public services, who owe their professional responsibility to Her Majesty's Government or other delegated authority. Their client is the politician. Only at one remove is the public involved, and it is the politician who represents the client of these public servants. Such a professional servant owes no direct loyalty to any individual member of the public.

Between these two extremes lie practitioners in professions which are incorporated into a State service. Because of the near-monopoly position of the NHS, doctors now fall into this category. They have to do two things instead of one. They still have to discharge their professional responsibility to the patient as an individual, but in doing so they have to comply responsibly with the requirements of the State. They are not civil servants and their, professional responsibility is not like that of civil servants to the government; yet in this sense, they are more like civil servants than, say, solicitors, because they have to work within the context of a government service and accept the working conditions which the government prescribes.

It is of crucial importance to doctors that the government should not prescribe conditions of work which are incompatible with their professional duty to their patients. It is of equally crucial importance to the government: after all, the basic reason for having an N.H.S. is to make available health care to all. This cannot be provided by Parliament, by the government or by the Civil Service, it can only be provided by doctors. But these other parties to the contract do have a role in deciding how much public money can be devoted to this purpose, to decide on the structure through which this money is to be distributed and to decide the broad priorities of that distribution.

It is at this point that one can discern the other significant role that Colleges, corporately have been developing since 1948. The Colleges are in a position to determine, if they are so minded, what standard of provision by the State is compatible with the professional responsibility of doctors (*en masse*) to patients (*en masse*). If you like, they monitor the professional responsibility of doctors to the State and of the State to its citizens.

This does not mean that they negotiate with the State. Unions do that on behalf of doctors for the things which the doctors themselves require in the way of salary or conditions of service. However, medical unions are not primarily responsible for negotiating on behalf of patients, for what doctors believe the patients require from a State medical system.

As an aside, it is obvious that should the State make inadequate provision, the only effective way of ensuring that doctors *can* provide the service that patients require to a professional standard, is the existence of an adequate margin of private practice. It should thus be an essential part of the Colleges' policy that private practice should persist. Without that safety valve, the Colleges must in the end be drawn into head-on collision with the State if the State chooses to ignore the advice it is given.

This is a new external responsibility of the Colleges and Faculties, to speak on behalf of doctors concerning professional standards in the Health Service. Before the Health Service it could not conceivably have been regarded as one of their functions. It is only when the majority of medicine becomes a State service that the need for bodies to act in this way becomes apparent. Authoritarian systems naturally eschew any such professional check, but democratic countries need one. Countries without such a tradition are undoubtedly having difficulties in inventing a suitable alternative.

Thus the functions of Colleges have changed enormously over time according to external circumstances. They started out to regulate the profession. A few of them have persisted with this function in vestigial form in the Conjoint Boards. At the same time they evolved into clubs of specialists, awarding higher degrees, again for the same basic purpose, namely, so that members of the public and their fellow practitioners would be able to recognise people's particular skills which were available for the benefit of patients. With the coming of the Health Service, they have perforce

acquired a fresh significance, of monitoring the standards of the State service.

To do this effectively they need to combine together. This necessary evolution can be found firstly in the Joint Consultants Committee, where Colleges join the B.M.A. to meet the government on behalf of the service. To try and formulate a 'College' policy, representatives of Colleges and Faculties needed forums in which representatives of all the Colleges and Faculties could discuss matters of common interest within their legitimate sphere. These have now come into being within the last few years as the Scottish Conference and now the U.K. Conference of Colleges and Faculties.

If this analysis is correct, these bodies can only be authoritative if the participants come into them as equals, and if the influence of the various voices approximates in some, albeit very rough way with the relative importance of the opinions that are expressed. Ultimately I hope, it will be seen that it cannot be right for representation in such bodies to be *both* on speciality lines *and* on geographical lines. There cannot be a good case for a voice from three different surgical Colleges and only one voice from anaesthetists.

In adopting the task of holding the ring between a monopoly employer, the profession, and the public, Colleges are moving into a kind of Medical Defence, or Medical Protection role as well as a Public Defence role. What they do is therefore of real relevance to us all, who have been given the special privilege of electing those who speak on our behalf. Anaesthetists have an important role to play in this area and should play it as equals. Innovation, initiative and evolution arise at many points in the system and since the Colleges have now achieved a pivotal position, their actions or inactions can have major organisational consequences. As anaesthetists, we have to be doubly careful not to allow our ideas to be conditioned by the somewhat anomalous organisational framework in which we currently find ourselves. In historical terms, they may well prove to be quite transitory.

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REGISTRAR'S PRIZE

Dr. J.H. McCLURE

CARBONATED BUPIVACAINE IN INTERSCALENE BRACHIAL PLEXUS BLOCK

Regional anaesthesia offers many advantages over general anaesthesia. However, to be acceptable to the patient, the anaesthetist and the surgeon, it must satisfy a number of criteria. It should be simple and quick to perform, involve a minimal number of injections, become effective quickly, and be consistently successful with a low incidence of complications.

Anaesthesia of the brachial plexus may be achieved by three basic techniques; the axillary¹; supraclavicular²; and interscalene³ approaches. Each technique has problems but the interscalene approach is simplest to perform and does not require abduction of a possibly painful arm. It requires only a single injection and avoids the complications of pneumothorax and major vessel puncture. Speed of onset of analgesia will be dependent on the stature of the patient, the local anaesthetic agent used and the accuracy of the block.

All three techniques require the injection of a large dose of local anaesthetic with the risk of systemic toxicity. Wildsmith et al.⁴ have shown that bupivacaine hydrochloride has a low toxicity and a long duration of action in inter-scalene block. However, it is a drug with a slow onset of action.

Carbonated solutions of local anaesthetics are less acidic than the hydrochlorides and are therefore more rapidly buffered in the tissues. Rapid buffering, and diffusion away of carbon dioxide deposits free base in high concentration on nerve fibres. Carbon dioxide is also thought to raise the intracellular hydrogen ion concentration, thus increasing the amount of active cation available at the receptor sites⁵. This study was performed to compare the effects of the hydrochloride and carbonated solutions of bupivacaine in a double blind trial when used for interscalene brachial plexus block.

Twenty patients undergoing forearm or hand surgery were studied. The patients were premedicated with a benzodiazepine and the brachial plexus was blocked using the interscalene technique of Winnie³. The patients were allocated randomly to receive 40mls of 0.5 per cent bupivacaine hydrochloride or 40 mls of 0.5 per cent carbonated bupivacaine. The onset and spread of sensory and motor block were assessed, and the pulse rate and arterial pressure were measured every five minutes for thirty minutes after the injection. The sensory block was assessed by pin-prick, analgesia being the inability to appreciate sharpness. The extent of sensory block was expressed as the number of seven dermatomes blocked (C₄ to C₈, T₁ and T₂).

Motor block was scored on a scale of zero to 3, zero being no motor block; 1 the inability to abduct the shoulder or flex the elbow against resistance; 2 the inability to abduct the shoulder or flex the elbow against gravity; and 3 the inability to abduct the shoulder or flex the elbow and wrist against gravity.

The statistical significance of differences between the two groups was determined using student's t-test.

SPREAD OF ANALGESIA (No. of Dermatomes)
Mean±S.E.

TIME (min)	5	10	15	20	25	30
0.5% Bupivacaine HCl (10 patients)	1.10±0.48	2.90±0.35	3.90±0.18	4.10±0.23	4.50±0.27	4.80±0.29
0.5% Carbonated Bupivacaine (10 patients)	1.30±0.37	3.40±0.37	4.50±0.43	5.40±0.37	5.80±0.36	6.00±0.37

N.S. N.S. N.S. p < 0.005 p < 0.005 p < 0.0125

The Table shows the mean number of dermatomes analgesic at 5 minute intervals. It can be seen that at 20 minutes more than 5 dermatomes were analgesic in the carbonated

group whereas this number was not reached until after 30 minutes in the hydrochloride group. The two groups were significantly different at 20 minutes, 25 minutes and 30 minutes. It was also noted that in the carbonated group 6 out of the 10 patients had analgesia in the distribution of the ulnar nerve within 30 minutes compared to none of the 10 patients in the hydrochloride group.

Grade 2 motor block was achieved in 9 out of 10 patients in each group with a mean onset time of 9.4 minutes in the carbonated group compared to 15.6 minutes in the hydrochloride group. This difference was statistically significant. Grade 3 motor block was achieved in 8 out of 10 patients in the carbonated group compared to 5 out of 10 in the hydrochloride group.

There was no significant change in heart rate or blood pressure in either group.

The results show that carbonated bupivacaine produced a more widespread and complete interscalene brachial plexus block than bupivacaine hydrochloride. Carbonated bupivacaine is therefore clinically more useful and in the majority of cases, surgery could commence 20 minutes after injection.

No systemic effects were noted in the series but two patients of small stature demonstrated bilateral epidural spread of local anaesthetic. In both patients there was bilateral thoracic analgesia with depression of respiration and coughing. However, respiration did not require assistance and the weakness was explained to them, and they underwent surgery uneventfully following administration of intravenous fluid and a pressor agent to counteract hypotension. This complication has previously been described by

Kumar et al.⁶, and should be borne in mind when large volumes are used in short patients. A dose volume related to height has been described by Winnie³. These two patients were excluded from the study and each was shown subsequently to have received bupivacaine hydrochloride.

Horner's syndrome secondary to cervical sympathetic block was present in 75 per cent of the patients. No other complication was encountered though phrenic nerve paralysis was not assessed radiologically.

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OBITUARY

The Society notes with regret the deaths of the following members:

Dr. R. Lawrie of Perth : a past President of the Society. Dr. Lawrie was instrumental in obtain-

ing the use of the Board Room of Perth Royal Infirmary as a venue for Council Meetings.

Dr. A. Montgomery Brown: a past council member, serving as the Glasgow representative in 1939.

Registrar's Meeting

NINEWELLS HOSPITAL, DUNDEE – 30th May, 1980

This year's Registrars' meeting was held at Ninewells Hospital and Medical School, Dundee on Friday 30th May 1980. A large number of registrars from throughout Scotland attended an interesting and varied meeting.

Three groups were formed for the morning sessions. One group visited the Anatomy Department where the anatomy of various 'blocks' was reviewed. The indications for Coeliac plexus and Stellate ganglion block were discussed and an opportunity given to practise the blocks on cadavers. The use of femoral and obturator blocks in hip surgery also prompted some discussion on the value of nerve stimulators in improving success with these techniques.

A second group attended a presentation and discussion of "Anaesthesia for Bronchoscopy". This supposedly "minor procedure" certainly proves that there are major and minor operations, but no major and minor anaesthetics.

The third demonstration, on thoracic epidurals, paravertebral blocks and upper limb local anaesthesia again reviewed anatomy on specimens before viewing some videotaped procedures. Paravertebral and wrist blocks were also demonstrated on two patients, and the practical problems of the techniques discussed.

Thanks for the organisation of the morning sessions to Drs Sherrif, Mann, Bisset and Redpath. The groups rejoined for an excellent lunch prior to the afternoon session and papers.

Dr Barker reported on an adverse reaction to anaesthetic drugs during a gynaecological procedure. The offending drugs were thiopentone and faldinium, and the management of such incidents was thoroughly reviewed.

Dr. Robertson then gave a learned dissertation on "The effects of anaesthesia and surgical trauma on mitogen – stimulation of human lymphocytes. His careful introduction and explanation of methods was much appreciated, and the results were placed in relation to the most recent literature on the subject.

The third paper was a review of 1707 obstetric epidurals and their use in Caesarean sections by Dr Pong. The advantages and disadvantages were outlined and many practical points discussed in an active debate. A most valuable paper for those registrars who perhaps work in areas without epidural services.

Mr M Metcalf then spoke on haemodilution and its application, particularly in relation to major vascular surgery. The advantages were shown against certain relative contraindications, the most important perhaps being the increase in cardiac output which must be possible for its safe application.

Finally, Dr Shearer presented an extremely interesting paper showing the effects of increasing ambient pressure on the actions of anaesthetic drugs. Not, perhaps, a field in which many of those present will work, but the many practical problems involved in the experiments and their ingenious solutions, followed by the beautifully presented results made this, for many, the "Paper of the Day".

Once again the Registrars' meeting gave those present a wide-ranging selection of topics useful for practical anaesthesia and, of course, the Final FFARCS. On behalf of those present congratulations and grateful thanks for a well-organised, stimulating meeting to Dr Ian Gray.

Scientific Meeting

SOUTHERN GENERAL HOSPITAL, GLASGOW – 14th November, 1980

This year's Scientific Meeting was held at the Southern General Hospital's Walton Conference Suite and was attended by about 100 anaesthetists. The Organisation was in the capable hands of Dr. Alan MacDonald, ably assisted by Dr. Anne Mellon and the meeting was chaired by the President. With such a combination a meeting (and lunch!) of high standard was guaranteed.

As the President pointed out it was a pleasure to see such a large number of Past Presidents present, and in particular that Dr. Deirdre Gillies

had been able to travel from Canada to attend the meeting. Accounts of the papers follow in the order of presentation.

The overall theme of the meeting was "Drugs and Techniques in Anaesthesia: Then and Now". The early speakers took the development of their subjects as their themes, but as the meeting progressed we were given insights into possible future developments before Dr. O.P. Dinnick, in the 3rd Gillies Lecture, reminded us that the dangers of anaesthesia very often result from simple, basic errors.

THE MACEWAN ERA

The first paper outlined the life and career of Sir William Macewan, one of the medical giants of his time. His contribution to medicine was immense, but he is particularly important to our speciality for two reasons.

Firstly he pioneered endotracheal intubation. His interest in this subject began very soon after qualification when, as the first Medical Superintendent of the Glasgow Fever Hospital, he was interested in the management of diphtheria. His work on the subject culminated in 1878 when for the first time a patient was intubated to allow safe anaesthesia for surgery of the tongue¹.

Secondly, although less well known, was his concern, shared by the profession and public in general, about recurring untoward incidents and

Professor D. CAMPBELL

deaths associated with anaesthesia. At his joint instigation with the Managers of the Glasgow Royal Infirmary a survey was carried out of all the main teaching hospitals in the U.K. On the basis of this survey and his own practice, Macewan insisted on the proper practical and theoretical training of medical students in anaesthesia and its physical and physiological basis.²

Macewan also made major contributions to General Surgery and Forensic Medicine and was a pioneer of pulmonary surgery. An adjunct to his presentation Professor Campbell arranged a display of relevant historical items.

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THE EVOLUTION OF ENDOTRACHEAL ANAESTHESIA

Dr. M.D. INGLIS

Descriptions of tracheal cannulation for resuscitation antedate Macewan's work by at least 100 years but he was the pioneer of its anaesthetic use. The technique of *wide* bore cannulation was not generally adopted for another 50 years but in the interim intratracheal insufflation was developed for pulmonary surgery by Ellsberg. Rowbotham re-introduced wide bore intubation in 1926 and in 1928 Magill was regularly using the nasal route and Guedel and Waters described a

cuffed tube. In 1930 Magill coined the oft misquoted aphorism for the patient's head position as that adopted when one "scents the air".

Developments since that time have been almost entirely in the field of materials and cuff design. Vulcanised rubber has physical properties that preclude attachment of a pre-shaped cuff so that inevitably a relatively high pressure is exerted on

the tracheal mucosa. Silicon rubber is physically suitable and causes little tissue reaction, but is too expensive for routine use.

The plastic, P.V.C., is suitable and economic (although irritant plasticizers must be avoided) and has permitted the development of the high volume low pressure cuff. Initially these were cylindrical in profile, but they produced problems because of disproportion between the size of the cuff and the

trachea. This could lead to under inflation, herniation or aspiration and leakage along folds in the cuff. The use of a pear-shaped cuff with intracuff pressure monitoring has been claimed to overcome these problems.

Ref.: Watson W.F. (1980) *Biomaterials* 7, 41-46. The author would like to thank Miss Carrington of Messrs Portex Ltd. for assistance in the preparation of this paper.

SPINAL ANAESTHESIA – THEN AND NOW

The idea of a direct action of local anaesthetics on the spinal cord was conceived by Corning in 1885 but did not become a practical possibility until Quincke had described lumbar puncture in 1891.

The first sub-arachnoid block was performed in 1898 by Bier but several problems, particularly headache and vomiting, prevented its widespread adoption. However, improvements in drugs, and realisation of the importance of asepsis and control of the spread of the injected drug, led to the ever increasing popularity of the technique.

Because of the neurological complications reported in the much publicised "Wooley and Roe" case spinal anaesthesia was virtually

Dr. P.J. McKENZIE

abandoned in the U.K. even though the court's decision was that there was no negligence. Fortunately large series without neurological sequelae have begun to offer reassurance and led to a renaissance in the use of the technique.

Further, much work is indicating that there may be advantages unsuspected in the first 70 years of its use. Large bowel surgery may be performed with a reduced incidence of anastomotic breakdown, total hip replacement with a lower incidence of deep vein thrombosis and the mortality and complications of surgical treatment of fractured neck of femur may be reduced. This too may be due to an effect on thromboembolic events.

RECENT ADVANCES IN INTRAVENOUS ANAESTHESIA

The final session before lunch was a "mini" symposium on intravenous anaesthetics under the chairmanship of Dr. Walter Nimmo. The main theme was how close three recently produced agents come to being the "ideal" agent.

Dr. Barbara Miller started by discussing Etomidate. It is rapid in onset and because of its rate of metabolism, produces rapid recovery. Circulation and respiration are minimally affected and there have been no reports of anaphylactoid reactions. Intra-cranial pressure is lowered. However, it is not the ideal induction agent, since it produces pain on injection, myoclonus, nausea and vomiting, but it does have a place in the anaesthetic cupboard.

Etomidate has also been used recently in combination with Fentanyl for maintenance of anaesthesia, in both ventilated and spontaneously breathing patients. The results have been promising and a multi-centre trial is now underway for further evaluation.

Dr. W. Fitch, then described the latest steroidal anaesthetic to be assessed – Minaxolone. It has proved to be a rapidly acting agent, some 2.5 times as potent as Althesin in animals with the great advantage of being soluble in water. In a dose of 0.5mg/kg induction was acceptable in 82% of patients, but there was a relatively high incidence of excitatory movements particularly in unpremedicated patients. Recovery was uncomplicated in 83% of patients although significantly slower than after Althesin. At present the drug has been withdrawn from clinical use for further toxicological studies.

The third drug to be considered was Diprivan (2, 6 diisopropylphenol – ICI 35868) by Dr. K. Rogers. This is given in a dose of 2mg/kg as a 1% solution in Cremopher EL. Again it has minimal cardio-respiratory effects but produces pain on injection, although no involuntary movements.

There was then a general discussion particularly centering on the (in?) validity of using therapeutic ratios to compare these agents.

One of the greatest problems in the development of better relaxants has been the lack of a reliable animal model. Many new drugs have shown great promise in animals but this has not been substantiated in human studies. However, the cat can be used to predict potency and cardiovascular side-effects, although not duration of action, in man.

A large series of pancuronium analogues were synthesised and their structure-activity relationships studied.¹ One of these, ORG NC 45, was shown in animals² to be shorter acting and equipotent in comparison to pancuronium, with no evidence of cumulation or upset of autonomic mechanisms at neuromuscular blocking doses.

In a different approach a series of drugs has been synthesised whose action is designed to be terminated by spontaneous (non-enzymatic) breakdown at body temperature and pH³. One of these compounds, atracurium, has been studied in animals⁴ and its profile would appear to be similar to that of ORG NC 45.

The significantly shorter duration of action and absence of cardiovascular side effects of both drugs have been confirmed in human studies and they are now undergoing further clinical trials.

The introduction of the train-of-four techniques⁵ for the assessment of neuromuscular

blockade has enormously improved the ease and precision with which the effects of non-depolarising relaxants can be monitored clinically. No pre-relaxant control response is required and by observing the response of adductor pollicis to ulnar nerve stimulation the degree of blockade can be estimated objectively. It is a sensitive means of detecting residual block and permits accurate assessment of the adequacy of reversal before the patient regains consciousness. Although essential for the assessment of new compounds, the more frequent use of techniques for monitoring neuromuscular blockade would permit the safer use of muscle relaxants in our clinical practice.

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MICRO COMPUTERS IN CLINICAL PRACTICE

The introduction of microprocessors has enabled the development of low cost desk-top computers. The essential feature of such systems is the ability to perform complex calculations and data analysis at great speed.

Their use in the teaching of anaesthesia has already been described and the presentation explained the contribution which they could make in the collection and analysis of anaesthetic records. Data such as hospital number, age, etc. is typed in from the keyboard but subsequent data

entry uses a light pen to select items from a selection display on a screen. This improves the speed and accuracy of data entry.

The analysis of pulmonary mechanics using a micro computer was presented and a typical volume-pressure hysteresis loop shown. The ability to connect the micro computer on-line to modern patient monitoring systems such as the Roche 128 and to perform complex calculations with the data obtained was also discussed.

"IN SOMMO SECURITAS" – A SERMON IN SAFETY



The President and Dr. Dinnick



Dr. Dinnick and Dr. Deirdre Gillies

It is a great honour and a personal pleasure to be asked to give this lecture and to be associated with the name of John Gillies for, like many of you, I treasure the memory of his warm friendliness. Of his many honours and achievements I will recall only one – his Presidency of the Association of Anaesthetists – because he then established the Association Committee on Anaesthetic Deaths to forward his abiding interest in improving the safety of anaesthesia.

I trust you will forgive me but I have taken the liberty of couching my talk in the form of a sermon with the motto from the coat of arms of the Association of Anaesthetists – *In Sommo Securitas* – as my text. This is normally interpreted as "Security in sleep", but "*securitas*" also means "without care" or "negligent". This is indeed apt for most studies of anaesthetic mishaps, by both the Association and many others, have led to the conclusion that very often the patient was not the only person who was asleep. Let me therefore take a less ambiguous text for my sermon – "Preserve him and keep him alive"

(Psalms 41:2). If I tell you nothing which you do not already know I shall be unrepentant – for such a message, and such an attitude by the preacher, comprise the essence of a sermon.

Safety means "absence of danger" and paradoxically is usually measured by the incidence of death. I shall therefore first examine this incidence over the past thirty years and then suggest how it might be reduced.

INCIDENCE OF MORTALITY

There have been a number of papers analysing large series of cases during this period but unfortunately it is not possible to make meaningful comparisons of their quoted death rates. This is because there are major philosophical problems over the definition of an anaesthetic death, the attribution of causality and the variety and number of risk factors.

These problems have been discussed at length by numerous authors. I shall not elaborate on them beyond reminding you that all accidents – in anaesthesia as in other fields – are multifactorial and that their classification and hence their

apparent cause depends on the opinion of the reviewer. Furthermore, standards have risen with time and the accumulation of new knowledge.

In 1949 Sir Robert Macintosh¹ pointed out that the causes of most anaesthetic deaths were devastatingly obvious and included respiratory obstruction, aspiration of vomit, relative overdose, failure to check drugs and equipment, lack of care in the immediate post-operative period and failure to quickly recognise and treat circulatory collapse — factors, alas, still operative today. He also estimated from a scrutiny of inquest reports in the lay press that there were about 150 deaths a year where it seemed highly likely that, as he put it, "there was a strong presumption that the anaesthetist had slipped up badly".

In that same year, with John Gillies as President, the Association of Anaesthetists set up a committee to study anaesthetic deaths. It broke new ground with its classification of deaths, and published interim reports (see reference 3) on the hazards of vomiting and regurgitation, aspiration of blood in ENT operations and respiratory insufficiency after relaxants.

Many other now well known hazards were described in the Committee's classic paper, which still repays study, of 1956². A sequel on similar lines was published by the present author³. The conclusion of both papers was, in essence, the same as Macintosh's, that the majority of the deaths were due to "departures from accepted practice".

Valuable as the Committee's papers were, they were no use for assessing the incidence of deaths as they were based on reports which had been submitted voluntarily. Nevertheless, the number of fatalities reviewed was not inconsistent with Macintosh's estimate.

Nothing comparable has since been written in this country about the anaesthetic mortality of general surgery although there have been many investigations in specialist fields of which the most familiar are the anaesthetic chapters in the Confidential Enquiries into Maternal Deaths. Here in spite of, or because of, a revolution in anaesthetic techniques there has been a disappointingly small reduction in anaesthetic mortality.

Overseas, especially in the USA, South Africa and Australia, there have been numerous large surveys⁴ with anaesthetic death rates varying from 1:415 to 1:3,995 but, as I said, they are not directly comparable because their basis of

classification varied; moreover, they were made some years ago and I quote them merely as background data. Also as background data, so that in Dripps' marvellous phrase, "we do not have to resort to self flagellation in assuming responsibility merely because an anaesthetic was administered", I give you the overall surgical mortality which is that one patient in 55 is dead within 2 months of his first operation⁵.

Returning to anaesthetic mortality, there have been a number of relatively recent major surveys from New South Wales,⁶ South Australia⁷, South Africa⁸, Vancouver⁹ and Finland¹⁰. The conclusions of these, and many other studies, old and new, are depressingly similar to those of Macintosh of the Association Committee. Further confirmation of this view — that the immediate cause of death is usually simple — comes from the recent detailed analysis of the serious anaesthetic mishaps reported to the Medical Defence Union¹¹. This paper should be read in full but suffice to say that intubation mishaps, misuse of equipment and post-operative respiratory obstruction, featured prominently in their list of relevant factors. These authors also drew attention to moral facets of behaviour — a point to which I shall return later. Again, two-thirds of the fatalities in Harrison's latest South African series were related to hypovolaemia, respiratory inadequacy after relaxants, the complications of tracheal intubation and inadequate post-operative care. In his words "It is sad to reflect that the causes of anaesthetic deaths are, by and large, simple and usually follow the lack of observation of simple precautions and the lack of clinical alertness".

Indeed, he postulates that there may be an irreducible minimum mortality because, as he puts it "all trainees must be educated through the same mistakes on their way to the final acceptance of total clinical responsibility".

Several trends are discernable in this vast amount of morbid study. An appreciable and increasing percentage of deaths now occur in fit patients, about half of them occur in association with elective operations, and consultants and trainees seem equally implicated. More deaths occur during maintenance of anaesthesia, with relatively fewer during induction, and in recent years there has been an increase in accidents where equipment is implicated although there are still a very small minority.^{12,13}

The last two situations are sometimes related, for example, when the breathing system becomes

disconnected during mechanical ventilation. There have been a number of such fatal incidents in recent years, although not all occurred in the operating theatre. Hopefully their incidence should be substantially reduced if the recommendations for the revision of British Standard 3849 are ever implemented.¹⁴

The reports of the Registrar-General – now the Office of Population Census and Surveys – have often been quoted, usually at public dinners, to show that there has been a steady, even dramatic, fall in anaesthetic mortality. This inference was probably correct until about twenty years ago even though these figures represented deaths within twenty-four hours of – but not, necessarily, due to – anaesthesia. However, one must be more cautious in making a similar inference from the figures published since 1956 because in that year the official definition of an anaesthetic death was changed to one “where anaesthesia is mentioned on the death certificate”. This is a horse of a very different colour.

In ridding ourselves of the stigma of having every death associated with anaesthesia officially recorded, we have created a situation where the number of recorded deaths, though smaller, becomes even less meaningful. I can recall instances where, by strict modern criteria, the anaesthetic could be implicated to a varying degree, even though the word “anaesthetic” did not appear on the death certificate. Most Coroners, in their concern for the public interest, are very kind to us. This point, though implied, was not specifically mentioned by Scurr¹⁵ when he quoted the latest available (1976) Registrar-General’s figure of ninety. Scurr pointed out the discrepancy between this figure and the relatively higher number of deaths reported in the Confidential Enquiry into Maternal Mortality, and also emphasised the need for special searches to seek more accurate information.

To this end, the Association of Anaesthetists has once again initiated a major study into anaesthetic mortality, and at the Annual Meeting of the Association last September, Professor Mushin gave a brief report on the work of his new committee. If I heard him correctly, he said that extrapolation of the preliminary findings suggested that in England and Wales there were a hundred deaths a year solely attributable to anaesthesia, out of two million anaesthetics. This gives the truly excellent – though admittedly provisional, ratio of one death in 20,000 anaesthetics.

I sincerely hope that this ratio proves to be correct but must confess to finding it difficult to accept. Firstly, the figure of one hundred deaths is very similar to the ninety of the Registrar-General and I have already given my reason for believing that this is an underestimate. Secondly, although I have stressed the fallacies involved in making such comparisons, more of the recent overseas series shows as favourable an anaesthetic death ratio. For example, Harrison’s average for ten years was 1:4,545; in the New South Wales Teaching hospitals it was a tentative 1:8,250; even better was the more recent 1:12,500 from South Australia but this was based on a smaller number of cases. The most recent papers are those from Vancouver with 1:5,337 “possibly preventable deaths” and from Finland with 1:5,059 “anaesthetic primarily contributory deaths”. Can we really be “safer” than our overseas colleagues?

Professor Mushin’s provisional estimate of two million in-patient anaesthetics a year also came as a surprise because it is so much lower than all previous estimates but perhaps less surprising in the light of the latest – 1977 – Hospital In-Patient Enquiry estimate¹⁶ of 2.05 million operations – which is also much lower than earlier ones.

You will doubtless already have worked out the implication of the ratio of one death per 20,000 anaesthetics in relation to your own personal practice and accordingly now feel reassured, alarmed or incredulous, according to your experience. With our 3,000 anaesthetists giving two million anaesthetics a year between them, the average would be one death per anaesthetist, per thirty years. This is, indeed, a high standard but I cannot help wondering again whether we really are that safe.

We will, of course, have to wait for the Association’s final Report for the full facts, but in one sense Professor Mushin’s estimate of 100 deaths a year is bound to be slightly optimistic. This is because he has not yet given an estimate of the number in that important category of death where anaesthesia makes a material contribution to the fatal outcome.

Whatever the final figure turns out to be, it will be judged against Macintosh’s 1949 estimate of one hundred and fifty deaths a year, even though today’s circumstances are very different. There are now more in-patient anaesthetics (though fewer on out-patients), patients are older, worse risks are accepted, operations are longer and more complex and anaesthetists receive a longer training, but is

anaesthesia now safer? While the answer would seem to be that it is, we still do not know all the facts, and the improvement may well be less than we had hoped for. Indeed, in the words of the latest Association annual report, "the Enquiry has shown that anaesthetic mortality is not an inconsiderable problem",

Why should this be the case?

NEW "CAUSES" OF MORTALITY

In my view there are a number of changes in anaesthetic practice which are generally regarded as promoting safety but which paradoxically may have the opposite effect.

Firstly, there are now more assistants for anaesthetists:- SHO's, ODA's, "technicians" and nurses. Such help is often essential, yet the mere presence of a "trained" assistant reduces the incentive for the anaesthetist to thoroughly check his drugs and equipment before using them. Wylie¹⁷ has discussed the problems of delegated responsibility at length and I will quote one sentence: "delegation of responsibility to a nurse in a recovery area does not absolve the anaesthetist of a continuing interest in his patient". Recovery room deaths from airway obstruction still occur. Delegation is also not unknown during maintenance of anaesthesia. Though mentioned more in medico-legal than in clinical reports, incidents leading to deaths have occurred during a prolonged absence of the anaesthetist.

The second change is the current unwillingness to give even a simple anaesthetic without a tracheal tube — the device most commonly implicated in equipment mishaps. The obsessional reliance on a tube may also lead to death during repeated attempts at intubation — sometimes when it is unnecessary. It should be recalled that the only manual skill peculiar to the anaesthetist is the ability to hold up a chin with a mask in place. It should not lightly be abandoned. Moreover those who practice this skill do not give their patients sore throats!

The third, and related, change is the widespread use of mechanical ventilation for relatively minor operations where this is quite unnecessary. This added complexity brings inevitable hazards, and even fatalities as I have mentioned. The corollary of this change is that little experience is gained of straightforward inhalational anaesthesia which is often invaluable for every ill patients.

The fourth change is the introduction of piped gas supplies. I mention this, not only because of the rare associated hazards, but also to suggest that anaesthetists brought up using piped supplies are perhaps less alert to the possibility of oxygen failure, than are their colleagues who use cylinders — a libellous suggestion which has been splendidly refuted in Glasgow!

The fifth change has been the steady reduction in the amount of a trainee's clinical experience because of slower surgery, statutory days off, longer holidays and attendance at numerous courses from pressure to pass the Primary FFA at the earliest possible time. Harrison's view on the importance of experience has been mentioned: few would disagree, and this point is stressed in the material deaths enquiry.

The final, and perhaps most significant change, is that there is now a tendency to rely too much on the EGG and other unreliable monitors at the expense of simpler methods such as feeling the pulse and watching the patient's respiratory movements. This may be difficult in some specialised procedures but deaths still occur in fit patients having simple operations.

All these changes in anaesthetic practice, singly or together, tend to produce that situation noted in all death studies, namely delay in the recognition and treatment of hypoxic and hypotensive crises. Here is an important area where we have not progressed and I shall return to it later.

PREVENTION

Anaesthetic accidents are, in essence no different from those in other fields, such as industry, flying and the roads, where numerous studies on accident prevention have led to an agreed approach under three headings: Education, Engineering and Enforcement.

Enforcement

As this is a sermon, I will only say that for professional men and women, enforcement of rules is, or should be, a matter for self-discipline. I appreciate that departments must have some rules and these will vary according to local needs and customs but there is one rule which should be universal, but which, alas, is not. This is the anaesthetists preliminary checking of drugs and machine, especially the breathing system and oxygen supplies. Such checking may initially

annoy well meaning assistants but the best ones will not be upset and may even be pleased to be relieved of the responsibility.

The best way to test the breathing system is that advocated in the only anaesthetic text book¹⁸ which specifically mentions "safe practice" in its title. That is to fill the system with the gas ostensibly labelled O₂ and to breathe it. This will confirm the identity of the oxygen supply as well as the integrity of the system. We will, however, have to re-educate bystanders by explaining that we are not drugging ourselves!

One other point which should be mentioned under Enforcement is the obligation on the head of a department to ensure that fatigue does not render his staff inefficient. I will say nothing about this emotive subject, which is being studied by another Association committee, except to remind you that a major purpose of training is to ensure that a person acts correctly and safely even when he is fatigued.

Engineering

In the natural tendency to find an excuse for our human failings a vast amount has been written about the engineering aspects of accident prevention.

A great deal has been achieved especially in industry and aviation while in anaesthesia much money has been spent on non-interchangeable cylinder and pipe-line connections and many people feel that the design of much of our equipment could be further improved. Some, indeed, feel very strongly that certain bits of apparatus are dangerous and ought to be banned or redesigned, but opinion is far from unanimous as to how they should be modified and, alas, in redesigning equipment to avoid one hazard it is all too easy to introduce another.

The equipment-related accident is a fashionable topic with a new book¹⁹ devoted entirely to this subject, which is also discussed at numerous committees, as well as at public enquiries and legal proceedings. Nevertheless I wish to emphasise that equipment-related accidents attract a degree of publicity which is quite disproportionate to their very low incidence¹³ and many large series make no mention of deaths from this cause.¹²

In spite of the increasing use of complex apparatus, the piece of equipment most commonly involved in a fatality is very simple:- a tracheal tube either blocked, kinked, disconnected or in

the wrong place.¹² Furthermore, even when complex equipment is involved, the fault is usually a simple one like a dis- or mis connection of the breathing system or of the gas supply.¹¹

Human failure is a major factor in these, usually because the anaesthetist has failed to check, or even to understand, his equipment before using it. Finally, in the crisis, the anaesthetist has not had a sufficiently high index of suspicion of equipment failure, so that he has failed to recheck or - more importantly - to discard the faulty device.

In summary - equipment-related accidents are nearly always due to misuse of equipment - and they are also no different from other accidents in that the anaesthetist is slow to recognise that something is wrong and that his contingency plans are deficient or poorly executed. In short - a failure of his education.

Education

Although I have already criticised, by implication, some aspects of our current teachings, I wish to enlarge on only one - that concerning the detection and management of crises during anaesthesia. Thirty years ago this subject was forcibly taught from the trainee's very first day. I suggest that, with the vast expansion of knowledge and the pressure to pass examinations which are heavily biased towards theory, such teachings has been, if not neglected, then less heavily stressed in the past twenty years when the assumption has been that "to know all is to understand all".

This is not sufficient and it is time to reinstate the formal teaching of basic safety precautions and emergency drill, and I suggest that this can be taught under three headings:

acquisition of watchkeeping ability, treatment of hypoxic and hypotensive crises and avoidance of errors.

What I call "watchkeeping ability", or constant scanning of the variables to be observed, is a quality quite distinct from intelligence, academic ability or even very quick reactions. Indeed, it may be endangered by the intellectual flights of fancy to which the superior mind is prone. It is, however, a quality that can, and must, be taught. The secret is to practice the acquisition of a "mental alarm clock".

You will all be familiar with the situation when you wish to rise early and set an alarm clock

— yet you wake just before the alarm goes off. This facility can be improved with practice and you can then dispense with the clock. In anaesthesia you must learn to make your “alarm” ring consistently at regular intervals of not longer than two minutes. This interval is chosen — because the worst hazard— unforeseen cardiac arrest is still correctable if left undetected for this time. While in some situations this interval must be shortened, the ideal of continuous close observation of all variables is impracticable and rapidly leads to fatigue and errors. For example, in some tasks such as watching radar screens, an unacceptable number of observer errors occur after only fifteen minutes. At the conclusion of each interval, say two minutes — you must — irrespective of the task you are engaged in — pause, feel the pulse (the most important), check the respiration, the colour and the amount of freshly shed blood, the drip, the surgeon’s colour and expression of his ears and eyes!; as well as the rotameters, pressure gauges and the ventilator.

Orthodox teaching is that you must never leave the patient. This is hypocrisy and is based on the doubtful assumption that disasters are unforeseeable. That they are often unforeseen is a separate issue. What we should teach therefore is not only the potentially dangerous situations but also when it is safe to leave — that is to say, to not closely observe the patient and for how long. With an effective inner alarm clock this is a reasonable and safe thing to do provided one also knows — by previous practice with a stopwatch — the precise duration of all those tasks which take one’s attention from the patient. Examples are: putting up a drip — drawing up a drug — fetching something — answering the phone — moving a lamp — even having a cup of tea or answering a call of nature. It is amazing what can be achieved in a well organised minute. I would rather have a peripatetic anaesthetist who regularly observes all the essential variables through the theatre window than one who, though always present, has his mind elsewhere — such as writing copious anaesthetic records. If you must do this or read the patient’s notes, carry out these tasks with one finger on the pulse — or with an audible pulsemeter or oesophageal stethoscope. Record sheets should be overprinted in red — “feel the pulse while filling this in”.

A realistic policy based on the two minute alarm clock also enables one to anaesthetise two or more patients simultaneously — an essential skill

to acquire for wartime conditions or practice in some underdeveloped countries. It also enables one to revive the old art of running a list by inducing the second patient before awakening the first. There is then no time to get bored and boredom is a factor which predisposes to errors. Nothing much happens to the average patient if the oxygen supply fails for a minute, or two, and it follows, alas, that those who die from this cause have been neglected for much longer.

Nevertheless, my second contribution to safe practice concerns the treatment of hypoxia and circulatory collapse. It matters not whether acute or chronic hypoxia, pre-existing pathology, haemorrhage or drugs have precipitated such a crisis or, as is usual, a combination of these factors, for when it occurs the hypoxia will increase at accelerating speed. Rapid detection and effective treatment are essential, yet in many death reports these attributes were clearly lacking.

Why then do anaesthetists sometimes fail to detect these catastrophic falls in blood pressure? Obviously some fail to anticipate the fall, some regretfully are inattentive, others are surprised by the speed of the fall, and a few rely excessively on pressor or anti-arrhythmic drugs. However, I submit that many anaesthetists fail to notice the circulatory collapse — pulselessness — because paradoxically they are looking too intently at only one variable.

I do not mean the ECG now, but that they are trying to take the blood pressure — and concentrating on this task to the exclusion of all other observations. It is difficult and time-consuming to take a blood pressure (unless there is an arterial line) when it is low or falling rapidly. When, at the third or fourth attempt the anaesthetist finally gives up and decides that the pressure is unrecordable — it is too late. You may laugh but I have seen this happen on many occasions and it has been recorded at Coroners inquests. Just time yourself when you take a blood pressure under these circumstances. The moral is to treat for hypotension on suspicion before attempting to take the blood pressure a second time — and concentrate your monitoring on the pulse — a time honoured maxim.

The other common cause of disaster is failure to treat pulselessness drastically enough — particularly by failing to give enough extra oxygen. Merely to increase the inspired oxygen from 30% to 50% is useless as it will take some minutes before this small change can have any

material effect. By this time it will be too late. A copious flush of 100% is essential before the other equally essential measures of prayer, elevating the legs and speeding up the drip. I realize that some practitioners of modern ultra-light anaesthesia are inhibited from giving 100% oxygen because of the fear of waking their patients, but this fear is unfounded if the patient really needs oxygen.

It is also good routine to give a breath or two of 100% oxygen every ten to fifteen minutes to ill patients: if the blood pressure then rises it means that there had previously been some hypoxaemia. Finally, concerning hypoxia — too much reliance is often placed on cyanosis as a physical sign — this cannot be detected in darkened theatres or in dark skinned patients. Furthermore, it is arterial blood that must be watched — a wound which is not bleeding does not change colour quickly. There is yet another and very important reason why crisis management is often deficient. It is very frightening when your patient is apparently dying suddenly — and fright paralyses or slows analytic thinking and decisive action — especially in the inexperienced. This is the basic reason for military drill. Therefore, I suggest we should forcibly teach emergency treatment at the very earliest stage of anaesthetic training. After all, when learning to drive a car you are taught how to work the brakes before you first start off. In anaesthesia, the aphorism in emergency is "treat first and think afterwards". The treatment is always the same — though the causes of circulatory collapse are legion.

There is one further point about emergency situations — and this concerns "squeezing the bag". In one's frantic efforts to revive the patient it is all too easy to squeeze much too hard — especially with the oxygen by-pass on — and the resultant high intra-thoracic pressure may well defeat the object of the exercise. It needs a considerable effort of the will to squeeze gently and slowly with an adequate expiratory pause in these circumstances. Again, preliminary training is essential.

Finally, in the teaching of safety we come to the avoidance of errors. Opinions on what constitute an error, and how big a part they play in anaesthetic accidents, vary considerably — particularly in court actions for negligence! But let me remind you of the New South Wales⁶ committee's conclusion that there were at least four errors of commission or omission in every death reviewed — any one of which could have

caused the death. In the South Australian study⁷ there were two errors per death, Utting et al. identified "technical faults" in nearly half the cases reviewed and the preliminary report of Professor Mushin's committee states there was an avoidable anaesthetic factor in 60% of the cases reviewed so far.

"To err is human" and while there may be no complete cure for this failing there is much that we can do for our trainees — and for ourselves — to reduce the incidence of errors or their serious consequences. Indeed, merely by choosing the simplest available techniques and equipment for the proposed task, the number of possible errors is reduced.

The study of mortality or morbidity reports and of "near misses"²⁰ will show when errors are most likely to occur and hopefully how they may be avoided. This is part of our orthodox training and it is not too unsuccessful in preventing errors of commission.

Most errors, however, are those of omission — e.g. failure to see a patient beforehand or to find out what drugs he is having, failure to transfuse enough fluid or, as I have stressed, failure to check equipment, drugs and decisions, to be alert or have adequate contingency plans. But many errors of omission are social rather than technical and consist merely of failure to carry out a prescribed task, because it seemed unimportant at the time or for an endless variety of other excuses. The task may, indeed, have been relatively unimportant in itself but it is seldom that one error is the effective cause of a fatality. Rather it is the interaction of many — often minor — errors. For example, in the Westminster incident, errors — chiefly of omission — of at least twenty people could be identified.

I know of another instance, too long to retail in detail, where the fatal outcome resulted from thirteen people making between them twenty-five errors — again chiefly of omission. None of these errors were particularly heinous by everyday standards, yet if they were to be judged against the highest moral values, then some of the deadly sins — sloth, avarice, greed and complacency or pride could be identified as having contributed to them.

Therefore there is one further essential requirement for the prevention of errors — a ruthless and continuing self-appraisal. This is required not only for the pursuit of moral perfection and conscientious behaviour but also for a very practical reason. This is, that such a scrutiny often reveals a pattern of circumstances

when one is most likely to make mistakes and thence hopefully to their prevention.

CONCLUSION

Thus, although correct Education, Engineering and Enforcement are the three essential components of safe practice, they are all linked by the common thread of human behaviour and human error.

"The fault, dear Brutus, lies not in our stars – but in ourselves."

The problems of human conduct are not peculiar to anaesthesia and they have been extensively studied in relation to safe practice in every field of human activity. The universal finding has been that human failure – ranging from an error of judgement in a complex situation under stress, to the far more common simple lack of ordinary care and courtesy – in other words selfishness – is the most common cause of accidents. This basic and painful truth is, of course, an oversimplification and raises many further problems.

I can do no better than quote from the conclusions of the Royal College of Surgeons Working Party on Accident Prevention²¹:-

".....we are dealing with a matter of ecology in which the behaviour of the individual is the dominant factor in an environment of many facets. If these are listed as social, economic, educational, psychological, moral, political, international as well as national, architectural, engineering, climatic, biological and not least medical, we still will not have completed the picture

Fundamentally, these matters touch upon every aspect of modern civilisation, the basis of family life, of upbringing and of morals"

Morals – the very core of a sermon but, fear not, I shall say no more about this fundamental aspect of safe practice.

My practical message is that three things must be taught to a trainee in his first days and rammed home in military fashion, so that they are always remembered in times of fatigue – emotional tension or panic-stricken crisis.

1. Check every drug – every piece of apparatus – and every decision.

2. Develop an inbuilt alarm clock that reminds you to check the pulse and other variables at least every two minutes no matter what else you are doing.

3. In a crisis always assume that you have made your patient hypoxic and therefore treat this first, and think about the cause afterwards.

These are the only aspects of anaesthesia which should be taught in this dogmatic fashion. In other fields, the teaching must, of course, be that reasoned thought precedes action. I apologise if I am preaching to the converted – but I fear that there is ample evidence that many anaesthetists are less enlightened.

Therefore let there be no ambiguity about the meaning of "In Somno Securitas" – so "To preserve him and keep him alive".

Fear God, keep your finger on the pulse and when in doubt – give oxygen, if need be from the air or your own lungs.

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PROFESSOR ALASTAIR SPENCE

It is with great pleasure that we record the appointment of Alastair Spence as titular professor of Anaesthesia in the Western Infirmary, Glasgow from 1st October 1980.

Professor Spence graduated MBChB at Glasgow University in 1960 and trained in Anaesthesia in the Western Infirmary in Glasgow. He became a fellow of the Faculty of Anaesthetists in 1964 and subsequently took up a research fellowship in the Western Infirmary contributing greatly to the programme of research in the hyper-baric chamber. He left Glasgow in 1966 to become the Association of Anaesthetists Steinberg Research Fellow in Anaesthesia in Leeds under the directorship of Professor J.F. Nunn and this was the beginning of a close and productive relationship between Professor Spence and Professor Nunn.

In 1969, he returned to Glasgow to succeed G.D. McDowall as Senior Lecturer and Head of the University Department of Anaesthesia in the Western Infirmary. Since then he has pursued his major research interests in lung function in the post-operative period, the use of the mass spectrometer in clinical anaesthetic practice and morbidity associated with working in operating

theatres. This last interest has gained Professor Spence international repute and was the title of his MD thesis in 1976.

However, research is only one of Alastair Spence's talents. He is much respected for his ability and counsel as a clinician and teacher and has recently completed a valuable term as a member of this Society's Council. His very special relationship with his NHS colleagues is a model of its kind and a credit to both sides. He is much in demand as a speaker at clinical or scientific meetings as well as after dinner.

In many ways Professor Spence has extended his contribution to Anaesthesia and brought honour to himself and the West of Scotland. He was Hunterian Professor of the Royal College of Surgeons of England in 1974-75 and gave the Hunterian Lecture "Lung function changes in surgical patients - mechanisms and therapeutic implications". He has been visiting professor in many centres in North America and Africa and of course is well known as having edited the British Journal of Anaesthesia since 1973.

As a clinician, teacher, writer, raconteur and general bon viveur he is welcomed all over the world. His many friends in Scotland are particularly delighted at his recent appointment.

Revised Constitution

A. CONSTITUTION (As approved on 26th April 1980)

- (1) The name of the Society will be "THE SCOTTISH SOCIETY OF ANAESTHETISTS".
- (2) The objects of the Society will be to further the study of the science and practice of Anaesthetics, and the proper teaching thereof and to conserve and advance the interests of Anaesthetists.
- (3) The Society will consist of Honorary Members, Senior Members, Ordinary Members, a President, a Vice-President, a Secretary, a Treasurer and an Executive Council formed by the above Office-Bearers, together with the Immediate Past President, the Editor of the Newsletter and seven Ordinary Members, two from each of the regions centred on Edinburgh and Glasgow and one from each of the regions centred on Aberdeen, Dundee and Inverness.
- (4) Ordinary Membership will be restricted to Members of the Medical Profession practising the speciality of Anaesthetics.
- (5) Senior Members may be elected from Ordinary Members who have retired from active practice.
- (6) A meeting will be held every year, at a time and place to be appointed by the Executive Council.

B. ELECTION

- (1) Ordinary Members may be elected by a two-thirds majority of those present, at any regular meeting, nominations by an existing Member to be sent to the Secretary one calendar month before the day of election.
- (2) Nominations for Vice-President, Secretary, Treasurer and Editor of the Newsletter, will be made annually by the Executive Council, and will be circulated to Members along with the notice of the Annual

General Meeting. Any further nominations for these Offices may be submitted to the Secretary 14 days before the date of the Annual General Meeting.

- (3) Regional Representatives will serve on the Executive Council for a period not exceeding three years, and on retiring from office will not be eligible for re-election to the Council within a period of one year.
- (4) Nominations for vacancies in the Executive Council created by retirement will be called for at the Annual General Meeting, and a ballot held if necessary.

C. DUTIES OF OFFICE-BEARERS AND MEMBERS OF THE EXECUTIVE

- (1) The President will preside at the Meetings both of the Society and Executive Council, and will have a casting as well as a deliberative vote. He will hold office for one year and retire at the Annual Meeting.
- (2) The Vice-President will act for the President when required to do so. He will automatically become President for the following year.
- (3) The Secretary will keep all the records of the Society and will notify all Members of the business of the Society. The Treasurer will collect subscriptions, pay accounts and render a financial statement to the Annual Meeting.
- (4) The Executive Council will be consulted by the President upon all matters concerning the conduct and interests of the Society, and will be permitted to record their vote by post upon any question in dispute.

D. FINANCE

- (1) All monies of the Society will be devoted to the purpose of the Society as declared at Clause A2 of the Constitution.
- (2) In the event of dissolution of the Society any assets remaining after

the satisfaction of all proper debts and liabilities will not be divided amongst the members but will be applied to a similar purpose that is charitable in law.

- (3) Ordinary Members will pay an annual subscription, the amount of which will be fixed at the Annual Meeting. Anaesthetists in training may pay a reduced subscription also to be fixed at the above meeting.
- (4) Payment of subscription must be by Banker's Order.
- (5) Any Member who has not paid his subscription for the current year

may, at the discretion of the Executive Council, cease to be a Member of the Society.

E. GENERAL

- (1) No alteration of, or addition to, the rules may be made save at an Ordinary Meeting after one month's notice given to the Secretary, who will place the suggestion upon the Agenda.
- (2) Such alterations will be notified to the Inland Revenue Claims Branch, Edinburgh.
- (3) Personal as well as official guests may be invited to the Meetings and Dinners of the Society.

REPORT FROM THE STANDING COMMITTEE (SCOTLAND) OF THE FACULTY OF ANAESTHETISTS

A review of the business of the Standing Committee in the last year underlines the important changes which are occurring, or being considered, with a view to making the Faculty of Anaesthetists more effective in fulfilling its complex role as the principal academic body of our speciality. This is the first full year in which the Regional Educational Adviser system has been strengthened by the appointment of either Faculty Tutors or Assistant Regional Educational Advisers. There is every indication that this arrangement is working well. The national meeting of Educational Advisers and Tutors provided a forum for discussion and communication which was of value to both those attending from the Regions and to the Board of Faculty. While it is obviously essential that such exchange should occur on a United Kingdom basis it is thought that there would be considerable merit in convening a meeting of Scottish Advisers and Tutors with the Dean or Vice Dean and with the Standing Committee. The first such meeting will be held in the summer of 1981, probably at Perth, and will be timed to precede the national meeting at York.

The Board of Faculty has been heavily engaged in discussions on the constitutional future of anaesthesia and the deliberations of the Board's working parties have included the implications of the formation of a separate College of Anaesthetists and particularly the possibility of meeting the aspirations of those who wish such a move while maintaining the huge advantages which accrue from association with the Royal College of Surgeons. The matter has now been referred to a constitutional committee composed of representatives of the Council of the College and of the Board of Faculty. Professor Donald Campbell serves in the latter capacity. The Dean, Dr. Nunn, has been at great pains to keep the Standing Committee fully informed of these activities.

With regard to matters which are exclusive to the practice of anaesthesia in Scotland, the Standing Committee continues to have a full agenda in addition to its representative functions

on bodies such as the Conference of Colleges and Faculties in Scotland, Scottish Joint Consultants Committee, the National Medical Consultative Committee and the Scottish Council for Postgraduate Medical Education. Items have ranged from the use of local anaesthetics by chiropodists, the role of operating department assistants and the content of their training programme, to the Senior Registrar establishment in Scotland and the representation of the Faculty on the National Panel of Specialists.

The Standing Committee has returned repeatedly to the question of training opportunities for anaesthetists with domestic commitments and the possibility of part-time appointments. Although some progress has been made in this respect in the Lothian region it is now clear, after months of confusion and uncertainty, that the Scottish Home and Health Department does not intend to make additional funds available for such posts. The Department has explained that its attitude is principally a response to the present financial plight of the public services. Nevertheless the opportunities for part-time training are obviously poorer than had been anticipated. If part-time appointments are to be held they will need to be contained within the existing establishment, or by the exercise of the so-called Oxford option although the availability of finance for this cannot be guaranteed.

The NMCC/NDCC report on the future of dental anaesthesia in Scotland, having been tabled with the Secretary of State, has now been sent to a wide variety of bodies for comment. The Standing Committee has identified an important role that it must play in these consultations, not least in ensuring that the present discussions south of the border on the Wylie report on dental anaesthesia are not confused with the recommendations of the Scottish report which the Standing Committee holds to be more appropriate to the practice of dental anaesthesia in Scotland.

Alastair A. Spence
Honorary Secretary

News From The Regions

SOUTH EAST REGION

This year has seen a number of changes. Professor Robertson has continued running the various undergraduate and postgraduate courses with a one hundred per cent change in lecturer manpower. Drs. J. McClure and D.T. Brown replaced Drs. W.S. Nimmo, and D. Wright and the much debated third lecturership was finally restored and went to Dr. G. Park. Undergraduate education is setting down in its new form, although the number of Students presenting for tuition in the shorter time available is awesome! Both postgraduate in-service courses continue to be well attended and although the Primary Course did not produce the pass results usually expected, the Final part courses succeeded in, as usual, beating the national pass figures.

Two courses on "The Scientific Basis of Anaesthesia" have been held under the auspices of the Postgraduate Board for Medicine and have been well attended. However, the number of applications for the Advanced Course in Anaesthesia has been falling over the years. It was replaced last year by a more specialised course and the first of these, on local anaesthesia, was held last year and repeated this year.

On the National Health Service side, Dr. Masson having held the reins of administration in the Royal Infirmary for nearly two years was forced through ill-health to resign. Such must be his value (and that of his predecessor, Professor Robertson) that he has been replaced by a triumvirate of Drs. MacRae, Martin D.B. Scott. It is perhaps as well that three share this burden as their arrival coincides with changes in the work schedules of both senior registrars and registrars. The training programme for the former has, as has been mentioned in previous newsletters, been under constant local review but recently the Joint Committee for H.P.T. for anaesthetists objected to some apparent omissions. This will result in a reconstruction of the senior registrars' rota with the introduction of rotations to Neurosurgery at the Western General Hospital, plastic surgery at Bangour and paediatrics at the Royal Hospital for Sick Children. This will have, as yet not fully appreciated, effects on the registrar rotation, but perhaps some limitation in their experience in paediatrics and perhaps Neurosurgery can be forecast.

Of very recent innovation is a new emergency on-call rota for senior registrars, registrars and senior house officers. This introduces an entirely new concept for R.I.E. of a daily on-call team. Perhaps the greatest benefit of this will be the greater participation of registrars and senior house officers under supervision in emergency surgical and gynaecological anaesthesia.

During the year two well-known consultants have retired. Dr. Leslie Morrison left the operating theatres of Leith Hospital — perhaps to prepare for the next Commonwealth or Olympic Games? Griff (need I say Dr. H.W.C. Griffiths) has at last hung up his chloroform — where will the young anaesthetists look for tuition in the use of that agent now? We wish him great good luck in what will now be officially his main occupation, fishing! Dr. David Beamish has followed in Dr. Morrison's wake to the east of the city and we wish him well. Dr. D.H.T. Scott was elevated to the consultant ranks on Griff's departure and we also wish him good luck in continuing his zestful researches. Dr. I. Hudson was appointed to fill Dr. Shannon's vacant consultant post in the Royal Hospital for Sick Children.

Dr. G. Smith joined the ranks of consultants in Kirkcaldy from Tayside and we feel sure he will settle in the pleasant professional atmosphere of the Lang Toon. Dr. K. Birkenshaw has joined the consultant group in Dunfermline, replacing Dr. T. Miller who went to Kilmarnock. Bangour General Hospital, West Lothian, has gained a new consultant appointment in the form of Dr. W. Brown from Dundee.

Changes in the ranks of senior house officers, registrars and senior registrars have been numerous. Drs. R. Meek, A. Wright, Glenys Jones, Fiona Ralley, W. Chambers and J. Conlon were elevated from registrar to senior registrar and Dr. Janet Jenkins was appointed on a part-time basis. Dr. J. McCarty has joined us from Sydney for a year and we will receive a newcomer in the form of Dr. Emery-Baker — an ex-patriot, in that he did an elective in anaesthetics as an undergraduate in Edinburgh.

Pain Clinics have been developed in both Western General Hospital and the Royal Infirmary of Edinburgh and are thriving.

The state of Phase I shows change and unchange! It is completed and ready for occupancy (we believe) but due to the financial climate the Area Board cannot find the local rates so it must remain unopened at least till the next financial year.

The Department continues to bulge at its seams and few consultants can find seats far less desks or, dare I say it, secretaries. There is always hope and, perhaps when Phase I does open, the Department will be seen doing an unseemly charge to occupy premises then vacated.

Finally, on a lighter note — we had a splendid departmental Christmas Party last year in Kingsknowe Roadhouse. The same organiser is apparent this year — our departmental secretary, Mrs. C. Cockburn, who is organising this year's party at the Harp Hotel.

HIGHLAND REGION

A concrete chimney stack towers 170 ft. skywards beside the concrete skeleton of the New Central Hospital in Inverness. The main eight storey ward block seems unlikely to blend architecturally into the Highland capital, but at least no-one should have trouble in finding the place. The builders, at present on the fifth floor, are progressing well. Meanwhile, the old E.M.S. plaster room at Raigmore is being upgraded to form a second Orthopaedic Theatre.

Dr. Christine Martin left us in Spring to have a baby and Dr. Andrew Kelsey has taken her place as registrar, while Dr. Gordon Pugh, D.A., has been promoted to registrar grade.

GRAMPIAN REGION

The past year has seen the continued occupation of the new wing of Aberdeen Royal Infirmary called "Phase II" for want of a better name.

This wing houses the new Department of Anaesthesia. It remains vacant, perhaps because of reluctance to forsake our old, but familiar, dilapidated cramped quarters. The move there, however, will have to come soon.

Although the new "Respiratory Unit" is moving to excellent new accommodation, it is clear that there are too few beds for acutely ill patients, so that concentrated efforts are continually being made to persuade the administration to open the vacant purpose built I.T.U.

On the academic front, the following successes are acknowledged:— PRIMARY F.F.A. — Harry McFarlane, Ian Levack, FINAL F.F.A. — Fiona MacLennan, Jackie Orr.

Movement of staff: John Pook, Consultant, will soon be leaving to take up a post in London. His energy and enthusiasm will be greatly missed. Ian Russell has been appointed to a Consultant post in Hull, John Ross to Northwick Park to pursue his hyperbaric research interests, Malcolm Sue Chu to Norway, Ian Affleck to general practice and Louise Aldridge to domesticity. Sorrow is expressed at losing old friends and colleagues. We wish them all well.

New recruits have joined the department. They are:— Don. MacLeod, Doug. McLeod, Alistair Ewen, Alistair Michie, Bill Mair.

Perhaps they will be persuaded to join the Society too.

Next year the Scientific Meeting will be held here. If it is half as good as this year's meeting in Glasgow, then it will be a success.

WESTERN REGION

After last year's activities this, on the surface, would seem to have been a rather quiescent year. However we did act as host for the Society's Annual Scientific Meeting and it would appear to have been a successful venture with more than 100 anaesthetists attending.

We were all delighted to learn of Dr. Alistair Spence's translation to Professor of Anaesthesia, University of Glasgow. Still in the academic arena Dr. Robert Hughes, formerly lecturer at the Royal Infirmary, has been enticed to a consultant position at Stobhill Hospital. Dr. Cameron Howie obtained the vacated lecturer's post.

Professor A.C. Forrester received the Faculty Medal for services to anaesthesia; and Dr. Oliver Watt (Monklands District) has been honoured with the O.B.E.

In the past year Dr. Harvey Granet (Institute of Neurological Sciences, S.G.H.) and Dr. John Scobie (Stobhill) have retired and we wish them a happy retirement. Dr. Sheila McLeod (Falkirk) has decided to try being 'Mine Host' in Arran. We wish her good luck in this new venture.

Sadly we have to record the death of Dr. Janet Walker (Greenock) in March, 1980; this post as yet has not been refilled.

Dr. John Barker has returned to his post at the Institute of Neurological Sciences, S.G.H. after a

very enjoyable year's leave of absence working in Ontario, Canada. There have been many sighs of relief that the attractions of North America were insufficient to cause him to stay.

New Consultant Appointments in our Area include Dr. Keith Rogers to the Western Infirmary; Dr. George Davidson and Dr. Frank McGroarty to Hairmyres Hospital (initially these appointments will be linked to the Victoria Infirmary but, in time, it is hoped that, Hairmyres Hospital will support its own department): Dr. Josephine Thorpe and Dr. Peter Paterson to Monklands District General; Dr. David Simpson to Falkirk and Dr. Terence Miller, previously at Dunfermline, to North Ayrshire District.

Two Senior Registrars decided to infiltrate into other territories for their consultant positions: Dr. Peter McKenzie to Oxford and Dr. Robin Allison to Dundee.

New Senior Registrar appointments include: Dr. James Dougall, Dr. David Marsh, Dr. David Weatherill to the Western Infirmary; Dr. Malcolm Calhem, Dr. Alison McDonald and Dr. Roger White to The Royal Infirmary; Dr. David Dutton (York) joins the Victoria Infirmary in January, 1981.

Some progress is being made with new hospital building projects. Phase I of the new Royal Infirmary is reported to be on schedule. The present corrective work on the, by now legendary, new North Ayrshire District Hospital is well underway, but the opening date is still rather a "who shot J.R." question.

TAYSIDE REGION

The year in Tayside has seen the retiral of David Dangerfield. Music lovers will be pleased to know that he has no intention of leaving Dundee. We wish him a long and busy retirement. In his place we welcome Robin Allison back from Glasgow.

Gordon Smith's consultant appointment to Kirkcaldy came at the end of last year, and Bill Brown joined the staff at Bangour in March. Four Senior Registrar vacancies were filled by Bob Mann, Charlie Allison, Joe Sherriff and Alex Redpath.

The junior staff establishment at Perth has been augmented in order to allow further development of the maternity epidural service and intensive care facility. An additional consultant post has been passed for Dundee. This is to help take account of the movement of elective orthopaedic surgery from Bridge-of-Earn to Dundee Royal Infirmary. Already it is clear that this will be insufficient to cover the increasing workload.

The Registrars' Meeting was held in Ninewells Hospital in June. Thanks to masterminding by Iain Gray, last year's member of Council, it was a great success.

Finally it was good to welcome back Hamish Finlay as a locum consultant. His sojourn in the hills as a shepherd has eroded neither his expertise as an anaesthetist nor his companionship as a colleague.

**NORTH EAST OF SCOTLAND
SOCIETY OF ANAESTHETISTS**

SYLLABUS 1980-81

Meetings are held at 8.00 p.m. in Aberdeen Royal Infirmary, Ninewells Hospital and in Stracathro Hospital, Brechin, unless otherwise notified.

Thursday, 25 September 1980 Dundee:
Insults to the Brain
Professor D.G. McDowall, Leeds

Thursday, 13 November 1980 Stracathro:
Goodbye Fentanyl
Dr C. J. Hull, Newcastle

Thursday, 12 March 1981 Stracathro:
Registrars Papers

Thursday, 16 April 1981 Aberdeen:
Therapeutic Hyperthermia
Dr R.T. Pettigrew, Edinburgh

Thursday, 14 May 1981 Stracathro:
Annual General Meeting and Presidential
Address.

**EDINBURGH & EAST OF SCOTLAND
SOCIETY OF ANAESTHETISTS**

SYLLABUS 1980-81

Meetings will be held in the Royal College of Surgeons, Nicolson Street, Edinburgh, at 7.45 p.m. for 8 p.m. unless otherwise stated.

1980

Friday, October 17th:
Combined meeting with Glasgow and West of Scotland Society of Anaesthetists in Edinburgh. Professor R.V. Short, Director of the M.R.C. Centre of Reproductive Biology. "Unusual Reproduction".

Tuesday, November 18th:
Presidential Address.

Tuesday, December 16th:
Dr. J. Watkins, of the Protein Reference Unit, Dept. of Immunology, Hallamshire Hospital Medical School, Sheffield. "Immunological and Haematological Reactions to Anaesthetic Agents".

1981

Tuesday, January 20th:
Members' Night.

Tuesday, February 17th:
Dr. R. M. Marquis, Honorary Consulting Physician, Department of Cardiology, Royal

Infirmary of Edinburgh, "A Cardiological Retrospect—the last 40 years".

Friday, March 6th:
Annual Dinner.

Tuesday, March 10th:
Professor A.A. Spence, Department of Anaesthesia, Western Infirmary, Glasgow, "Communication in Anaesthesia". This meeting is scheduled to take place in Dunfermline, Fife.

Tuesday, April 21st:
Annual General Meeting.

Further details of meetings from Dr. J. Wilson, 15 Campbell Road, Edinburgh. Tel: 031-337 6763.

**GLASGOW AND WEST OF SCOTLAND
SOCIETY OF ANAESTHETISTS**

CURRICULUM 1980-1981

1980

Friday, October 17th:
Combined Meeting with Edinburgh and East of Scotland Society of Anaesthetists — *in Edinburgh.*

Thursday, December 4th:
Dr. Mark Mehta — "Problems of Chronic Pain".

1981

Thursday, January 22nd:
Members' Night — presented by members of Division of Anaesthesia, Southern General Hospital.

Thursday, February 26th:
Dr. J.F. Nunn — "The Faculty, Past, Present and Future".

Tuesday, March 10th:
Presidential Address — Dr. J.G. Mone.

Thursday, April 19th:
Annual General Meeting.

Thursday, May 21st:
Golf Outing — Williamwood Golf Club — 2 p.m.

Unless otherwise stated, meetings will be held in the Royal College of Physicians and Surgeons of Glasgow, 242 St. Vincent Street, Glasgow. Further details from Dr. K.M.S. Dewar, Dept., of Anaesthesia, Western Infirmary, Glasgow.

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