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ANNALS- SCOTTISH SOCIETY OF ANAESTHETIST
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**THE
ANNALS
OF THE
SCOTTISH
SOCIETY OF
ANAESTHETISTS**

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Scottish Society of Anaesthetists

Council for 1994-1995

Office Bearers

President.	Dr AL Forrest, Dundee
Past-President	Dr ABM Telfer, Glasgow
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Regional Representatives

		retires
Aberdeen	Dr WR Casson	1997
Dundee	Dr N McKenzie	1997
Highland	Dr JH Spencely	1995
South-East	Dr RA Bowie	1996
	Dr DHT Scott	1997
West	Dr B Scorgie	1995
	Dr WJ Kerr	1996

Programme for 1995

Registrars Prize: Entries to be submitted to the Hon Secretary by 28th February.

Annual General Meeting: Peebles Hydro Hotel, 21st - 23rd April.

Trainee's Meeting: Aberdeen Royal Infirmary - 9th June.

Scientific Meeting and Gillies Memorial Lecture: Edinburgh - 17th November

Golf Outing: Glasgow GC, Killermont. - 16th June

PRESIDENT'S NEWSLETTER



Following a very successful Annual Meeting in Peebles when Professor Keith Sykes and his wife were delightful guests to entertain, the Council had to provide a rapid response to the report of a working party on 'Minimal Access Surgery' chaired by Professor Alfred Cushieri.

There is little doubt that this very important advance is set to expand with considerable, if not significant, changes in current surgical practice. The Society was concerned about the apparent lack of specialist anaesthetic advice in the report with the result that concerns about pre-operative assessment, intra-operative care, patient monitoring and provision of pain relief services were inadequately covered. Our worries were expressed at the Conference of Scottish Colleges by Dr John Vance, Chairman of the Scottish Standing Committee and received a sympathetic hearing. We await future developments.

The Society's Registrars' Meeting and the Scientific Meeting are important elements of our year. Shortages in study leave expenses in certain regions mean that we should strive to maintain the highest educational value in these meetings which, in their geographical settings, allow attendance on a one-day basis.

The Registrars' meeting organised by Dr Bill

Kerr, was held in the Southern General Hospital, Glasgow. This was a highly successful meeting attended by seventy trainees. Dr Kerr, along with one of his trainees, Dr Dunn, conducted a questionnaire which has provided very valuable information for the future development of this link with our trainees.

The Scientific Meeting in Aberdeen attracted an audience of near record numbers - a tribute to the excellence of the programme provided by Dr Harry McFarlane and his colleagues. It was a pleasure to welcome Professor Nigel Webster who celebrated his first Scottish Society meeting by delivering a really excellent paper. We await confirmation by the University of Dundee that this year's Gillies Lecturer, Dr JAW Wildsmith has been appointed to the foundation chair of Anaesthesia, and offer him our congratulations and good wishes for the future. The establishment of these two departments in the North East greatly strengthens the base of academic anaesthesia in Scotland.

It is with great sadness that I have to record the passing of Dr Alistair MacKenzie of Law Hospital, Carlisle, President of the Society in 1986. Few will forget his wonderfully entertaining address on Medical Hypnosis. He was mainly responsible for the development of the Intensive Care Unit in Law and his many contributions to his hospital are now recognised in the 'Alistair MacKenzie Library' there. He was a kenspeckle figure in Carlisle and he also gave the Society its 'Scott Golf Trophy'.

At the coming Annual General Meeting we take leave of our honorary secretary, treasurer and editor, Drs John McKenzie, Iain Levack and Alastair Chambers have given the Society outstanding service over the past four years and we are deeply indebted to them for the immense amount of work which they have done on our behalf.

In closing I would like to acknowledge their support and that of the other members of Council. It has been a great privilege and pleasure for me to have been your President in a year when I spent part of the last day of my official working life visiting the ether dome in the Massachusetts General Hospital.

It is self evident that practitioners in any developing field need to keep up to date and the fashionable trend towards formally recording evidence of continuing medical education (CME) means that we will all have to demonstrate our continued efforts to maintain our knowledge and proficiency. It is likely that certain scientific meetings will be recognised as worthy of credit and therefore that others may not. Many Trust hospitals have already severely reduced the funds available to individuals for study leave purposes, others are likely to follow suit and a stricter examination of the potential benefits of attending particular meetings may well ensue.

The motives for attending meetings are very mixed, varying from the ardent pursuit of knowledge perhaps in a highly specialised field, to the wish to hear about developments in areas with which the listener is not in routine contact. It might even be supposed that a few individuals find the let up of a few days away from home base a relaxing diversion. It will be interesting to note the criteria which the various Colleges will use to determine whether or not a meeting will attract CME credits and perhaps significant weight will be given to the scientific content on the programme. As a Society, we need to continue to strive to maintain the highest standards when arranging the programmes for our meetings and indeed the President commented that the almost record attendance at the last Annual Scientific Meeting in Aberdeen was due in no small part to the excellence and relevance of the programme.

However we should not forget that other factors come into play. Almost thirty years ago Professor Hugh Trevor-Roper wrote: *The value of any conference lies less in the formal process than in the private social discussions on the fringe: less in its organisation than in its gradual decomposition. I hope that this is not an ungrateful thing to say ... So let the organisers go on organising.* How often have we heard or felt: *I'm not sure if I have learned much but I did enjoy it.* Many meetings

yield some valuable pieces of information which have been discovered not in the printed programme but in private conversation with colleagues over coffee or a drink. The meetings of this Society, particularly the Annual General Meeting and family weekend at Peebles most certainly bear examination in this light.

In any Society the members can be divided into two categories in a number of ways, but in the above context one of the most noticeable is on the basis of those who attend meetings and those who do not. Although the attendance at the Annual Scientific Meeting and the Annual General Meetings over the past decade have been well maintained, there has been a dramatic and sustained increase in the numbers in our Specialty in Scotland over this time. Should we be doing more to encourage those who do not come? Are we even aware of the reasons why they do not come? Council of the Society spent some considerable time debating possible changes to the Registrars' Meeting in order to attract a larger attendance. However, the most useful part of this exercise was not the amount of time or thought that members of Council put into the exercise initially, but the results of a survey which is reported elsewhere in this journal. Is it time for us to extend this exercise to more senior members?

This is the last edition of the Annals which I shall edit and I wish my successor every success during his period of office. I would like to thank all those who have contributed to the Annals over the course of the past four years and to successive Presidents and members of Council for their full hearted support. I have felt that the Annals should reflect the activities not only of the Society but also of anaesthetists in Scotland generally and would urge those with a story to tell to consider committing it to paper and submitting it for publication. I know that future editors will be grateful. Finally I should like formally to record my thanks to the members of the Society for affording me the privilege of acting on their behalf.

ANAESTHESIA MATTERS

This is the eightieth anniversary of the foundation of the Scottish Society of Anaesthetists - the oldest regional society in the world. Eleven Specialists in Anaesthesia held the first meeting in the Balmoral Hotel in Edinburgh on the 20th of February 1914. At this meeting it was resolved to hold two ordinary meetings per year, one being on the third Saturday in April - a tradition to which we still hold quite closely. Dr McCallum of Edinburgh gave the first Presidential address in the Guild Hall there on the 18th of April, 1914.

Meetings were interrupted by the Great War and the Second World War, so I think that this is the 65th April meeting.

In 1908 Parliament had passed a Bill which required Medical and Dental practitioners who wished to be registered from 1912 to have received instruction in Anaesthesia. One of the founder members of the Scottish Society, Dr Arthur Mills was appointed in 1914 by the University of St Andrews to be their first Instructor in Anaesthesia in the Royal Infirmary of Dundee. He gave Anaesthetics between 9 and 11am, returning then to his General Practice, leaving a Resident Surgical Officer to finish the list! Dr Mills, whose grandson, John is an Obstetrician in Ninewells, became President of this Society in 1929 and again in 1934.

For many years I worked in a Community Dental clinic in Whitfield, one of the less well-off areas of the city, with a dental surgeon, Mr Macdonald Black, who is also a licensed radio amateur. He was researching the life of James Bowman-Lindsay - a pioneer in wireless telegraphy who showed in 1854, that signals could be transmitted across the river Tay, at Invergowrie, using large immersed copper plates. Macdonald Black noticed in the Dundee Advertiser of 30th September 1836 a report, which he photocopied and gave to me, of 'Dr Fyfe's Lectures' being given in the James Watt Institute, in Barrack Street, Dundee. The Watt Institute was set up to instruct artisans in the rudiments of maths,

physics and chemistry. Dr Fyfe had been giving a series of lectures and by request of the class he was giving a lecture on nitrous oxide as an intoxicating gas. During the course of this lecture he prepared nitrous oxide and filled a silken bag of two Scottish Pints size which was breathed from by seven gentlemen in succession. No two results were the same. *"The first evinced its effects by grimaces and laughter. One sprung to his feet and went through some pugilistic attitudes; while another sat in a state of deep abstraction, and another rapidly bowed and shook his head."* These visible outward effects were only of a very short duration. Had the doctor made sixty gallons instead of six he could easily disposed of it. The lecture was really a high treat. Of course there was no Wells in the audience and eight years were to pass till that time. And now, 150 years later where does chairside Dental Anaesthesia stand?

In that same Whitfield Clinic, I was working alone with one of Mr Black's colleagues several years ago when I got into some difficulty with a boy of about seven who had enormous tonsils, and had to intubate him quickly. I resolved then that working like this, far from any help, was no longer on. As a Department we had supplied an anaesthetist twice per week to a variety of Community Dental Clinics spread throughout the City. Dr Bill Bisset, who did the other session, and I decided to reduce the outside clinics to one, sited in the GP Health Centre close to Ninewells. While it was well equipped, the recovery facilities were minimal and children had to recover in the chair. Latterly, thanks to the Anaesthetic Nurse service set up by Dr Iain Gray, we have had skilled assistance. The other site for Dental outpatient work under GA was the Dental Hospital. Throughout the country the numbers of patients has dropped dramatically by 90% from a high of 1.5 million in 1955. Recent figures for the Dental Hospital (about 1100 per annum) show that this population is now almost exclusively children, a number of whom are pre-school age.

In the light of the Poswillo Report we decided that it would be wise to provide the best facilities which we could for these children, by opening a new out-patient facility - this week in fact - in an under-used clinic area in Ninewells, and discontinuing the GA sessions in the Dental Hospital.

Our Clinical and Academic Dental colleagues readily agreed to this move. Another advantage is that the Dental students will be instructed in Inhalation and IV Sedation techniques, à la Poswillo, in the Dental Hospital - a setting more akin to their own practice in the future. They will have to travel the three miles to Ninewells to observe the GA's for the children - hopefully making them realise how important this branch of paediatric anaesthesia is.

Much has been said recently about the inadequacies of Undergraduate Medical Education. The King's Fund Centre in 1990 enquired into the design of future undergraduate curricula, while at the same time, the Education Committee of the GMC began its discussions on the subject with the Medical Schools

There is widespread agreement that students are overloaded with facts which soon go out of date. There is too much learning by rote, the topics are often irrelevant, and the teaching methods are not always appropriate. There is a need to reduce the amount of material to be learnt, consistent with equipping the young doctor to serve in a recognised pre-registration post.

The recommendation now is for a core curriculum occupying about two thirds of the time, accompanied by special study modules where an interest of the student's own choice can be studied in depth. The core must be defined jointly between basic scientists and clinicians who have to agree on the essential components of the course. Since this is on the road to a Specialist Medical Training which will be shorter and more structured, as foreseen by Calman, the GMC feels that bodies like our Royal College should enter into the dialogue too. It is important to realise that better quality undergraduate teaching will make the con-

cept of seamless training so much more feasible. Self-directed learning will be encouraged along with appropriate assessment of progress.

The value of good teaching is soon to be assessed in all Medical Schools by the Scottish Higher Education Funding Council. The rating will be in addition to the current Research ratings.

After putting out several documents for discussion by Medical Schools, the GMC has recommended that the undergraduate curriculum has to enable the student to develop the core knowledge, the skills, and the attitudes to learning which will last a lifetime. The Core Curriculum in Dundee will require teaching in the first three years in particular, to be integrated both horizontally and vertically, by both the basic scientist and the clinician. It will also be system based. We will be teaching on eleven systems like Cardiovascular, Respiratory and Neurological, which will be taught in sequence, each system being allocated about four weeks. The theme of Emergency Care within these different systems has been co-ordinated by myself. This has meant the inclusion of a variety of topics from the management of hypoglycaemia in the Endocrine system to the elements of ATLS in the Musculo-skeletal system.

The basic clinical procedures have not been prescribed by the GMC so that schools can construct their own skills list in consultation with Postgraduate Deans, and with advice from bodies like our Royal College. Mention is made, however, of basic and advanced life support and venous access. In addition it is desired that all students become computer literate.

Recently, Ronald Harden, the Professor of Medical Education in Dundee has compared the integration required to a spiral. This will build continuity from one phase of the curriculum to another, and will foster inter-relationships among the disciplines within the same phase. As the student progresses to each new phase in the spiral, new information and skills will be introduced that are directly linked back to the information and skills from the previous phase.

Phase I includes contributions from anatomy, physiology and biochemistry, while there is a course in First Aid.

Phase II is a single integrated, systematic course using problem - based learning whenever possible. Phase III includes modular clinical attachments with study guides to encourage self-learning.

So where does Anaesthesia fit in?

Some years ago the then College published its views on the place of 'Academic Departments of Anaesthesia in Undergraduate Education' - referring to them as an undervalued resource. In our discussions with the University over the foundation of an Academic Department, Dr Bill Bisset and myself have found this a valuable weapon. Our hardest battle has been against the view, held by some, that Anaesthesia is, essentially, a post-graduate discipline. This is based to some extent on the 'Funded Teaching Equivalents' where we do badly because we teach individuals and not large laboratory classes daily. I believe, and increasingly so, that we have an important role to play in undergraduate education. I think too, that Academic Departments of Anaesthesia must play a full part in the life and work of the University.

There is not much difficulty in identifying the contents of a core for Anaesthesia: pre-operative assessment, fluid management, airway care, post-operative care, oxygen therapy, pain relief and regular practice and assessment of CPR skills.

My mind was concentrated on how best to deliver this programme by the University Academic Standards committee. A remit of this committee is to provide quality assurance procedures in respect of teaching and learning. Their requirements include the need to provide written aims and objectives of the course, to receive feedback from the student, to review teaching methods, and to ensure that staffing resources are adequate. The clinical teaching had been organised extremely well and efficiently for some years by Dr Farquhar Hamilton so there was no difficulty in deciding to guide the learning with a Workbook - a device used by other Anaesthetic Departments as well. I was given helpful advice by the

Department of Medical Education about the layout of the content. I look on the workbook as a dialogue really, between ourselves and the fourth year students as Surgical House Officers. Ten objectives were written down as required, and included; being able to prepare a patient for surgery, know the objectives of pre-medication, maintain the airway of an unconscious patient, know how to give oxygen, and how to relieve post-operative pain. The initial feedback from the students told us that the workbook was too long and that they would like more one-to-one teaching. We responded by introducing a problem-solving approach to the section on pre-operative assessment, and by arranging two mornings per week of attachment to one anaesthetist.

As an educational strategy Professor Harden proposed his mnemonic SPICES model.

STUDENT CENTRED: the students take on much of the responsibility for their tasks which shifts the focus on to the learner and away from the teacher. In McMaster University in Canada students learn in small groups with a member of staff available for advice. By shifting the emphasis from what is taught to what is learned, motivation and increased learning are enhanced. This should also be a good preparation for continuing learning.

PROBLEM ORIENTATION: provides a framework for teaching and learning. Coles believes that this also encourages deeper learning and understanding of underlying principles rather than just memorising. The student can be presented with a real clinical situation and explore various topics. This approach fits in well with an integrated approach and with self-directed learning programmes where students choose the problem to tackle.

INTEGRATED: no specialty is more integrative than ours, pulling together physiology and pharmacology in an applied way. Hopefully in the new curriculum the application of the oxygen dissociation curve to patient care, will be less of a mystery!

COMMUNITY: way of teaching general medicine in the community .

ELECTIVES: in Anaesthesia are an extremely valuable way of developing skills and confidence. I had an elective student in her final year who wrote in the introduction to her report that prior to coming to us she felt quite alarmed at the prospect of having to deal with certain acute situations in August. On the outside cover of the folder she wrote, ' I am doing a locum at the moment and am infinitely more competent than two months ago.'

SYSTEMATIC: teaching in systems as referred to before.

We updated the workbook by introducing four typical case scenarios to illustrate pre-operative assessment, intercurrent medical disease and concurrent drug therapy: viz.- Patients with, respectively, ischaemic heart disease , insulin dependent diabetes mellitus, chronic obstructive airways disease, and an acute intestinal obstruction. We stressed the need to be more selective regarding pre-operative investigations so that unnecessary tests were not done. Risk factors were presented, and selection had to be made from a list of possible complications, with assignment to the correct management category. Continuation or otherwise of current medications was presented.

The GMC are also keen that learning be more student centred and problem oriented , while use should be made of up- to- date technology, particularly in self-directed learning.

Dedicated Skillslabs are less familiar to us. The University of Limburg in Maastricht, of Treaty fame, has used the educational insights of McMaster to develop problem -based learning in their ultra-modern Skillslab. The Skillslab is useful for teaching physical examination, basic laboratory procedures, skills of communication and therapeutic skills like basic life support. Use can be made of a variety of teaching devices - anatomic models, videos, computer programmes and simulated patients. As day care facilities

increase there will be fewer in-patients for students to see , and the skillslab will have a definite place in teaching for the early years

The University Funding Council has introduced a Teaching and Learning Technology Initiative designed to make teaching and learning more productive and efficient by using modern technology. Forty three projects are underway through out the country. The four Scottish schools plus Belfast and Liverpool , are in a consortium utilising the computer in daily teaching and learning. Of course Computer Assisted Learning is not new to Anaesthesia - Sir Donald Cambell's department in Glasgow pioneering its use back in the 1970's. Dundee is the lead centre and is using the computer as a Log book of clinical experience and tasks accomplished, as a time table, as a data base, and for word-processing In addition the computer is being used as a Study guide.

The study guide is about process: it is an electronic tutor really, guiding and prompting what should be learned and showing the learning opportunities for doing so. We have just completed our Study Guide for Anaesthesia and I must acknowledge the help given me by Dr Willie McClymont our most recently appointed Consultant - not least for his 50 questions complete with explanatory answers - and Dr John Blicharski of Medical Education who is the computer expert. The study guide is designed to be used alongside the workbook. Study guides on other subjects will be a feature of the self learning in the Clinical years.

Twelve personal computers have been issued initially, while further access will be available to the remainder through the campus network.

While it is possible for a student to become competent in basic CPR, it is more difficult for them to feel confident as JHO's in performing this procedure as Gillard et al. have noted in a survey of over 1000 pre-registration house officers in the Thames regions, comparing 1988-9 with 1992-3. Although there was an apparent increase in the adequacy of training in basic CPR, there was little change in the proportion who felt confident in per-

forming it. Confidence and competence in this activity do not always coincide. More adequate training may produce a rise in competence, but not remove anxiety about the procedure and thus house officers still lack confidence.

Both the GMC and the Scottish Health Service Advisory Group working party on CPR are concerned about medical student proficiency in CPR. The latter group criticised those in the later years of training for their lack of motivation and poor retention of skills. Lack of motivation does not apply to the Scottish Ambulance para-medical service which has made a very significant contribution to the early diagnosis and treatment of cardiac conditions. For the past four years Dr Melvin Thomson has been co-ordinating, most successfully, the para-medical training programme in association with Mr Gerry Kelly, the Tayside Divisional Training Officer of the Scottish Ambulance Service. There are now twenty para-medics in the service who, during their training learn to pass a minimum of twenty four endotracheal tubes on anaesthetised patients. In the past six months, 268 patients received extended skills, intravenous cannulae being sited in 95%, while 19% were intubated. Of 123 defibrillation attempts, 23% were successful. By far the most common reason for intubation by the para-medical service in the UK is cardiac collapse.

In March the British Heart Foundation published its Guidelines for the early management of patients with myocardial infarction and emphasised the importance of this early provision of basic and advanced life support. They also called for GP's to respond rapidly too and liaise with the para-medics to provide adequate analgesia, oxygen, aspirin, and nitrates. They should also have available adrenaline, atropine, lignocaine, frusemide, and naloxone.

David & Prior-Willard have just shown how unfamiliar a group of thirty SHO's & Registrars were with the European Resuscitation Council Guidelines - (29 neglected fundamental rules for the management of cardiac arrest). They were taking part in a Part II MRCP course in Reading and

were all active members of their own hospital cardiac arrest teams. Of course successful resuscitation is related to skill and experience with survival being better in specialised areas like CCU and ITU.

It is clear that CPR training at all levels must be effective, and the skills inherent in basic and advanced life support must be demonstrated repeatedly and assessed rigorously.

An excellent way of assessing these practical skills is to use the Objective Structured Clinical Examination (OSCE) which Harden pioneered in 1975. The aims of the test can be clearly defined, the variables can be controlled, and more knowledge can be tested compared to the conventional clinical examination. Candidates rotate around a series of stations at each of which they may perform a clinical task or answer questions on material provided. Assessors are present at each station to assess the candidate's performance using a standardised check list. Anaesthesia has had a station in our Surgical Final examination since 1986 by invitation from the Professor of Surgery. The themes are taken from CPR seminars which we share with the cardiologists, and lectures on pre-operative assessment, post-operative care, O₂ therapy, pain relief, shock and fluid management. The three assessors, who man one similar station at three different sites simultaneously, prepare meticulously so that they know what they expect of the candidate. The lay-out of the station is planned in detail to be objective, and on occasion, dummy runs have been made on the trainees! It is interesting that the marks obtained in the Anaesthetic station are a good predictor of how a candidate will do overall.

In their preparations for the FRCA part III OSCE, Professor David Hatch came to observe our exam. The four groupings upon which the part III OSCE will be based include, clinical assessment (history and physical examination), data interpretation, communication, and technical skills, including CPR.

Dr Hewitt writing in the March Royal College

Newsletter said that one of the disadvantages of this new system would be the absence of the wonderful characters who were the clinical material of past years! I remember being grateful for not being examined in the final FFA on a poor soul who was diabetic, tabetic and who breathed through a tracheostomy!

Teaching of our trainees and students is part of our ethic, and many of us enjoy it, but few of us have received any formal training in teaching methods. In her book on 'Medical Education', Stella Lowrie remarks that teaching must be seen to be important and that staff should be helped to teach as effectively as possible. Staff development courses in teaching techniques are now available. The Centre for Medical Education in Dundee runs two distance learning courses, one for the Certificate in Medical Education, and the other for the Diploma. Included in the syllabus are teaching methods, learning and assessment. At the moment we have one Senior Registrar completing the CME course. This professional approach should help to raise the standard of teaching.

And now we have reached the top of the spiral - the pre-registration house officer. How successful is our product? All had learned to work hard and cope with stress. They enjoyed the responsibility and the wealth of experience and had become more proficient. Calman and Donaldson have looked closely at this initial step in postgraduate training. Using a critical incident study, which looked into the tasks associated with being a pre-registration house officer and identified where the job was well done or was associated with special difficulty, they interviewed a group of thirty house officers in the West of Scotland along with other doctors and nurses, and uncovered a very rich source of data. Some house officers were deficient in basic clinical skills and in practical procedures. By the end of the year they were all fully trained in such practices but their early months could have been made easier by additional training in the under graduate course. This applied too to communication skills and being able to cope with the dying patient and their relatives.

Finally, the results of a postal survey of 92 graduates from Dundee who completed their pre-registration training year between August 1992 and July 1993 are presented. Twenty eight different topics were raised. Apart from the excellence of the library facilities, the highest ratings of satisfaction (out of 5) were given to pain relief - for Ninewells Surgical Units this rose to 4.84. Why was Pain so good?: basically because we involve the JHO from the induction day by a personal approach from the Consultant members and the nursing Sister attached to the Acute Pain team who keep them well informed and instructed throughout.

Calman too, noted that feed-back on performance was essential, and that too little time was devoted to formal education. The survey also showed that there was not enough work experience of anaesthesia and surgery, and not enough experience of endotracheal intubation. Roberts on behalf of the Council of Deans of UK Medical Schools stated recently that a radical improvement in the pre-registration year is required, and Calman calls for urgent educational innovation. If resources permitted would a rotation through Anaesthesia, perhaps during the Surgical house post be beneficial?

Last year Scotland received £92 million as its allocation of funds for the Additional Cost of Teaching. This ACT money was introduced originally to ensure that facilities were available for teaching undergraduates and for supporting clinical research. After several years of negotiation our proposed new Academic department has been financed by the Dundee Teaching Hospitals Trust in association with the University of Dundee - an excellent and tangible way for some of this ACT money to be invested. I am sure that this new Department will fulfil the requirement to teach both medical and dental undergraduates, influence our trainees and to further research in the specialty. We look forward to the presence the Professor will bring to the whole Department and to the University. The standing of Anaesthesia in Scotland and beyond will be enhanced, because Anaesthesia matters!

MACINTOSH: FROM TIMARU TO TIMBUKTU

SIR KEITH SYKES



Most anaesthetists of the current generation will associate Macintosh with the curved laryngoscope blade which bears his name; others will have read his books on physics or regional analgesia. However, there will be many who know little about his early life and the immense range of his contributions to anaesthesia. I am delighted therefore to have this opportunity to tell you something about this very remarkable man. Since Sir Robert Macintosh was the first Nuffield Professor of Anaesthetics at the University of Oxford, and that this chair resulted directly from the foresight of Lord Nuffield, it is appropriate that I should first say a few words about Nuffield and his many benefactions to medicine.

Lord Nuffield, William Richard Morris, was born in Worcester on the 10th of October 1887. However, both his parents came from Oxfordshire, and they moved back to Oxford around 1880. He left the local church school in Cowley, on the outskirts of Oxford, at the age of 14, and was apprenticed to a bicycle repairer. Within nine months he had realised that he could make more money by working for himself, so he set up his own repair business in a shed in his parents' back garden. Within a few months he had

taken over the front room of their house as a showroom and shop. He started building bicycles and made the first one to the order of a rather large local vicar, who used it to make daily progress around his parish. The strength of the 27-inch frame obviously impressed potential customers and he soon had a full order book. He gained additional publicity by competing in local cycle races and by 1901 he was the cycling champion of Oxfordshire, Berkshire and Buckinghamshire. His many trophies are still displayed in his Cowley office, now a museum, and close by are tins of medicinal pills and bicarbonate of soda - Morris's favourite remedy for all ailments. The cycle business expanded rapidly and, in 1901, he obtained a contract to repair all the bicycles used by the Oxford Post Office telegraph boys, and moved into premises in the High Street. His mechanical expertise was much in demand when the first motor-cycles and cars appeared in Oxford, and he soon created a thriving car sales and repair business. This was accommodated in the old livery stables in Longwall Street, where one can still see an example of the bull-nose radiator which characterised the early Morris cars. Within a short time he had switched to the assembly of cars from bought-in parts, the first two-seater Morris car being advertised at the 1912 Motor Show, though the first model was not actually produced until 1913. The cars were assembled in a disused military academy which he had purchased in Cowley. In 1913 he sold 393 Morris Oxford cars at a price of £175 each, and in the next year 909 cars were sold. The Cowley works were then switched to the manufacture of shell cases and mine sinkers for the duration of the war. After the war there was huge expansion of the manufacturing facilities at Cowley, and by 1925 he had broken the monopoly of the model T Ford and was selling over 50,000 cars annually. In 1927 Morris turned down an offer of 11 millions pounds from General Motors, when they tried to purchase the business.

Morris was very much a loner and, whilst loyal to his workforce, often bore a grudge against institutions. At the beginning of the century he had had a brief but disastrous commercial partnership with a rich undergraduate which set him against the University, and for many years he would not employ graduates in his organisation. He also had many battles with the city council over their refusal to update the old horse-drawn bus service. Eventually, he started a rival motor bus service which he then sold to the council. He twice refused the Freedom of the City and only accepted it when the original members who opposed him over the buses issue had retired. Morris was always interested in social problems and in medicine, and in 1926 he gave £10,000 to enable parents to visit their children in Borstal institutions. In the same year he gave a similar sum to Oxford University to found the King Alphonso XIII Chair of Spanish Studies, since British exports to Spain and South America were being hindered by a lack of knowledge of the language. These benefactions were soon followed by donations to hospitals in Birmingham, and Coventry (where he had factories) and St Thomas's Hospital in London. In the 1930's he made donations for the rebuilding of the Oxford orthopaedic hospital (which became the Wingfield-Morris Orthopaedic Hospital) and the Radcliffe Infirmary. He also provided further funds for the purchase of the old University Observatory site, part of which was later used for the expansion of the Radcliffe Infirmary. The Observatory itself was used to house the Nuffield Institute of Medical Research, and has now become part of Green College.

Morris's main recreation was golf, and in 1927 he purchased Huntercombe Golf Club, a rather exclusive club near Henley, which had got into financial difficulties. This soon became his second home. Initially, he lived in a flat in the clubhouse, then built a cottage in the grounds, and later purchased a small manor house in the village of Nuffield nearby. It was the name of this village which provided the title when he became a baron in 1934. A number of consultants from Guy's hospital and their wives frequented this club, and Macintosh and his wife Marjorie were amongst

them. Dr and Mrs Macintosh appear to have been particularly friendly with Morris and his wife, for there is a picture of them on the dressing table in the bedroom of Nuffield's house at Huntercombe. Morris often used to dine at the common table at the golf club, and used to discuss possible medical benefactions with the Guy's consultants. In 1936, Nuffield listened to a speech by Sir Farquhar Buzzard, Regius Professor of Medicine, which had been given at the Annual BMA meeting in Oxford. Buzzard had put forward the idea of a post-graduate medical school in Oxford, a concept which mirrored Nuffield's own ideas. Shortly after this meeting, when Nuffield met his medical friends over dinner at the golf club, he announced that he proposed to donate money to Oxford University to establish a post-graduate medical school with chairs of medicine, surgery and obstetrics and gynaecology. Macintosh casually joked that anaesthetics had been left out again. Little further was said at the time but doubtless Nuffield would have recalled the difference between his own early experiences of nitrous oxide given by his dentist, and the much more pleasant experience of an intravenous anaesthetic given by Macintosh. Whatever the stimulus, Nuffield decided to add a chair of anaesthetics to his benefaction. The University claimed that anaesthesia could not be considered an academic subject and proposed that the post should be downgraded to a Readership. Nuffield is quoted as saying that he was aware of the problem and recognised that it would take three generations before the subject could attain scientific credulity. Finally, the University relented, and not only created the chair, but also appointed Macintosh to it. Subsequently, Nuffield increased his benefaction from 1.25 to 2 million pounds. The postgraduate school was founded but was almost immediately overtaken by the exigencies of war, which resulted in many clinical students being evacuated to Oxford for clinical training. This ultimately led to the large clinical medical school which we have today. However, Macintosh believed that this development was contrary to Nuffield's wishes, and as a mark of protest, never wore a gown on University occasions. Such was his loyalty to Nuffield!

So who was Macintosh? He was a New Zealander born at Timaru, a small town situated between Christchurch and Dunedin in the South Island, on the 17th of October 1897. He was thus ten years younger than Nuffield. His father was Charles Nicholson Macintosh who played in the first New Zealand rugby team to tour Australia in 1893, and was mayor of Timaru in 1901 and 1902. Shortly afterwards the family emigrated to South America where Macintosh senior edited a newspaper and speculated in land. Macintosh's father, brother and sister remained in South America, but Macintosh returned to New Zealand with his mother when he was thirteen years old. His mother died shortly after their return, and he was sent to Waitaki Boys' High School where he shone academically and athletically, and was Head of School. In December 1915 he sailed to England and was commissioned in the Royal Scots Fusiliers. After a short period in France he was transferred to the Royal Flying Corps, for which he had originally volunteered. He was mentioned in dispatches but was shot down by the German ace Paul Strahle on the 22nd of May 1917. He was not injured and managed to blow up his plane before being taken prisoner. There followed a remarkable series of escapes from various prisoner-of-war camps (which have been documented in HE Harvey's book *Cagebirds*), but he never succeeded in getting out of Germany.

After the war Macintosh entered Guy's Hospital Medical School, qualifying MRCS, LRCP in 1924. He initially trained as a surgeon, obtaining the Edinburgh FRCS in 1927, but found that his skills as a dental anaesthetist were much in demand, and soon built up a lucrative Harley Street practice with WS O'Connell, later senior anaesthetist at Guy's hospital, and Bernard Johnson, later senior anaesthetist at the Middlesex Hospital. The group were highly organised, each doctor being assisted by a technician who set up the apparatus and assisted the anaesthetist in the dental surgery or nursing home. One of these men was Richard Salt who became the chief workshop technician at Oxford, and subsequently played a major role in the development of the curved blade of the Macintosh laryngoscope, the various

Oxford vaporisers, single and double lumen tracheal tubes and countless other devices. Not surprisingly, the anaesthetists competing with this practice were inspired by the lorries of the *Mayfair Gas, Light and Coke Company* to rechristen the group the *Mayfair Gas, Fight and Choke Company*.

In the 1930's there were very few full-time specialists in anaesthesia, and none had received any formal training. Macintosh was in a similar position and had the additional disadvantage that he was not on the staff of a London Teaching Hospital. (This also had the effect of debarring him from the award of the DA without examination, and it is typical that he and Freda Pratt, his first assistant, should take and pass the examination just before the war!) Although he had visited a number of American departments and had spent a short period in Ralph Waters' department in Madison, Wisconsin in 1935 he always said that he felt quite unfitted to take the chair. Indeed, he arranged to keep his place in the partnership open for a year, so that he could return if he was not successful in Oxford. However, Macintosh's initial requests to the Nuffield Committee show that he had some clear ideas about the future running of the department. Amongst his requests were salaries for two anaesthetic nurses. Whilst nurse anaesthetists were commonly employed to give anaesthetics in the United States, the idea of employing nurses specifically to help the anaesthetist was utterly new. The scheme proved a great success and within two years the two original holders of these posts were recommending the role of anaesthetic sisters to their colleagues in the nursing profession. However, the concept did not become fully established until after the war.

Shortly after being appointed in February 1937, Macintosh visited some of the major teaching hospitals in London and the provinces. He then spent some weeks travelling in the United States with W Stanley Sykes, a consultant anaesthetist from Leeds who retired from practice to become a medical historian. Amongst others, they visited Waters in Madison, Clement in Toledo and Rovenstine in

New York. Macintosh then returned to Oxford and began to recruit basic scientists to help him initiate research. He also accepted an invitation to travel to Spain and anaesthetise for Eastman Sheehan, an American plastic surgeon who had volunteered to treat the wounded in the Spanish civil war. Macintosh spent six weeks in northern Spain and so gained first hand experience of working under wartime conditions with very primitive equipment. The only vaporiser available was the Ombredanne (a French version of Clover's inhaler) so Macintosh utilised a Flagg's can - a tin can with holes in the lid for ingress of air and a piece of rubber tubing leading from the neck of the can to the tracheal tube. The can contained ether, the concentration of vapour being controlled by shaking the can and applying warmth with the hand. This experience convinced him that there was a need for a simple, portable vaporiser which would deliver known concentration of ether when used under field conditions. When he returned to Oxford he invoked the aid of physicists in the Clarendon Physics Laboratory and together they produced the prototype Oxford Vaporiser No 1. Between 1941 and 1945 over four thousand of these vaporisers were produced in Lord Nuffield's Morris car factory in Oxford, many being used in the services and later in underdeveloped countries. This vaporiser was the first of many similar devices developed by the department, the latest of which was used in the Falklands war.

Another initiative which dated from 1938 was the provision of tank ventilators for the treatment of patients with paralytic poliomyelitis. Nuffield became concerned with the shortage of apparatus for treating patients with respiratory paralysis, which was such a common complication in the prevalent polio epidemics, and asked Macintosh to advise. Dr CLG Pratt, a physiologist in the department, produced a film which reviewed all the apparatus then available, and this was shown to Nuffield. Nuffield then offered to provide a tank ventilator for every hospital in the Commonwealth who requested one. Fortunately, an Australian

engineer called Both, who had designed a simple fibre-board version of the Drinker iron lung was in England having discussion with the Ministry of Health, and Nuffield was able to utilise this design. By 1947 over 1750 Both ventilators had been produced at Cowley, 450 of these having been delivered to British hospitals. The Nuffield department accepted responsibility for training medical and nursing staff in the use of these machines, and in the five years after its introduction the Both ventilator was used to support respiration in patients with snakebite poisoning, diphtheritic diaphragmatic paralysis and barbiturate poisoning as well as poliomyelitis. In 1940 Macintosh used the device to support ventilation in two patients who were given large doses of morphine to relieve post-operative pain. However, as he later commented - the idea did not catch on since neither the patient nor the surgeon liked the idea of a patient waking up in a coffin!

During the second world war Macintosh became an Air Commodore in the Royal Air Force with responsibility for anaesthetic services, but he retained his Oxford connections. The department ran many two week courses for anaesthetists and was also involved in hazardous physiological research into the provision of respirable atmospheres in submarines, survival during parachute descent from high altitudes, the testing of life-jackets and the measurement of the efficiency of various methods of artificial ventilation. The reports of some of these experiments are hair-raising. Descent from high altitudes was simulated by the breathing of low concentrations of oxygen (2% for the first minute and increase of 1% concentration in each successive minute) to mimic a parachute descent at the rate of 2000 feet per minute. As Macintosh recorded 'by the end of the third minute the condition of the patient is grave. He has passed being blue - he is grey, sweating, twitching horribly and gasping'. The volunteers were later suspended from a parachute harness at the same time to ensure that the chest compression produced by the harness did not affect the results. These experiments showed that survival was unlikely if jumps were made above an altitude of

40,000 feet without oxygen.

The life-jacket experiments were initiated by Edgar Pask, who had spent a brief time as an anaesthetist in the department and had then joined the RAF as a physiologist. He had been seconded to the rescue boats which picked up airmen who had bailed out over the North Sea. He found that the life-jacket then used caused the unconscious airman to float face down so that they drowned. At that time there were no accurate anthropometric models with the appropriate weight and buoyancy which could be used for such tests, so Pask asked Macintosh to render him unconscious with a deep ether anaesthetic so that he could be thrown into a swimming bath to test alternative designs. In the second set of experiments conditions were made even more realistic by carrying out the tests in a film studio tank with a wave-making machine. Pask was also one of the subjects who was anaesthetised with ether to the point of respiratory arrest to measure the effectiveness of different types of artificial ventilation and was later one of the first volunteers to receive curare for a similar investigation. Pask was awarded the OBE for his wartime activities.

Macintosh's modesty and keen interest in his staff induced great personal loyalty. He had immense personal courage and did not hesitate to confront his colleagues over a matter of principle. One of the battles he fought in the forties was concerned with the relatively high mortality associated with anaesthesia. At that time the cause of death was often attributed to 'Status Lymphaticus' or some other euphemism when, in reality, it was due to hypoxia or other error in anaesthetic technique. He collected many press cuttings concerned with anaesthetic accidents and was one of the first to press for an enquiry into the causes of death under anaesthesia. A letter to the Association of Anaesthetists in 1944 initially met with a negative response, but eventually Council of the Association set up an enquiry, the first findings of which were published in 1956. This was a landmark publication which stimulated a much more open approach to the problem of anaesthetic acci-

dents.

Throughout his time in Oxford, Macintosh was closely involved in day-to-day work in the operating theatre and in teaching. He did not consider it necessary to visit the patient before operation and relished the difficult anaesthetic problem. He could also be perverse. I remember Sir John Stallworthy telling me about one of these encounters. Apparently Stallworthy was pioneering the use of radiotherapy before, instead of after, hysterectomy, and Macintosh had agreed that he would provide a spinal anaesthetic to diminish bleeding whenever Stallworthy carried out one of these operations. There came the day when Stallworthy had arranged to demonstrate the technique before a distinguished group of visitors. There was an even longer delay than usual before the patients was wheeled in by Macintosh and, when he did so, Stallworthy saw that she was breathing from the Oxford vaporiser. Stallworthy said: *All I could do was to take my gloves off and walk out.* Apparently neither he nor Macintosh ever discussed the event.

Macintosh had also been active in the field of publication. His first book 'Essentials of General Anaesthesia', written with Freda Bannister, had been published in 1940, and his second 'Local analgesia: brachial plexus' (written with WW Mushin) had been published in 1944. 'Physics for the Anaesthetist' followed in 1946. Other books on local and regional analgesia were published during the ensuing ten years and all ran to many editions. It was, therefore, not surprising that Macintosh received a large number of invitations to lecture overseas. Despite incessant pressure from Macintosh, the University had not honoured its promise to provide appropriate space for the anaesthetic department and so, feeling that he could not produce further developments at home, Macintosh accepted the invitations. He preached the value of simplicity in anaesthesia and travelled the world demonstrating simple but safe anaesthetic techniques based on the Oxford vaporiser and inflating bellows, which could be used in any type of environment. These tours had an enor-

mous impact on the standard of anaesthesia in many developed and underdeveloped countries, and there are few senior anaesthetists who have not, at some time, come under his influence. These travels spread the reputation of Oxford abroad and resulted in a vast circle of friends who regularly made the pilgrimage to this country to visit him.

Finally, I must mention his role in the development of academic anaesthesia world-wide. The first chair in anaesthesia to be endowed was the Henry Isaiah Dorr chair in Boston. However, although the chair was endowed in 1917, and Henry K Beecher was appointed to head the department in 1936, he was not appointed professor until 1941. Waters was head of an independent department in Madison, Wisconsin but it seems that this position was not funded by the University when Macintosh was appointed. Macintosh greatly liked and admired Waters, and always referred to the Oxford chair as being the first in the British Commonwealth, and not the first in the world. However, he did his utmost to further the academic development of our subject wherever he went. His assistant, EA Pask was appointed to a Readership in the University of Durham (now Newcastle) in 1947 and was given a personal chair in 1949. His other assistant, WW Mushin, became Director of the department in Cardiff in 1947 and Professor in 1953. Chairs in Groningen (Holland), Aarhus (Denmark), Louvain (Belgium) and Mainz (Germany) were also created around this time. Many of the anaesthetists appointed to these chairs had received part of their training in Oxford. Since that time many academic departments have been created throughout the world, many undoubtedly inspired by the Oxford example.

Macintosh was a quiet and extremely modest person, who provided immense personal support for his staff. He was a good judge of a person's ability and very loyal to those privileged to enter his circle. However, he was a strict disciplinarian and had enormous determination. He had a soft voice, but spoke with extreme precision and a telling

phrase. He rarely spoke about himself, but was always interested in the doings of others, and quizzed dinner companions relentlessly but kindly. He was a skilled boxer in his youth, learnt to ski in his sixties, continued to take a keen interest in sport throughout his life, and remained mentally and physically active in retirement. He was knighted in 1955 and received many other distinctions including honorary Doctorates of the Universities of Wales, Buenos Aires Aix-Marseilles, Poznan and the Medical College of Ohio and Honorary Fellowships of the Royal College of Surgeons, Royal College of Obstetricians and Gynaecologists, Royal Society of Medicine and the English, Irish and Australasian Faculties of Anaesthesia.

Macintosh's name will always be associated with the laryngoscope blade, now used almost universally throughout the world, and with the superbly illustrated texts on anaesthesia, physics and spinal analgesia. However, his major contribution to anaesthesia was the development of the academic approach to anaesthesia. He believed that there is not a single answer to a given problem, but that each problem should be considered in the light of available evidence. He always encouraged free discussion between colleagues, and if he was convinced by an argument, he would revise his practice. He was a dedicated teacher and his thinking has influenced generations of anaesthetist throughout the world. His personal interventions did much to encourage the foundation of academic departments in Europe and other countries, and his own distinction did much to improve the status of the anaesthetist during his lifetime. However, in one of our last conversations Macintosh expressed a secret disappointment: although he had visited most of the major countries in the world, he had never been to Timbuktu. So when I received your kind invitation, there was only one possible title - From Timaru to Timbuktu.

At the age of 91, Macintosh was walking his dog and suffered a fall. He died in the Radcliffe Infirmary, Oxford on the 28th of August 1989.

Registrars Prize Essay Competition - First Prize

THE DESIGN AND CONSTRUCTION OF THE OESOPHAGEAL STETHOSCOPE TRANSDUCER - A MONITOR AND TEACHING AID

Clifford N. Barthram



The oesophageal stethoscope has been described in the *Textbook of Anaesthesia* as one of the most useful pieces of monitoring equipment and as perhaps *the* most useful in paediatric anaesthesia. It provides direct and unprocessed information on the respiratory and cardiovascular system of the anaesthetist's patient. It is relatively simple to place, non-invasive, robust, and safe. Despite these apparent good points, the oesophageal stethoscope is hampered by the interface with the anaesthetists ears.

The usual practice in Ninewells Hospital was to connect the oesophageal stethoscope to the sprung ear pieces of a conventional stethoscope such as the Littman. This has important disadvantages. Conventional ear pieces are unsuitable for more than a few minutes use as they rapidly become painful to the ears. If conventional ear pieces are worn in both ears the anaesthetist is deprived of other useful information from his/her surroundings such as pulse oximeter tone, monitor alarms, and communication with staff. Moulded ear pieces as used in hearing aids are a solution to the dis-

comfort problem, but they need to be made individually. Teaching of junior staff and medical students is an every day occurrence in our hospital as with many others. For both conventional and moulded ear pieces there is no facility for a second observer to listen in for teaching purposes. Nor is the recording of heart and breath sounds to audiotape practical with this set-up.

Electronically transducing the oesophageal stethoscope and relaying the signals via lightweight head-phones solves all the above problems. Lightweight head phones similar to those used in "Walkman" type cassette players are comfortable enough to wear for several hours. They are acoustically transparent allowing other equipment and conversation to be heard at the same time as the heart and breath sounds.

Transducing the oesophageal stethoscope has been described in the past by modifying equipment designed for other purposes, one of which deliberately distorted the signal. Other systems are available commercially which involve VHF telemetry, but these are very expensive. D.I.Y FM wireless systems have been described but these are relatively expensive and provide an unnecessarily complex solution to a simple problem. The system described here is constructed from readily available materials using techniques familiar to a hobbyist and certainly well within the capabilities of hospital electronic engineering departments.

Performance Targets

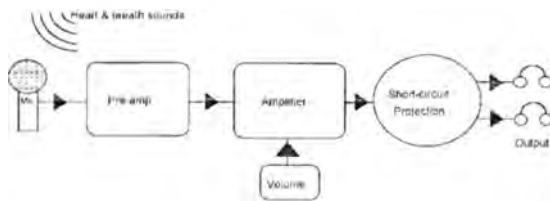
In order for the system to be of practical use and survive in the harsh environment of an operating theatre it had to fulfil the following characteristics.

- Safe for both anaesthetist and patient i.e. comply with or better British Standard 5724.
- Portable.
- Compatible with existing oesophageal stethoscopes.
- Provide an undistorted and interference free output.
- Physically robust.
- Provide output for two head phones.
- Provide a signal for a tape recorder.
- Provide adequate battery life.
- Be of low cost to construct and maintain.

Circuit Description

In all, three basic circuit designs were constructed and tested before the final circuit was adopted for the working prototype. A single chip design based around a low cost operational amplifier, and a combination of discrete transistor and amplifier chip design were unsuitable. The final circuit is a two chip design using a pre-amplifier stage and a monolithic power amplifier chip. It is soldered onto single sided vero-board, which is cheap and available from most electronic retailers. The monolithic power amplifier chip has a maximum power output of 1.2W which is more than adequate for this application. The input feeds from a subminiature condenser microphone connected to the oesophageal or precordial stethoscope. Output, which can be adjusted with the volume control, is via two 3.5mm jack sockets to the headphones or tape recorder. The circuit has built in short circuit protection. The device is powered by a small 9V alkaline battery (PP3 size). In normal theatre use the battery life is in excess of 36 continuous hours.

Stethoscope Transducer Block Diagram



Physical Construction

The Case

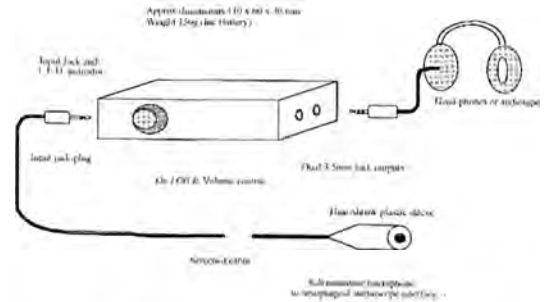
The amplifier and battery are housed in a tough dust proof ABS plastic box. Externally the case features an on/off/volume knob, an indicator light emitting diode, two output sockets, and one input socket.

The Microphone

The subminiature microphone is encapsulated in a tough plastic closed cylinder. A precision drilled hole at one end acts as the female connector to the oesophageal stethoscope. It was found during tests that it is essential to have a gas tight seal

between the microphone, its plastic housing, and the oesophageal stethoscope. This is important to allow maximal transmission of sound from the stethoscope to the microphone whilst minimising extraneous sounds. Heat-shrink plastic technology is now available in electronic and DIY shops. We used this to seal the back of the microphone housing to its pick-up cable.

Oesophageal Stethoscope Transducer



Use of the oesophageal stethoscope transducer in theatre

Lightweight headphones are particularly suited to this monitor. Binaural delivery of sound gives the impression of "depth". At the same time communication with colleagues in theatre and listening to other equipment such as the pulse oximeter beep is easily achieved. This unit was originally tested with 15 anaesthetists of varying grades and their comments invited. Since then it has been used by many more. All users found the device simple and intuitive to use. The lightweight headphones were found to provide a degree of comfort not usually associated with the oesophageal stethoscope. All users found reproduction as clear as the unaided oesophageal stethoscope and found the ability to vary the volume useful. The ability to plug in a second set of headphones for teaching purposes was found to be a valuable facility. The device performed equally well with a precordial stethoscope attachment. No interference from diathermy or any other equipment was apparent during testing.

In conclusion this simple add-on for the oesophageal stethoscope makes it a much more versatile piece of monitoring and teaching equipment. The device is easy to build and can be constructed for around £20. Further evaluation of the device continues.

REGISTRARS' MEETING EDINBURGH - 4TH JUNE 1993

The Annual Registrar's Meeting was held at the Southern General Hospital, Glasgow on the 3rd of June 1994. The meeting was opened by the President, Dr Forrest and a varied programme was presented.

Regional Anaesthesia in Peripheral Vascular Disease Dr JAW Wildsmith, Royal Infirmary of Edinburgh

Development of peripheral vascular surgery has been one of the major advances to take place in medicine over the last ten to fifteen years. In the UK the speciality encompasses surgery to those components of the arterial and venous trees that lie outwith the thoracic cavity, although it is likely that the management of thoraco-abdominal aneurysms will be by 'peripheral' vascular surgeons in the future. Currently though, this is an operation performed rarely in this country and the work of the Vascular Surgery Unit in Edinburgh comprises surgery for infra-renal aortic aneurysms, renal artery stenosis, occlusive arterial disease of the lower limbs, varicose veins and finally the creation of arterio-venous fistulae for dialysis access. Developments in thrombolysis and per-cutaneous angioplasty have meant that many of the more straightforward patients are managed without the need for surgery, but other patients have taken their place on operating lists. Much more distal procedures are being performed for lower limb revascularisation, particularly in diabetics, and the demonstration that surgery is the best option for a patient with a greater than 70% stenosis of the carotid artery has resulted in a significant increase in the performance of carotid endarterectomy.

Many of the procedures undertaken are thus major in scope, can be prolonged in duration and involve patients with significant intercurrent disease. Regional anaesthesia has much to offer the patient with ischaemic heart disease, respiratory disease and diabetes and there is an increasing body of evidence which shows that proper employment of regional techniques can decrease morbidity and

mortality. Perhaps even more dramatic (and less easy to dispute) is the fact that the use of continuous epidural analgesia after abdominal procedures in these patients can significantly decrease the cost of hospital stay. Balanced against this must be a recognition that the use of regional anaesthesia in these patients requires experience, care and attention to detail, a committed approach and a whole 'team' that recognises how the patient who has had regional anaesthesia/analgesia is different from a patient who has had general anaesthetic. Drugs that interfere with coagulation are used widely in these patients and it is essential that clear policies are employed to ensure patient safety.

Perhaps the greatest challenge in this area is the management of anaesthesia for carotid endarterectomy. It is a relatively 'small' operation, yet an adverse outcome can be truly catastrophic for the patient. They tend to be amongst the more severe arteriopathies, have very labile blood pressures and the operation severely restricts anaesthetic 'access' to the patient. Understanding and managing these aspects are more important than detailed knowledge of the more obscure factors controlling cerebral oxygenation and metabolism. The influence of anaesthesia on cerebral blood flow pales into insignificance compared to the potential effects of clamping the carotid artery. Superficially, it would seem fairly simple to perform this operation under local or regional anaesthesia, but this is not the preference even of this enthusiast for such methods. Most reports of large numbers of carotid endarterectomy performed under local describe a very high incidence of having to induce general anaesthesia during the procedure to 'control' the patient and this is felt to be unacceptable. A superficial cervical plexus block helps smooth out the procedure but it is an almost incidental component of the technique.

In this environment dealing with varicose vein patients brings some light (and ASA 1) relief! Most anaesthetists would probably employ general anaesthesia for such surgery, but I believe that spinal and epidurals have a lot to offer these patients, especially with the increasing pressure to manage them as day cases.

Update on neuromuscular transmission and its pharmacology

Professor WC Bowman,
Strathclyde University

The process of neuromuscular transmission is conceptually simple, the main basic events having been established and widely accepted for more than forty years. The neurotransmitter acetylcholine is synthesised within the nerve endings and stored in vesicles. A small, ineffective amount is continuously released spontaneously, mainly from the axoplasm but also from the vesicles. Vesicular release (but not axoplasmic release) is abruptly and greatly accelerated, through a calcium dependant mechanism, by the arrival of a nerve impulse at the nerve endings. The released acetylcholine diffuses across the narrow junctional cleft and combines fleetingly with the nicotinic acetylcholine receptors on the postjunctional membrane of the motor end plate. The consequence is a localised depolarisation, the endplate potential, which initiates a propagating action potential that passes around the muscle fibre membrane to trigger the contractile mechanism. Although these basic tenets of the transmission process have been accepted for many years, important advances in detailed knowledge continue to be made through the accelerating developments of new skills and techniques, especially in the fields of molecular biology and electrophysiology. Much has been learned about the loading process by which acetylcholine is packed into vesicles, and the mechanism through which exocytosis of the transmitter occurs is being worked out. The possible roles of co-transmitters, such as ATP and CGRP are being defined. All of these presynaptic mechanisms are susceptible to drug action. At the postjunctional side, it is becoming clear that fast onset and offset of non depolarising block can be achieved only with drugs of low potency, thereby increasing the cost and possibility of unwanted side effects. The future of neuromuscular block may lie in short chain, biodegradable polypeptide molecules.

Spinal Cord Injuries

D Walker

Southern General Hospital, Glasgow

Each year more than one thousand people in the United Kingdom sustain a spinal cord injury;

whereas fifty years ago more than 90% of these patients would die within one year, that figure is now 2%. The prevalence of patients with spinal cord injury is therefore rising and is now about 1000 per million population. 80% of spinal cord injury patients are under 40 years old at the time of their injury.

Currently nothing can be done to reverse the effect of the primary injury. Medical intervention is directed at managing the complications of spinal cord injury and reducing the likelihood of secondary injury. Basic life support should commence at the site of injury followed by evacuation to hospital where appropriate examination and investigations can be instigated. High dose methylprednisolone treatment initiated within eight hours of injury has been shown to produce a small improvement in motor function but the clinical relevance of this improvement has been challenged. Anaesthetic considerations at this stage involve appreciation not only of the respiratory and cardiovascular consequences of spinal cord injury but also the effects on other body systems. There are also anaesthetic implications in the management of the patient with long standing spinal cord injury, notably the recognition and management of the phenomenon of autonomic hyperreflexia.

Regional anaesthesia for cataract surgery

Catherine Brydon,

Victoria Infirmary, Glasgow

An increasing proportion of cataract surgery is now being performed under regional anaesthesia. Since the majority of patients presenting for cataract surgery are elderly with multiple medical problems, the avoidance of a general anaesthetic should at least in theory reduce morbidity and mortality. The two most frequently employed regional techniques for cataract extraction are the traditional retrobulbar block and the newer peribulbar block. The advantages and disadvantages of each continues to be debated. However the peribulbar technique, employing two extra-conal injections, appears to be favoured by the increasing number of anaesthetists who are now performing regional blocks for cataract surgery. Theoretically it should be associated with fewer

complications. Anaesthetists are well equipped to perform these blocks provided they have some knowledge of orbital anatomy and the surgical requirements, adequate training and supervision and an awareness of the relative contraindications and potential complications.

Pre-operative assessment of patients for day surgery

SM Lloyd,
Southern General Hospital, Glasgow

In the future, up to sixty per cent of all surgery may be undertaken on a day case basis. Poor pre-operative assessment results in higher rates of cancellation and overnight admission, which is inconvenient for the patient and expensive in terms of health care resources. There are surgical, medical and social criteria for suitability for treatment as a day patient.

At the Southern General Hospital, a system of patient operated computerised history taking has been developed for the pre-operative anaesthetic assessment of patients in whom surgery under general anaesthesia as a day case is proposed. Patients answer questions using a touch sensitive screen and further information is entered by a nurse. Patients are designated, suitable or unsuitable for day case anaesthesia. A suggested list of investigations is produced and a printed summary of the history and investigations is placed in the patient's notes. The programme is based on a literature review and uses rules by which the decisions are made. An audit of 500 patients shows the system to be practical for use in the Day Unit and to be accurate in assessing suitability for day surgery.

Day case cystoscopy is a frequently performed procedure on patients who are often elderly and have co-existing medical problems. A questionnaire was sent to Consultant Anaesthetists in Scotland undertaking these lists to find out which patients they felt were suitable and which investigations should be requested. The results showed an extremely wide range of views.

The Role of Excitatory Amino Acids in Head Injury

Alison Wagstaff
Southern General Hospital, Glasgow

There is good evidence that much of the brain damage resulting from a head injury or an ischaemic insult is secondary damage and therefore possibly preventable. In recent years the biochemistry of cerebral ischaemia has become better understood, enabling the development of drugs that intervene in the chain of events which ultimately result in neuronal cell death.

Microdialysis of the brain around an ischaemic lesion, in both animals and man, has consistently shown high levels of extracellular glutamate for several hours, sometimes days. Extracellular glutamate is known to be neurotoxic. The best understood mechanism of its toxicity is via its action on the N-methyl-D-aspartate (NMDA) receptor. Glutamate, which is a neurotransmitter in the excitatory pathways, is normally released from presynaptic vesicles. It acts on the recognition site of the NMDA receptor opening the ion channel to sodium ions. When excessive amounts of glutamate are present in the synapse, the ion channel remains open for longer than normal and calcium is able to pass through the channel into the cell.

Drugs which block the action of glutamate have been undergoing phase 2 safety studies in Glasgow. The competitive antagonist prevents glutamate binding to its recognition site, so preventing the ion channel from opening. The non-competitive antagonist acts within the ion channel, physically preventing ions from passing through the channel.

None of the NMDA antagonists significantly reduces damage in animal models of global ischaemia. A sodium channel blocker, however, does appear to be more promising in this situation. It acts presynaptically, inhibiting glutamate release. Glutamate is known to act at sites other than the NMDA receptor, which are thought to play a more prominent role in damage occurring after global ischaemia. This drug is about to start its safety studies.

It will, unfortunately, be many months before it is established whether any of these drugs significantly improve outcome and if so become available to the clinician.

ANNUAL SCIENTIFIC MEETING - ABERDEEN 18TH NOVEMBER

The Annual Scientific Meeting held in Aberdeen attracted a near record attendance with around one hundred and forty registrants. After an opening address by the President, the morning session was chaired by Dr DG Ross and dealt with aspects of intensive care. After an excellent lunch in the adjacent post graduate centre, the afternoon session, chaired by Dr R Davidson-Lamb consisted of three addresses on various roles of anaesthetists outwith the operating theatre. The afternoon session concluded with the Gillies' Memorial Lecture which was delivered by Dr JAW Wildsmith. The President brought the day's proceedings to a close and thanked the local organiser Dr Harry McFarlane and all those who had contributed to a highly successful meeting.

Blood filtration, leucocyte depletion and outcome

Dr Rob Casson,
Consultant Anaesthetist, Aberdeen Royal Hospitals

The use of micro-aggregate blood filters became commonplace in the early 1980s. It was thought that transfused micro-aggregates were involved in the genesis of the adult respiratory distress syndrome, and that their removal would prevent its occurrence or limit its severity. These micro-aggregates are made up of platelets, fibrin and leucocytes, and are formed during the first seven days of storage. The filters are of two types, screen or depth, although the former are now seen to be superior to the latter.

Since about 1985 the use of these filters has become much less common. A survey of 24 consultant anaesthetists at Aberdeen Royal Infirmary revealed that six had never used a filter, fifteen used them but have now stopped and three continue to use them. The reasons for abandoning their use were, in general, because the uncertain

benefits of micro-aggregate removal were thought to be outweighed by the disadvantages of the filters themselves. On closer study it seems that these detrimental effects of infusing micro-aggregates (entrapment within the lung microvasculature, non-haemolytic febrile transfusion reaction, thrombocytopenia, fibronectin depletion and histamine release) either do not exist, are of little clinical significance or are due to the leucocytes within the micro aggregates. However, the quoted disadvantages of the filters (exsanguination, haemolysis, release of foreign particles, platelet retention and complement activation) are also not based on sound scientific data. With the greater use of rapid transfusion devices in acute massive haemorrhage, the major disadvantage remains the time it takes to change a filter after five to six units have been administered.

There has been much interest recently in the detrimental effect of transfusing donor leucocytes in blood or blood products. These effects range from definite (e.g. NHFTR, development of HLA antibodies in potential transplant recipients) to possible (e.g. enhanced tumour spread). It is likely that we, as anaesthetists, will be approached by the manufacturers to use leucocytes depleting filters in our clinical practice. A Consensus Statement has been made by a conference convened at the Royal College of Physicians of Edinburgh. The use of leucocyte depleting filters when transfusing blood or blood products is either definitely indicated, recommended, has possible benefits or is not indicated. The conference saw no definite indications. Their use is recommended in the prevention of recurrent NHFTR and in potential transplant recipients. There are possible benefits in, for example, preventing the immunosuppression which may enhance tumour spread, or reducing the incidence of post-operative acute lung injury by removing the leucocytes from the arterial side of the cardiopulmonary bypass circuit. It is essential that if there is a possible benefit leucocyte depleting filters should only be used as part of a prospective randomised clinical trial.

Acute Lung Injury

Professor Nigel R Webster, Department of Anaesthetics and Intensive Care, University of Aberdeen

Acute lung injury was first described in 1967 and is said to occur in some 150,000 patients each year in the United States. Despite advances in intensive care the mortality remains high - between 40 and 70%. New approaches to the treatment have been developed based on a rapidly evolving understanding of the events involved in the development of ARDS and the effects of conventional supportive therapy.

Pathophysiology

The occurrence of pulmonary oedema can be readily explained by knowledge of the Starling forces across the alveolar-capillary membrane. An increase in the hydrostatic pressure or a decrease in the intrathoracic pressure (seen during straining because of airways obstruction). A decrease in the reflectance coefficient i.e. an increased permeability of the membrane to large molecules. A decreased oncotic pressure. Inadequate lymphatic drainage.

Acute lung injury occurs following a range of insults to the lung both direct and indirect and it is suggested that a humoral mechanism exists to account for this observation. Acute lung injury frequently is associated with systemic events such as sepsis, shock, trauma and drug reactions. Lung injury occurs due to a complex interaction of systematically activated humoral and cellular mediators. The complement - neutrophil activation theory was one such mechanism that has been proposed. Several diverse stimuli activate complement which in turn activates neutrophils which aggregate and sequester in the lungs where they release toxic oxygen derived free radicals. However, complement activation does not necessarily correlate with the development or severity of acute lung injury and in addition acute lung injury can occur in neutropenic patients. This the-

ory has therefore been expanded to include additional mediators e.g. endotoxin, tumour necrosis factor, interleukins, thromboxane and macrophages. Some of the newer therapeutic approaches used in the treatment of acute lung injury involve these mechanisms.

New treatment Options

Inhaled nitric oxide results in selective pulmonary vasodilatation and improved V/Q matching and a decrease in pulmonary vascular resistance.

Anti-endotoxin and anti-TNF or soluble TNF receptor strategies show some promise in animal models.

Eicosanoids. In animal models cyclo-oxygenase inhibitors can prevent pulmonary hypertension and oedema formation following endotoxin administration. In man there is as yet no conclusive evidence of a beneficial effect of the use of drugs such as ibuprofen. However, cyclo-oxygenase inhibitors prevent the synthesis of both prostaglandins and thromboxanes. Specific thromboxane synthetase inhibitors have been developed which may prove useful. Ketoconazole (a potent thromboxane synthetase inhibitor) has been shown to decrease the incidence of acute lung injury from 31% to 6% in a high risk surgical population. In addition leukotriene metabolites are increased in patients with acute lung injury and inhibitors of leukotriene synthesis decrease endotoxin induced lung injury in a sheep model.

n-Acetylcysteine

Surfactant

Newer modes of mechanical ventilation

Although acute lung injury appears to be a homogeneous disease with uniform increase in lung density on chest X ray and a uniform decrease in lung compliance, it is now thought to be heterogeneous. CT scans show marked variability in den-

sity from region to region. Using multiple inert gas technique there is a wide range of ventilation-perfusion distributions. It has now been suggested that the patient with acute lung injury has a diminished volume of normal lung with no effective ventilation in the remainder. Ventilation with normal tidal volumes and high inspiratory pressures as previously advocated is now believed to result in direct lung injury. Because of the marked heterogeneity in lung units a normal tidal volume with increased inspiratory pressure will produce overdistension of the normal alveoli but little ventilation in the poorly compliant alveoli. These concepts have resulted in the use of pressure control ventilation which allows inflation of all lung units regardless of time constant. This process will result in recruitment of previously uninflated alveoli. The technique of pressure control ventilation with short expiratory times and a reversed I:E ratio is now commonly used to treat patients with acute lung injury.

Nitric Oxide - What's all the fuss about

Dr Nigel Benjamin, Senior Lecturer, Department of Medicine and Therapeutics, University of Aberdeen

In 1980 Furchgott and Zawadski showed that the integrity of vascular endothelium was necessary for acetylcholine to cause vascular relaxation. Over the next seven years various candidates were put forward as the endothelium dependent relaxing factor (EDRF). Furchgott himself proposed in 1986 that the simple molecule nitric oxide was the chemical responsible. This was shown to be the case by Salvador Moncada in 1987 using a bioassay cascade method. Since then it has been shown that nitric oxide is continually released by vascular endothelium to provide vasodilator tone to vascular smooth muscle. Inhibition of nitric oxide synthesis results in increased vascular resistance and increased blood pressure.

In addition to endothelial cells, it was found that nitric oxide was also synthesised by cells in the central nervous system, particularly cerebellar cells, and non-adrenergic, non-cholinergic

(NANC) peripheral autonomic nerves. Such Nitroergic neurotransmission is now known to account for most NANC neurotransmission and is important in the autonomic regulation of gut, uterine, vascular and urogenital vascular smooth muscle.

Simultaneous studies showed that bacterial endotoxin caused the synthesis of nitrate and nitrite in mammalian cells. It was shown that L-arginine was the precursor for nitrate and nitrite and subsequently that many mammalian cells would synthesise very large amounts of nitric oxide when stimulated with bacterial lipopolysaccharide and inflammatory cytokines.

It thus became apparent that nitric oxide could be synthesised by constitutive nitric oxide synthase enzymes from L-arginine in endothelium and neuronal cells and could be made in large amounts from inducible nitric oxide synthase, also from L-arginine, in many other cells, including inflammatory cells. It is now thought that inducible nitric oxide synthase is induced to produce nitric oxide for the purpose of host defence against invading micro-organisms.

We are now in a position to consider how knowledge of nitric oxide biology may be useful in treatment of patients. Those with septicaemia are known to over produce nitric oxide and the hypotension associated with this condition is amenable to therapy with nitric oxide synthase inhibitors such as L-NG Monomethyl arginine (LNMMA), although survival benefit has not yet been demonstrated. Inhaled nitric oxide therapy shows even more promise in patients with adult respiratory distress syndrome. Low concentrations (less than 1 ppm) can improve oxygenation whereas higher doses may reduce pulmonary vascular resistance.

In summary, in the last few years it has become evident that nitric oxide is important both in normal physiological regulation and in protection against infection. Understanding of the role of this molecule may help in the acute management of pulmonary disease and overwhelming infection.

Optimisation of Oxygenation

Dr Neil Soni

There is a small group of high risk patients undergoing high risk procedures. The mortality in this group may be as high as 40%. The biggest perioperative cause of death is cardiac disease but while emphasis in screening has been on the risk of myocardial infarction, it is probably cardiac failure which is of greater importance. Several studies indicate that patients in this group may present in a sub-optimal state which is occult but can be corrected with aggressive management. If uncorrected or uncorrectable they have a high mortality. Attempts to determine whether they can meet the challenge of surgery include measuring their exercise tolerance or their anaerobic threshold with exercise and using this as a predictive indicator. Shoemaker demonstrated the usual physiological response to surgery and has demonstrated improved mortality by augmenting haemodynamic parameters preoperatively. These results are supported by Boyd. However a recent study, albeit in critically ill postoperative patients, suggests that if patients who respond well to basic measures such as fluid management are excluded, the effects of augmenting the remaining patients are unconvincing. While the results of both assessment of failure and preoperative optimisation are impressive they are both logistically difficult especially if applied to the entire at risk group because of limitation of intensive care resources. We need a simpler means of screening for a much smaller vulnerable group and we also need more data on which patients benefit from augmentation.

Hyperbaric Therapy - pharmacology not physiology

Dr John Ross, Senior Lecturer, Department of Environmental Medicine
Head of Service for Hyperbaric Medicine,
Aberdeen Royal Hospitals

Hyperbaric oxygen therapy is a curative technique for decompression illness, cerebral gas embolism and the acute effects of carbon monoxide poisoning if provided before irreversible neurological

damage occurs. The past decade has also seen increasing use of the technique internationally to accelerate wound healing, especially in hypoxic tissue which is effectively perfused, and to avoid the delayed neurological sequelae of carbon monoxide poisoning.

Effective treatment by any drug requires its efficient administration. Oxygen administration is conventionally by means of a face-mask but administration of 100% oxygen for several hours during therapy is difficult to maintain and recent work in Aberdeen has demonstrated that a ventilated hood is more effective albeit entailing higher gas usage.

Drug treatment requires consideration of side effects and pulmonary oxygen toxicity is important when considering the treatment of patients who may already have pulmonary disease for instance after smoke inhalation. Early pulmonary oxygen toxicity, however, is not cellularly mediated and is only seen during the prolonged treatment of decompression illness. In fact recent work from Thom's group in Pennsylvania demonstrates that hyperbaric oxygen therapy inhibits neutrophil adherence after capillary endothelial damage induced by carbon monoxide poisoning and this may be important in the prevention of delayed sequelae after poisoning with this gas.

The Anaesthetist in the Resuscitation Room

Dr Rona Patey,
Consultant Anaesthetist, Aberdeen Royal
Hospitals

It is with a certain amount of horror that many anaesthetists approach the resuscitation room when called down to attend an emergency. Reasons for this include the fear of attending an unknown situation, working with unfamiliar or poor equipment and poor anaesthetic assistance. It was also common in the past to be working with junior and inexperienced staff in the Accident and Emergency Department, particularly at night, who were unlikely to have much training in resuscita-

tion. The anaesthetist, however junior, was often the most experienced member of medical staff and therefore in control of the initial resuscitation.

With the development of the specialty of Accident and Emergency Medicine and an increased presence of senior and trained staff, the resuscitation room presents a new challenge. The anaesthetist must work as part of a team and to do so effectively needs to understand the aims and path which the resuscitation will follow. Many of the changes and debates in management of the Accident and Emergency patient do not appear in anaesthesia journals until a late stage, unless these relate directly to airway management or perhaps intensive care. Currently these include guidelines for standards of trauma care that include the opportunity for anaesthetists to act as a team leader in a trauma team. To maintain a level of knowledge in this area requires reading of journals outside the standard anaesthesia literature or alternatively some of the mainstream anaesthesia literature could begin to review articles from other specialty journals. Consideration as to the role we as anaesthetists wish to take in Accident and Emergency resuscitation rooms will need to be taken into account for planning staffing resources and training programmes for the future.

Managing post operative pain in infants and children

Dr Graham Johnston, Consultant Anaesthetist, Royal Aberdeen Childrens' Hospital

Post-operative pain management in children has traditionally relied on the administration of weak oral analgesics and intramuscular opiates. The administration of analgesic drugs depended on an observer being convinced that pain was present. A variety of studies demonstrated that pain management in children was less than ideal. In order to improve the pain management in the Royal Aberdeen Childrens' Hospital, an acute pain service was introduced. The aim was to standardise patient assessment, medication and observation. In order to avoid the subjective effect, pain preven-

tion techniques based on continuous infusion epidurals, patient-controlled morphine infusions and nurse-controlled morphine infusions were introduced. These techniques allow painless administration of analgesic drugs, and reduce the difficulties associated with the assessment of pain in children.

Protocols were introduced for each technique, although the choice of analgesic technique was left entirely to the individual anaesthetist. Nursing protocols were introduced, detailing appropriate action to be taken by nursing staff according to the child's pain score or sedation score.

Audit results demonstrated that almost two thirds of children seen by the Acute Pain Team received patient-controlled analgesia. Nurse-controlled analgesia is expected to supersede continuous intravenous morphine infusions for children under five years of age.

Continuous infusion epidural analgesia has proved to be a highly effective technique, but had a high incidence of technical problems. Concern over potential life-threatening complications has limited the use of this technique in children. Audit of side-effects of active analgesia demonstrated a high incidence of nausea with morphine based techniques in older children. The Acute Pain Service has been successful using simple drugs and commonly available equipment.



SPEAKERS AT THE ANNUAL SCIENTIFIC MEETING

Neurological Trespass

I am greatly honoured, and not a little intimidated, by the invitation to give the 1994 Gillies' Memorial Lecture. Honoured to be asked to associate my name with that of John Gillies and intimidated by consideration of the eminent members of our specialty who have given the lecture previously, including several of my own mentors. In accepting the invitation I was mindful of the advice that one previous lecturer, Professor TC Gray, was given by John Gillies himself when he wondered aloud whether he should accept an invitation:

Young man you cannot afford not to accept!

I am honoured, not only by association with the name of John Gillies, but also because the invitation comes from the Scottish Society of Anaesthetists, a Society which I first stood before nearly twenty two years ago to deliver the Registrars' Prize Paper and one which I have been proud to be a member of ever since. This interval suggests, perhaps even more than the thinning hair, that I am not so young any more, but accepting the invitation is still an imperative.

My title, Neurological Trespass, relates to the safe practice of spinal anaesthesia and is one that I hope that Dr Gillies would approve of because one of his many important contributions to our specialty was his justification of the safe use of that technique for induced hypotension - the concept of physiological trespass. The technique was introduced in response to surgical demands for improved operating conditions and it was historically, as well as clinically, appropriate that he and HWC Griffiths chose a regional anaesthetic. Edinburgh has had an association with these techniques that goes back to the very beginnings of anaesthesia, and I trust that you will understand my frequent references to that centre.

You all know that James Young Simpson was an early advocate of general anaesthesia, but it is less well known that by 1848 he had coined the term Local Anaesthesia, appreciated its benefits and tried to produce it by the topical application of various liquids and vapours. Many are also aware

of the work of Alexander Wood - an Edinburgh physician sometimes known as the Father-in-Lore of local anaesthesia - who reasoned that the perineural injection of morphine would make it more effective. Much less well known is the early work of Alexander Hughes Bennett, later the first man to diagnose the position of a brain tumour from its symptoms, who in 1872 described inhibition of withdrawal reflexes by the subcutaneous injection of cocaine in frogs. Unfortunately the clinical significance of this observation was not appreciated and it was over a decade before Carl Koller, working in Vienna, recognised the usefulness of the peripheral actions of cocaine and launched local anaesthesia by pharmacological means as a clinical entity.

Over the next twenty years all the techniques of regional block except epidural were described and it is clear from the work of Struthers, a surgeon in the Royal Infirmary, that Edinburgh was involved in their use and refinement. Apart from his book, Struthers' eminence in this is clearly indicated by his contribution to the discussion of Barker's seminal paper on the effects of the baricity of spinal anaesthetic solutions. The period between the two World Wars was, relatively speaking, a fallow period for regional anaesthesia, certainly in the United Kingdom. If the methods were used at all they were the province of the surgeon, but the work of Gillies and Griffiths is an obvious indicator of a re-awakening and an increase in interest in the 1940's. Of course the seed for this was sown with John Gillies' appointment as a full time anaesthetist in 1932, for the gradual increase in the numbers of specialist practitioners led naturally to an increase in all possible techniques of anaesthesia.

However, the more specific trigger was the need to produce a bloodless field for the operation of thoraco-lumbar splanchnicectomy devised by Professor Learmonth for the surgical treatment of essential hypertension. What was particularly unique about their work was not that some new drug or technique was introduced, but that they applied existing knowledge to a new situation. Proper application of existing information is very much one of my personal themes. Within the library of the Department of Anaesthetics in

Edinburgh there is a fascinating indicator of how thoroughly Gillies and Griffiths researched in devising their anaesthetic technique, and that is the collection of books remaining from that period. Their reasoning was clearly based on physiological principles and, of direct relevance to this presentation, they were clearly aware of the susceptibility to harm of the nervous system.

All the volumes from that time are signed by John Gillies, but only Maxon's Spinal Anaesthesia, the then definitive work, is signed by Griff, an indication, perhaps, of their roles as theoretician and practitioner in this particular enterprise. I only met John Gillies once, and that was long after he had retired. I received a charming, but penetrating examination of the current state of anaesthesia as a whole, and the Infirmary Department in particular, when he visited one day - and this only a few months after I joined the specialty! Griff I knew better and, if you will pardon the momentary digression, seeing chloroform, hexamethonium and high spinal anaesthesia during my first day in the specialty was an experience from which no recovery is possible - or even desired.

Sadly, the interest in spinal anaesthesia that their work generated was relatively short lived. Precisely the same pharmacological development meant both that Learmonth's operation became an historical footnote and that hypotension could be induced during surgery by systemic, rather than by spinal, injection. Both Gillies and Griffiths embraced these methods and Willie MacRae maintains this interest in Edinburgh still, but I risk digressing again. A second factor influencing the use of spinal anaesthesia was concern about safety. This was started by publication in the USA of a large series of major neurological complications and amplified in the UK by the Wooley and Roe case.

In 1950, Foster Kennedy, a Queen's Square trained neurologist working in New York, published a review of major sequelae of spinal anaesthesia. It is little more than an anecdotal collation of disaster, contains much neurological information but no anaesthetic detail, and is a classic case of condemnation by association without proper consideration of cause and effect. In spite of this, the conclusions were breathtaking:

So, spinal anaesthesia is accompanied by many

definite and terrible dangers which are far too little appreciated by surgeons and anaesthetists. Paralysis below the waist is too large a price for a patient to pay in order that the surgeon should have a fine relaxed field of operation.

In the aftermath of this came the publicity produced by the legal case stemming from the operating list at Chesterfield Royal Hospital on Monday 13th October 1947. Woolley and Roe sued for negligence because they both became paraplegic from the moment that they were given spinal anaesthetics. Robert Macintosh persuaded the Court that the cause was leakage into the local anaesthetic solution of the phenol in which the ampoules were stored for sterilisation. Because that risk had not been described at the time of the anaesthetics, Lord Denning pronounced:

We should be doing a disservice to the community at large if we were to impose liability on hospitals and doctors for everything that happens to go wrong. We must insist on due care for the patient at every point, but we must not condemn as negligence that which is only misadventure.

In spite of this favourable judgement, the conjunction of these events with significant developments in general anaesthesia led to the view that virtually all anaesthetic problems could be solved without recourse to regional techniques and the apparent major risks. A few enthusiasts kept the techniques in use, but even in Edinburgh spinal anaesthesia was reserved for major pelvic operations during which induced hypotension was considered necessary. My own interest in regional techniques stems from seeing, as a surgical house officer, the immediate postoperative advantage of such patients anaesthetised by Alastair Masson.

However, such practice was very much the exception rather than the rule when I started anaesthesia in 1970, and for some time beyond, although there had been some developments. A few cautious enthusiasts, such as Bruce Scott, had begun to evaluate epidural block, first as an alternative to spinals for induced hypotension and later for analgesia in labour in a small number of selected patients. In addition, the introduction of prilocaine in 1965 had made intravenous regional anaesthe-

sia a safe, routine procedure.

From these roots the use of regional anaesthesia began to recover inexorably from the disasters of twenty years before, fed by the availability of a wider range of drugs, appropriate preparations of reliable sterile disposable needles and catheter systems, together with an understanding of the physiological effects of extensive block and the ways in which inappropriate practice can cause harm. In addition, advances in surgery were, as in the 1940's, challenging the skills of anaesthetists. Along with this there was a realisation that general anaesthesia might not, after all, provide all the answers, particularly in an ageing population with significant intercurrent disease and undergoing surgery to the lower half of the body, for which spinal anaesthesia can be particularly suitable.

In obstetrics too, pressures from our colleagues and, more importantly, our patients led to a progressive increase in the use of regional anaesthesia. The effects of all these developments can be seen in the figures for the use of regional anaesthesia by members of the Department of Anaesthetics in the Royal Infirmary of Edinburgh over the last thirty years, figures made available by the foresight of Professor JD Robertson long before audit was a consuming passion. This increase in use of regional anaesthesia has, of course, been widespread and as a confirmed enthusiast I welcome it, but not without some concern. Those who kept the practice of regional anaesthesia alive between 1950 and 1970 were all too well aware of the potential risks and of the need to be careful in all that they did. We must continue to heed the lessons of history.

An essential pre-requisite for the rehabilitation of spinal anaesthesia was a refutation of Kennedy's claim of many definite and terrible dangers. Fortunately the reaction to his paper in the USA had been less emotional and altogether more scientific than in the UK. As a specific response, Vandam and Dripps had prospectively reviewed over 10,000 patients to demonstrate that major neurological sequelae could be avoided. For reassurance if nothing else, their papers should be read by all users of spinal anaesthesia, but so should Kennedy's. Whatever the causes of the problems reported therein, no one should ever forget that the patients actually existed. Vandam and Dripps demonstrated that spinal anaesthesia can be safe, but that demonstration was firmly grounded in

high quality clinical practice.

Any practitioner of spinal anaesthesia must start by recognising that its great potential for both benefit and harm stem from the same factor. Literally a thimbleful of local anaesthetic will produce an extensive, profound block of all modalities of nerve function. After equilibration, the CSF concentration of local anaesthetic can be no more than one tenth of one percent, so how does so little produce so much? The answer is that a subarachnoid injection by-passes all the protection - skin, soft tissues, bones and ligaments - that nature provides for the spinal cord and the roots of the segmental nerves. Within the dural sac there is virtually direct access to neural axons, with little even in the way of connective tissue covering them.

If only tiny amounts of therapeutic agents are effective, then only similarly small amounts of toxic substances will be equally, but disastrously, effective. Protection against physical, as opposed to chemical, trauma is lacking also. The needle enters a bony and ligamentous compartment containing delicate structures which we cannot control and which are supplied by end-arteries whose feeding vessels are less than secure. CSF is the perfect microbial culture medium and its leakage may expose the central nervous system to gravitational forces that tear those delicate structures. Crucially the central nervous system has no capability for repair - that is why nature has provided such complex protection for it; that is why no one should perform a lumbar puncture without recognising that the central nervous system is at his or her mercy.

With consideration of these points, it is hardly necessary to consult the literature of disaster to produce a list of the ways in which sequelae can be produced: trauma, chemical damage, infection, CSF leakage, ischaemia and haematoma formation may all occur. Neither does it take much thought to recognise the contributory factors, noting that all represent poor decisions or actions, errors of omission or commission, clinical or administrative by anaesthetists. Sadly these problems are not just of historical interest. Only recently, misuse of continuous spinal anaesthesia produced a series of cauda equina syndromes in the USA and I believe that there are other current causes for concern.

Strategies for the prevention of these sequelae are

equally obtained by analysis of general principles and by historical review. The conclusion of Vandam, Dripps and others that spinal anaesthesia, when properly used, can be safe must be maintained if patients are to receive its not inconsiderable benefits. Careful case selection (based on sensible risk/benefit analysis) and use of good quality materials as part of an atraumatic, aseptic technique by practitioners who understand how patients should be managed subsequently continue to be essential. Many components of this are accepted, but I am concerned that familiarity is breeding contempt so that the proper safeguards are not always practised as they should be. At the same time, too much concern is being expressed about some aspects, or at least the emphasis of that concern is wrong.

Nowhere is this truer than in regard to the use of central nerve blockade in patients who have some disorder of coagulation. Traditional teaching has always said that blocks are contraindicated in such patients, but therapeutic advances have produced a number of shades of grey in this area, while presenting to us patients for whom the potential benefits of regional anaesthesia are significant. The risk that has to be balanced is that needle insertion is bound to damage some blood vessels with the result that coagulation failure will allow a haematoma to develop within the vertebral canal. This produces intense back pain with progressive paraplegia and must be treated rapidly if cord damage is not to be permanent.

Vertebral canal haematoma occurs sporadically in the general population, having some association with anticoagulant therapy. Its incidence is unknown, which in this day and age means that it must be very rare. Thus assessing whether anaesthesia increases the incidence is difficult, if not impossible. In 1990, Sage reviewed the English language literature and concluded that the concerns has been overstated. He found seven reports of haematoma formation after spinal anaesthesia, there being an undefined bleeding diathesis in five, and 17 reports after epidural block, 13 with a bleeding diathesis. Set against the number of blocks that must be performed, this is reassuring information, although it does lend some support for the traditional proscription of major blocks in anti coagulated patients.

However a number of other factors must be con-

sidered. It is a condition about which very little is known and the aetiology is far from clear. Can simple bleeding alone produce such profound cord damage, or are some other factors involved? Before regional anaesthesia is reflexly blamed for a case, two reports of its occurrence after uneventful general anaesthesia must be noted. Before the use of regional block in anticoagulated patients is condemned the experience of Odom and Sih, who performed epidurals in over one thousand patients on warfarin, must be considered. The problem is that we know neither the numerator nor the denominator, although our neurosurgeons are disarmingly reassuring. They say it never happens, and who ever met a surgeon who was not ready to blame an anaesthetist if given even half a chance.

In spite of these factors it is necessary to have sensible policies, remembering that even one case would be a tragedy for two individuals: patient and anaesthetist. There are no absolutes in anaesthesia, but relating the degree of anticoagulation to the challenge presented to the anaesthetist by the particular patient before proceeding cautiously is wise, if rather non-specific advice. Once, after giving a lecture on this precise topic, I was reprimanded very aggressively by a member of the audience for *not telling me what to do*. He was correct, I had not told him what to do and I am not going to tell you what to do either. You have to make up your own minds about every individual patient. I can only tell you (as I have tried already) what we know and what we do not know about the problem, and assist by outlining my personal policies.

When deciding whether to use spinal anaesthesia, current therapy with anticoagulant or thrombolytic drugs is as close to an absolute contraindication as there is, but I have done it once. She had three artificial heart valves, insufficient cardiac reserve to allow her to lie flat and a very large peri-anal abscess. The saddle block was perfect, but I must admit to a hope that I will never have to do something like that again. For elective vascular surgery, my approach is to withdraw warfarin, substitute low dose subcutaneous heparin as coagulation returns to normal and then proceed normally. In the emergency situation, patient management requires very careful collaboration with surgeon and haematologist, but the use of a major regional block requires caution and other techniques may

be preferred.

The subcutaneous use of heparin for thromboembolic prophylaxis is an area in which many consider no special concern is necessary. A number of published series suggest that there is no risk, but in epidemiological terms they are all small and it is recognised that some patients become transiently anticoagulated a few hours after subcutaneous administration. Arranging matters so that the block is not performed in that time frame requires only a little forethought, clear instructions to nursing staff and, as in other situations, policies agreed with our surgical colleagues. If the operation is to be after noon, the morning dose is given, but for morning procedures this is delayed until after the block has been instituted. The new low molecular weight heparins should present less of a problem; they are less variable in effect and are given only once daily in the evening.

Heparin administration during vascular surgery is something that does not inhibit my use of major blocks (the clinical benefit has now been shown to be significant), but I would not allow a trainee to make repeated attempts at needle insertion. I am not involved in cardiac surgery, but a few centres are evaluating epidural block in that situation and the catheter is inserted the day before to ensure a well established coagulum. When heparin is being used peri-operatively the timing of catheter removal must be considered equally careful. Nursing and surgical staff must understand this and have simple, but clear guidelines.

The final concern is the patient taking non-steroidal anti-inflammatory drugs. Here, more than anywhere in this field, a sense of proportion is needed, to say nothing of the application of logic. Demonstrating that platelet function is impaired requires very complex, sensitive tests and we should remember that these patients do actually survive the outside world in spite of this impairment. Over the last twenty years huge numbers of patients have undergone total hip replacement under spinal anaesthesia while taking industrial doses of aspirin without any problem being apparent. Thus, if you worry about performing a spinal in a patient taking half a junior aspirin a day, I would respectfully propose a less stressful speciality - dermatology perhaps.

However, I have said that this is my position and

it is very natural to try and obtain some numerical reassurances in this area. Quite didactic pronouncements have been made in regard to the bleeding time, but I cannot emphasise enough that these are without any scientific foundation. The bleeding time is, at best, a less than reliable screening test which has no place in clinical decision making. Even if it could be there is no epidemiological or haematological support for defining any particular figure as dangerous or safe. Thromboelastography is an interesting development, but we still lack epidemiological support for its use. My own view is that simple patient questioning on ease of bruising and bleeding are better than anything else available.

It is interesting to note that, in spite of these concerns, there have been only two reports of vertebral canal haematoma in the UK literature over the last six years. No risk factors were identified in one and the other patient, reported from Turkey, was anticoagulated at the time of catheter removal and no anaesthetic details were given. Literature review is a far from ideal way of assessing incidence and medico-legal constraints may prevent publication, but this should apply equally to pyogenic complications, yet there have been five times as many reports of meningitis or epidural abscess formation in the same period. It is essential to at least ask if current concern is about the wrong complication.

Like coagulation defects, intercurrent infection has been a traditional contraindication to central block. An infected site near the point of injection presents a major risk, but there are still no absolutes. I would not use a block for the drainage of an abscess in a young and otherwise healthy patient, but amputation of an infected, and ischaemic foot in an elderly arteriopath is a positive (and routine) indication in my practice. Again it's all about individual case assessment and selection. In a number of the case reports there is clear evidence that the infection was endogenous and, especially in the puerperal situation, could have occurred anyway. However, when a case report include a prolonged defence of not taking a simple, standard precaution (wearing a face mask), questions must be asked.

It may be considered a minor point, but a surgical face mask does reduce contamination of surfaces in front of the mouth and nose. Infection occurs

when the balance between bacterial pathogenicity and host resistance favours the former. CSF is the perfect culture medium and it is without defence mechanisms. I have already stressed that association does not equal causation, but here the appropriate precaution harms no one, although there are other aspects to be considered. Factors causing immunosuppression are mentioned in a number of the reports, and obviously may predispose to infection. Impairment of coagulation features as well, and while a haematoma may not be large enough to compress the cord it will aid bacterial proliferation if contamination occurs.

A common factor in a large proportion of epidural abscess reports is local steroid therapy, and these drugs produce both immunosuppression and increased blood vessel fragility. Given that there is considerable controversy about the effectiveness of epidural steroids, I wonder about the propriety of continuing to use them. I would stress that I am not reporting fact or providing answers, but simply asking questions about aspects of practice that, in my interpretation, do not withstand a careful risk-benefit analysis. When considering anaesthesia we have to be sure that what we do actually conveys at least some benefit.

A good example is the use of adrenergic agents in spinal anaesthesia. It is a matter of faith in some centres that they prolong the duration of block, but all the modern evidence is that they have only minimal effect and yet many practitioners continue to inject them near the end arteries that supply the spinal cord. Vasoconstrictors around end arteries - not very logical! Adrenergic drugs have a place in spinal anaesthesia, but their role is to be given systemically to maintain the circulation in the face of sympathetic block. The management of hypotension is a lecture all in itself, but I am sure that John Gillies would agree that we should consider the cause of the hypotension physiologically and treat it logically, rather than simply pour in yet another unit of fluid.

My final concern is perhaps the most controversial and that is whether central blocks should be performed with the patient awake or asleep. The arguments in favour of the latter are speed, ease of

teaching and patient comfort: the argument against is simply safety. This is certainly an area where my medico-legal practice provides a worrying amount of evidence. Properly performed lumbar puncture (and other block procedures) should cause minimal discomfort and, until proved otherwise, discomfort equals damage, with the damage being to some of the most unforgiving tissues in the body. Thus I believe that all major block procedures should be performed before induction of general anaesthesia in adults. Many, including, I readily admit, one co-editor of a volume that I am not unconnected with, would disagree absolutely. But remember: before the needle is inserted, the spinal cord is superbly protected; once the needle is in place the cord is defenceless. Spinal anaesthesia is major neurological trespass.

In the very first Gillies Lecture, Professor (later Sir) Gordon Robson noted that:

Safety was the tenor of all John Gillies teaching. Whatever you do to patients the risk should be balanced against the necessity for doing it and safety is paramount, even with major physiological trespass performed because of surgical necessity.

I would very much associate myself with the view that we should balance risk against necessity. I am, in spite of the things I have said, a great enthusiast for spinal anaesthesia, but it is essential to recognise that the central nervous system is still as vulnerable as when Kennedy condemned the technique. To paraphrase:

*Safety is paramount,
especially with major neurological trespass.*



WHO DISCOVERED INHALATIONAL ANAESTHESIA?

The origins of anaesthesia in the United Kingdom in the late eighteenth and early nineteenth centuries

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Imagine surgery without anaesthesia. Think of the days when amputations and the setting of fractures were done with only alcohol to dull the patient's pain and senses. "Biting the bullet". Surgery in the late 1700's and early 1800's was a coarse callous affair, best described as a destructive last resort, taken only when everything else had failed. The indications for surgery were simple - unbearable pain, crippling deformity or imminent death. Any attempts to improve the quality of surgery were greatly restricted by the lack of any means to produce insensibility in the patient. A great surgeon was one who could perform a procedure with the utmost speed - 13 second amputations were well known - and so spare the agonies of his poor suffering patient (or victim). There was an apparent disregard for pain during surgery, but as nothing could be done to prevent it, it became a necessary part of treatment. It is hardly surprising therefore, that surgery at this time mainly consisted of dental extractions or amputations of limbs, and as amputations were most often performed for gangrene, patients tended to die if they were not performed (although many patients also died even if surgery was performed due to their surgeons' non-existent understanding of sepsis and antisepsis).

Despite its appearance in the Bible as a means of preventing pain during the removal of Adam's rib (Genesis 2:21 "...and so the Lord God put the man into a trance, and while he slept he took one of his ribs and closed the flesh over the place."), insensibility for surgery was but a forlorn hope for the surgical patient until the late 1840's. Anaesthesia as we would recognise it today was first reported in the United Kingdom in 1847 when an article appeared in *The Lancet* reporting that insensibility for surgery could be induced with ether. Imagine the excitement this news must have caused. Although others had claimed to be able to do something similar with nitrous oxide gas (known

at the time as "laughing gas"), their attempts to publicly demonstrate it had failed. But ether was different. This was a substance which had been demonstrated publicly in Boston to the great medical people of the day and was the talk of Massachusetts. It had repeatedly proven safe and effective. Professors of surgery had even allowed its use on their own children. Now it had arrived in London and had been used on a number of patients by various surgeons including the best known surgeon of the times, Robert Liston. Was this an answer to their prayers? But how had it been discovered

The world's first public demonstration of ether anaesthesia:

On the 16th. October 1846, in the operating theatre (later christened the "ether-dome") at Massachusetts General Hospital, ether was administered to a printer and journalist named Gilbert Abbott by a dentist and medical student named William Thomas Green Morton (1819-1868), while the Professor of Surgery at Harvard University, John Collins Warren (1778-1856) excised a tumour from Abbot's jaw. As a result of this highly successful demonstration, Morton gained the support of many of Boston's most important and influential doctors including Warren himself (who said of ether at the time "*Gentlemen this is no humbug. We have seen something today that will go round the world*"), a young (but later very famous) surgeon at the Massachusetts General Hospital named Henry Jacob Bigelow (1818-1890), and Oliver Wendell Holmes (1809-1897), professor of anatomy and physiology at Harvard, and the man who was to later coin the word "*anaesthesia*". Henry Bigelow went on to lecture widely on, and encourage the use of ether, and it was his father Jacob Bigelow who was responsible for sending news of the discovery to an American named Dr. Frances Boott (1792-1863) of Gower Street, London. In 1846, Jacob Bigelow was both Professor of Materia Medica at Harvard University and one of North America's leading botanists. Boott was also interested in botany and he and Jacob Bigelow regularly communicated with each other about this and other scientific matters. Bigelow knew that Boott

would be an appropriate person to disseminate the news of the important discovery. It is interesting to note that by the time news of ether anaesthesia had reached Boott in London various other doctors and scientists in the United Kingdom had also learnt of the events in Boston, but for various reasons had chosen not to follow them up. Bigelow relayed news of Morton's discovery to Boott in a letter which he sent on 28th. November 1846. In addition to this letter, he also sent a description of a dental extraction performed on his daughter while she was under the influence of ether and a copy of the *Boston Daily Advertiser* of 19th. November 1846 which contained an article about ether anaesthesia written by his son Henry who had witnessed the events of 16th. October. These documents were later reprinted in the first edition of *The Lancet* of 1847 which announced the arrival of ether anaesthesia in Britain. They were carried to England on the Cunard paddle-steamer, the *Arcadia*, which left Boston on 3rd. December and docked at Liverpool on 16th. December 1846. During this Atlantic crossing, the ship's surgeon Dr. William Fraser (1819-1863) of Dumfries, also learnt of ether's new use and he took the news back to his home town to try to convince the surgeons there to try it during surgery.

The introduction of ether anaesthesia to Britain

On the 19th. December 1846, ether was administered to a patient named Miss Lonsdale in Gower Street London by the dentist James Robinson (1813-1861) who subsequently removed her diseased molar tooth. Robinson had been persuaded to try ether by Frances Boott. On the same day, it would appear that ether was also administered to an unknown patient in the Dumfries Royal Infirmary by the surgeon William Scott (1820-1887). The procedure in Dumfries was probably a limb amputation, and was the first use of ether anaesthesia in a hospital in the United Kingdom. Scott heard about ether anaesthesia from William Fraser, the surgeon from the Cunard paddle steamer *Arcadia*, and it was Fraser who designed the inhalation equipment used in his home town on that day. Two days later, on the 21st. December 1846, the first British public demonstration of ether took place at University College Hospital London, when the surgeon Robert Liston (1794-1847) was persuaded by Boott to make use

of ether for one of his "capital" operations. On this occasion, a medical student named William Squire administered ether to a butler named Frederick Churchill for a limb amputation using an inhalation system designed by his uncle Peter Squire, the Queen's druggist and chemist (later referred to as the "Squire's inhaler"). The patient had no recollection of the 25 second procedure, and did not groan or flinch during it, and William Squire recalled later that Churchill awoke from the procedure shouting "*Take me away. I can't have it off, I must die as I am*". Liston was so impressed with this new trick (he proclaimed "*This Yankee dodge beats mesmerism hollow*", as he finished the amputation), that he immediately set about his second case under etherisation. Shortly after, Liston wrote to Boott about his initial experience of ether at University College and this letter was included in Boott's communication which was printed in the first edition of *The Lancet* of 1847 which broke the news to the profession in England that surgical anaesthesia had been discovered.

Who discovered inhalational anaesthesia?

We might easily be led to believe that the origins of inhalational general anaesthesia were firmly rooted in North America. After all it was there that clinical ether anaesthesia was first demonstrated. But was it an American discovery? Although the events in Boston in 1846 undoubtedly represented the first public demonstration of an apparently useful (or perhaps more correctly essential), safe, reversible state of insensibility for surgery, they did not represent the beginnings of anaesthesia. Nothing which was done in Boston was particularly new, and everything which was demonstrated on that Autumn day in 1846 had been documented by others up to 100 years previously. English pioneers such as Joseph Priestley, Matthew Turner, Thomas Beddoes, Humphry Davy, Michael Faraday and Benjamin Brodie had all in their own way investigated and identified the fact that certain gases could induce analgesia and even insensibility, and some of them had even suggested their usage as analgesic agents or as aids to facilitate surgery. One man, Henry Hill Hickman, had even gone so far as to perform a series of animal experiments to test his theory that an insensible state could be induced with certain

gases for surgery. His carefully researched studies, experiments, results and conclusions were largely ignored and even ridiculed, and probably represent the greatest missed opportunity in the "pre-history" of anaesthesia. Although now largely forgotten for their contributions to anaesthesia, it is these men who are best described as the true originators of inhalational anaesthesia.

Joseph Priestley : Phlogiston and the identification of oxygen and nitrous oxide:

In England in the late 18th. and early 19th. century, various gases were described for the first time, and attempts were made to find therapeutic uses for them. Many of these gases which were identified then are those which we as anaesthetists are concerned with every day of our working lives. In the early 1770's Joseph Priestley (1733-1804) carried out a series of experiments with various gases including air. Priestley was the eldest son of a dresser of woollen cloth and was born in Birstall, Leeds. His interests were wide and varied. He trained as a minister, and by far the majority of his publications are theologically related (70 out of 128). Only 18 of the remainder are scientific. He initially worked in Leeds from 1767 to 1773, then moved to Colne, then Birmingham and on to North America where he died. His first gas experiments were carried out in Leeds where he initially chose to study "*fixed air*" (carbon dioxide) as he had a ready supply of this gas from the brewery next door to his home (incidentally still in existence and now operated by Tetley's). Priestley demonstrated that this "*fixed air*" could extinguish fire and make frogs unresponsive. Much of his work concerned investigations into the substance "*phlogiston*". Phlogiston was thought to be the inflammable part of any body which escaped on combustion and which Priestley believed was also involved in respiration. He discovered "*nitrous air*" (later called nitric oxide), and subsequently went on to be the first to describe "*dephlogisticated air*" (later called oxygen) in 1771 and "*dephlogisticated nitrous air*" (later called nitrous oxide) in 1773. The Frenchman, Lavoisier (1742-94) later disproved the "Phlogiston theory" in 1773, and it was he who renamed dephlogisticated air "*oxygen*". Lavoisier was responsible for repeating and continuing much of Priestley's work.

Thomas Beddoes, James Watt and Humphry Davy: the Pneumatic Institute:

Following the identification of these gases, possible uses for them were sought. In 1794, a "Pneumatic Institute" was founded at Clifton in Bristol by Thomas Beddoes (1760-1808). Beddoes was one of the leading authorities of his day on "airs" (gases and vapors), and his institute was funded by his friends to allow him to study the use of various gases and vapors such as hydrogen, oxygen, carbon dioxide and nitrous oxide in the treatment of conditions such as tuberculosis. He worked in conjunction with the engineer James Watt (1736-1819) to develop the apparatus required to produce and administer these "airs". Their delivery equipment resembled a very primitive anaesthetic machine with identifiable bellows, gas holders, tubes, masks and non-return valves. In 1798, Humphry Davy (1778-1829) came to Bristol to be the superintendent of Beddoes's Pneumatic Institute and he carried out many experiments on gas inhalation, both on himself and also on some of the young Bristol intellectuals of the day including such well known names as Samuel Taylor Coleridge and Robert Southey. He repeated some of Priestley's researches, and in 1799/1800, in the course of his work, he recognised that nitrous oxide had analgesic properties. It was Davy who came up with the name "*laughing gas*" and he suggested that inhalation of the gas might be useful during surgery saying "*...as nitrous oxide in its extensive operation appears capable of destroying physical pain, it may be used with advantage during surgical operations in which no great effusion of blood takes place*". However, he did not appear to put his theory to the test. Sadly perhaps for this early history of anaesthesia, Davy was more interested in chemistry than medicine and shortly after he left Bristol to join the chemistry laboratory at the Royal Institute in London. Work on nitrous oxide was not pursued at this time by either Davy or others, and it became a substance of amusement in the fairground or at parties. Davy of course became much more famous in later years for his invention of the miners' safety lamp in 1815, an invention which was responsible for saving countless lives. Prior to the identification of "firedamp" (i.e. methane) as a cause of mining explosions and the subsequent development of the safety lamp, candles had been the source of lighting in mines. As

the demand for coal increased, deeper and deeper mines were dug, with the resultant increase in explosions and their associated mortality. In 1814 alone over 160 miners had died as a result of such accidents in England. It is interesting that Davy refused to patent his lamp design on the basis that doing so might limit its introduction into the mines of Britain (*"my sole object was to service the cause of humanity"*). Davy was elected President of the Royal Society in 1820. As of nitrous oxide, it didn't surface again as a possible anaesthetic until the 1840's when several unsuccessful attempts were made to publicly demonstrate its use for this purpose, most famously perhaps in the hands of Horace Wells (1815-1848) in 1845. A year later, ether anaesthesia was described.

Michael Faraday , Matthew Turner, Benjamin Brodie: ether insensibility:

The career of the chemist and physicist Michael Faraday (1791-1867) in some ways mirrors that of Davy. In 1813, he came to London to join Humphry Davy at the Royal Institute as Davy's laboratory assistant. Twenty years later he was to succeed Davy as Professor of Chemistry at the Institute. Faraday is best known as the physicist who in 1831 described the principles by which electrical current might be generated (electromagnetism). Thirteen years previously, he reputedly made another important discovery, namely the fact that ether had narcotic effects. Faraday is alleged to have reported that one of his friends become unconscious and ill after breathing ether during an "ether frolic". Unfortunately, he did not appear to follow up this finding.

However Faraday was not the first Englishman to experiment with ether. Ether had been around since 1540 when it was synthesised and named the "sweet oil of vitriol" by Valerius Cordus. Frobenius, the German chemist renamed it "ether" in 1730. In 1744, a young Manchester chemist and physician named Matthew Turner (who incidentally was Priestley's teacher) published an essay entitled *"An account of the extraordinary fluid called ether"* in which ether was recommended for various medical conditions. Turner even suggested its administration by inhalation for the relief of certain pains. Beddoes and Watt also studied some of the properties of ether at the

Pneumatic Institute in Bristol and were certainly aware of its flammability.

Before research into ether moved across the Atlantic, there was another significant event in its history. On 5th. February 1821, Benjamin Brodie (1783-1862) demonstrated that ether inhalation could induce insensibility in a guinea pig. What was especially noteworthy was that this demonstration was to no less a body than the Royal College of Surgeons of England itself! Brodie also performed experiments involving carbon dioxide inhalation. These were described in his lecture *"On Death from noxious gases or confined air"*, one of a series given to the College of Surgeons in 1821. From Brodie's own descriptions of his work it is clear that the narcotic effects of ether were well known and regularly demonstrated in the early 1820's. However these effects of ether were associated with a certain amount of *fear* in both those who performed and witnessed such experiments - *"ether operated like a narcotic poison"* - and this effectively blocked any attempts to take what would appear to us to be the next logical step and to investigate the agent as an aid to facilitate surgery. In his experiments, Brodie also reported another technique of interest to anaesthetists when he described how he resuscitated one of his etherised animal subjects writing *"an opening was made in the trachea, the lungs were now artificially inflated...."*.

The remainder of the history of ether is well known. Its first use as a true clinical anaesthetic was probably not until 1842, when W. E. Clarke (1818-1878) of Rochester, New York gave it to a patient to produce insensibility for removal of a tooth. Clarke's reasons for trying ether in this way stemmed from his own participation in an ether frolic - he had recognised the same effects as Faraday had in 1818. A few months later, Crawford Williamson Long (1815-1878) administered it to James Venable for the painless removal of a neck tumour in Georgia. By the time Long reported his case, Morton had already convinced the world of the advantages of ether anaesthesia as a result of his demonstrations in Boston.

Henry Hill Hickman: *"....the earliest known pioneer of Anaesthesia by Inhalation"*:

The appalling, inhumane and cruel state of

surgery in the early 1800's has been well documented. Surgery was a last resort, to which you would only submit if you were in excruciating pain or would die without it (although you might well die as a result of it). It was into these circumstances that a young country doctor, Henry Hill Hickman, started to investigate how surgery could be made more comfortable for his suffering patients. He came closest to describing what we understand as the basic principle of anaesthesia, namely the induction of a state of reversible loss of consciousness. His efforts probably represent the greatest "missed opportunity" in the development of anaesthesia in the early nineteenth century, and differ from the discoveries of others in one important way. Whereas men such as Beddoes, Davy and Faraday were scientists whose contributions to anaesthesia came almost as an incidental part of their researches in other fields, Hickman was the one person who set out with the sole intention of producing insensibility for surgery as his primary aim - he was trying to provide an answer to a problem he was only too well aware of, and probably witnessed for himself on most days of his working life. But sadly his research was largely ignored, and the few medical people who were made aware of his work generally mocked and ridiculed it.

Henry Hill Hickman was born at Lady Halton, Bromfield, Shropshire on 27th. January 1800, the seventh of thirteen children of a tenant farmer. He matriculated as a student at Edinburgh University on 1st November 1819. Shortly after this he joined a student group, the Royal Medical Society, where in 1820 he attended a lecture entitled "*On Asphyxia*" given by Henry Goldwyer. In his lecture, Goldwyer described asphyxia as "*a temporary suspension of the vital functions arising from a deficiency of atmospheric air*" and went on to describe its reversal using artificial respiration and the electrical restarting of the heart. Hickman's stay in Edinburgh was relatively brief, and on 5th. May 1820, he was admitted as a member of the Royal College of Surgeons in London. On 29th. May 1821, he married Elizabeth Hannah Gardner of Leigh Court, Worcester, and shortly after set up in practice in Ludlow, Shropshire.

Between 1821 and 1824, while living in Ludlow, Hickman carried out a series of experiments in which he induced "suspended animation" in ani-

mals. Initially, this was achieved by inducing semi-asphyxiation as a result of air starvation, but later he made animals breathe Carbonic Acid gas (carbon dioxide). After unconsciousness was induced, Hickman operated on them, removing their ears, amputating their limbs, and making certain standard incisions. He made careful notes of any evidence of pain or suffering during his surgery, the severity of bleeding, the time taken to recover from the state of suspended animation, and the results of wound healing. On 21st. February 1824, Hickman sent a letter to a local squire, T. A. Knight of Downtown Castle, in which he reported his claims of having carried out operations on animals rendered insensible by carbon dioxide. It is uncertain whether Hickman and Knight knew each other personally despite Downtown Castle's proximity both to Ludlow and to the Lady Halton estate on which Hickman was born. However, through Knight, Hickman hoped his researches would attract Humphry Davy's attention. Knight and Davy certainly knew each other well, both men being members of the Royal Society (Knight as a Fellow, and Davy by this time as its President), and Davy regularly visited Downtown Castle where he went fishing for grayling. In his letter Hickman said "*.....There is not an individual who does not shudder at the idea of an operation however skilful the Surgeon or urgent the case, knowing the great pain that the patient must endure, and I have frequently lamented, when performing my own duties as a Surgeon, that something has not been thought of whereby the fear may be tranquillised and suffering relieved.....*". He broached the subject of suspended animation for surgery saying "*...I have been induced to make experiments on Animals, endeavouring to ascertain the practicability of such treatment on the human subject.....I have witnessed results which show that it may be applied to the animal world, and ultimately I think will be used with perfect safety and success in Surgical operations.*" Hickman reported his technique as being reversible, saying "*...I have never known of a case of a person (i.e. animal) dying after inhaling Carbonic Acid gas if proper means were taken to restore the animal powers...*". He went on to briefly describe a series of seven experiments on dogs, mice and rabbits in which he excised their ears or performed amputations under conditions of oxygen starvation or carbon dioxide inhalation. All his animals recovered, and none

showed any evidence of pain or distress during the procedures.

Why did Hickman chose carbon dioxide as his agent to attempt to induce insensibility? The answer to this is unclear. It may have stemmed from Goldwyer's lecture to the Royal Medical Society in Edinburgh in his student days, or he may have heard of Priestley's experiments in Leeds or Brodie's work in London. Of far more importance is the fact that Hickman's letter was the first description of an attempt to prevent pain and induce insensibility during surgical operations. Hickman did not invent "suspended animation", but he was the first to identify and state its advantages for surgery. His experiments were based purely on the basis of helping his patients.

In 1824, Hickman moved to Shifnal, Shropshire (incidentally the birthplace of Thomas Beddoes) and took up residence in Church Street. Why he moved there is unknown, but it may be that for a young doctor, Shifnal was a much more prosperous proposition than Ludlow. In 1815, the Holyhead Road Commission had been set up to review the rapid stage coach link between London to Holyhead (and therefore to Ireland), and as a result this road was largely rebuilt under the direction of the Scottish engineer Thomas Telford. This route substantially still exists in the 1990's as the current A5 trunk road. Work on the Wolverhampton to Shrewsbury section took place between 1815 and 1835, and as Shifnal was one of the principal communities on the new road, it undoubtedly attracted much passing trade. There are however other reasons why Hickman might have gone there. The East Shropshire area was one of the first areas of England to undergo industrialisation in the late eighteenth century, and has been rightly called the "Cradle of the Industrial Revolution" by many authors. Several major events took place there at that time marking England's transformation from a relatively rural to an industrial country, including the first production of coke-smelted iron, the building of the world's first iron bridge and the early development of an iron railway. Shifnal was particularly important for its coal mines and ironworks. This was the "Age of the Engineer": an exciting time of great social upheavals and advances in knowledge and technology. My own theory is that Hickman may have thought that his revolutionary ideas

might be better accepted somewhere like Shifnal compared to a country town like Ludlow. The Industrial Revolution had produced a new type of person; the intelligent "new bourgeoisie" who had profited financially from Britain's industrialisation, and who was much more prepared to listen to, encourage and act upon new ideas. Many of the Shropshire Ironmasters were Quakers, several of whom were particularly interested in scientific writings and in carrying out their own researches. One of them, John Wilkinson (1727-1808), was actually the brother-in-law of and a strong supporter of Joseph Priestley. Wilkinson was almost a folk-hero in certain parts of Shropshire where his memory continued long after his death. He was one of the Ironmasters responsible for the building of the world's first ironbridge in 1779

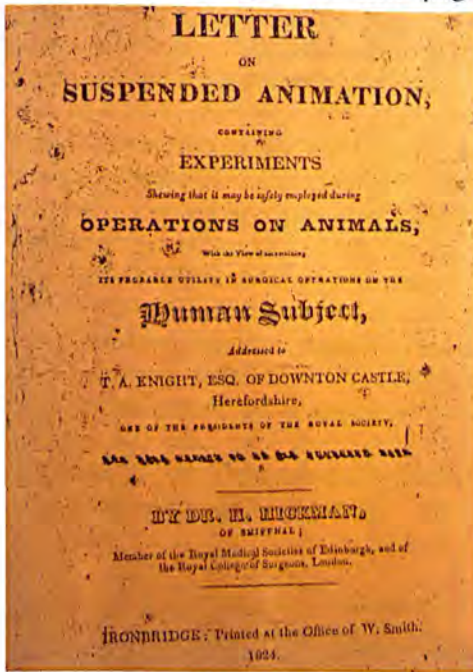


The World's first Ironbridge, Ironbridge, Shropshire (erected 1779).

This monument to the Industrial Revolution, together with the surrounding ironworks, mines and new canals roads and railways made the East Shropshire villages such as Ironbridge, Coalbrookdale, Coalport, Dawley and Shifnal a magnet for the many intellectuals, artists and other influential visitors who came to marvel at the wonderful industrial and technological achievements of the day. This area of Shropshire became part of the "Grand Tour" of England for the rich and influential and was later described by a local topographer as "*the most extraordinary district in the world*".

In August 1824, Hickman wrote again to T. A. Knight, this time detailing the results of his exper-

iments in a pamphlet entitled “*A Letter on Suspended Animation*” which he had privately published in Ironbridge. The title page of



Title page of Hickman’s pamphlet “*A Letter on Suspended Animation*” W. Smith, Ironbridge, England, 1824

Hickman’s pamphlet was addressed to “*T. A. Knight of Downton Castle Herefordshire, one of the Presidents of the Royal Society*” and also contained the crossed out line “*and read before it (i.e. the Royal Society) by Sir Humphry Davy*”. The opening page of the pamphlet was addressed much more simply “*To the public*”. Most of what was in Hickman’s original letter of 1824 was repeated in this pamphlet, and much of the detail was later published in the *Shrewsbury Chronicle* in 1825. In conclusion, Hickman stated that he felt “*particularly satisfied that any surgical operation might be performed with quite as much safety upon a subject in an insensible state, as in a sensible state...*”. He saw the obvious advantages for both patient (“*...the best effects would be produced by the patient’s mind being relieved from the anticipation of suffering, and his body from the actual suffering of a severe operation...*”) and surgeon (“*...there are few, if any Surgeons, who could not operate more skilfully when they were conscious they were not inflicting pain...*”). Although he was wary of human experimentation, he concluded his pamphlet by offering himself as a guinea pig in certain circumstances “*...I feel so*

confident that animation in the human subject could be safely suspended by proper means, carefully employed, that, (although I could not conscientiously recommend a patient to risk his life in an experiment) I certainly should not hesitate a moment to become the subject of it, if I were ever under the necessity of suffering any long or severe operation...”. It is uncertain if the Royal Society was ever made aware of Hickman’s work. It has been suggested that Davy and Knight may have initially been interested in Hickman’s researches, but were concerned about the aspects which involved animal experimentation as there were certain anti-vivisection concerns in England even then. It would certainly appear that Hickman justified his reasons for using animals far better in the pamphlet than in the original letter.

The publication of the pamphlet, and its subsequent appearance in the *Shrewsbury Chronicle* failed to bring any credit to Hickman for his efforts. Instead, it attracted only criticism, condemnation and derision, and was attacked perhaps most famously in the scathing letter headed “*Surgical humbug*” and signed “*Antiquack*” in *The Lancet* in 1826. This anonymous letter accused Hickman of “*downright quackery*”, made all the worse by the fact that he was also a physician. Antiquack suggested that Hickman’s intention was to use his theory of suspended animation as “*a decoy by which the credulous may be induced to give up their senses as well as their cash, to men, who though perhaps not greater fools, are at any rate greater knaves than themselves.*” As of Hickman’s offer to be a guinea-pig in a suspended animation experiment “*.....it would be impossible to find any surgeon who would be so great a fool, and so unwarrantably bold to undertake that operation on such terms....*”. And to summarise Hickman’s work “*no Doctor of Physic would so far disgrace both his profession and himself by writing such a tissue of quackery, which he himself, and every medical man must know is (to say the least of it) humbug.*” And so one letter, published in that pillar of the medical establishment, dismissed Hickman as a quack, a con-man, and a rogue, and his lifetime’s work as worthless.

But Hickman did not give up just yet. On September 26th. 1828, having failed to gain any support in England, he sent a memorial to Charles X of France asking for the opportunity to demon-

strate his experiments. In it he said "...It appears demonstrable that the hitherto most agonising, dangerous and delicate surgical procedures may now be performed with perfect safety and exemption from pain on brute animals in a state of suspended animation...". His letter was referred to the Royal Academy of Medicine in Paris in the Autumn of 1828, and Hickman moved from Shifnal to Paris in readiness. On 21st. October 1828, his letter was read before a meeting of the Academy. The contents caused a sensation, although many members treated them with derision and contempt. Hickman's only supporter was Baron Dominique Jean Larrey (1766-1842), one of Napoleon's surgeons, who not only suggested that his ideas merited further investigation, but also offered himself as a subject for a human experiment. It is perhaps not surprising that Baron Larrey showed interest in Hickman's ideas. As a military surgeon he was particularly aware of pain and surgery and during one battle had personally performed 200 amputations. In addition, he may already have witnessed the fact that surgical pain could apparently be modified in patients whose sensation was dulled by hypothermia or partial asphyxiation. Therefore he was perhaps closer to understanding Hickman's theories. The French Royal Academy of Medicine formed a committee to look further at Hickman's claims, but no further action was taken.

In 1829, Hickman returned to England and set up a practice in Tenbury Wells where he died nine months later. He was buried at Bromfield on 5th. April 1830. He was completely forgotten until 1847, when several letters from a Mr. Thomas Dudley of Kingswinford were published in *The Lancet*. This was a time of great excitement and euphoria following the introduction of ether, and a time when *The Lancet* contained many letters from people such as Jackson, Morton, Long, Wells and their respective supporters arguing over who should take the credit for the invention of anaesthesia. Much of this correspondence led on from Morton and Jackson's attempts to patent ether anaesthesia which they had now christened "*The Letheon*". The introduction of a patent for ether anaesthesia would obviously result in doctors and dentists being deterred from using it for surgery and it was vehemently opposed by both Frances Boott, and by *The Lancet* which published a leading article on the matter. On 6th.

February 1847, in the midst of this correspondence concerning the true origins of anaesthesia, Dudley described how a Dr. Hickman "*performed various experiments*" on animals while they were in a state of unconsciousness similar to that apparently associated with ether. He felt that the "*claim of priority*" for the discovery should be awarded to Hickman, and reminded the readership of the journal that Hickman's ideas were "...generally condemned as a wild and visionary theory which was deemed practically useless, if not dangerous and impossible.." when first described in the 1820's. In a later letter of 27th. March 1847 to *The Lancet*, Dudley expanded some of his earlier comments and stated that as a result of his researches he could say that Hickman was the "...originator of the idea of producing insensibility" for surgery and that credit for the invention "...may be awarded to those to whom it is fairly due".

Despite Dudley's letter Henry Hill Hickman remained largely forgotten until 1912 when a paper appeared about his work in the *British Medical Journal*. On April 5th 1930, the 100th. anniversary of his death, a memorial tablet erected by the Section of Anaesthetists of the Royal Society of Medicine was unveiled at Bromfield Parish Church in whose churchyard Hickman is buried in an unmarked grave, dedicated "*to the memory of the earliest known pioneer of Anaesthesia by Inhalation*"



Memorial plaque erected at Bromfield Parish Church, Shropshire on 100th anniversary of Hickman's death in 1930.

It reads:

A. M. D. G

HENRY HILL HICKMAN

Member of the Royal College of Surgeons
Born at Lady Halton, in this Parish, Jany. 27
Baptized in this Church, January 30, 1800

Died at TENBURY, April 2
Buried in this Churchyard
April 5, 1830

This tablet is placed here at the initiative of the Section of Anaesthetists of the Royal Society of Medicine as a Centenary tribute to the memory of the earliest known pioneer of Anaesthesia by inhalation.

HONOUR A PHYSICIAN WITH THE
HONOUR DUE TO HIM

A.D. 1930

Postscript

Today, very few of these early pioneers of anaesthesia are household names in the way that other great medical innovators such as Pasteur, Jenner, Lister and Fleming are. Davy remains probably the best known by the public at large, but primarily for his invention of the miners' safety lamp. His name does however live on in anaesthetic circles in Bristol (where his nitrous oxide research was performed) in the "Sir Humphry Davy Department of Anaesthesia" at Bristol Royal Infirmary. Faraday's greatest discovery was the principle of electromagnetism, although his other popular claim to fame is that he was responsible for the inauguration of the Royal Institute Christmas Lectures for Young People, a tradition which runs to this day. Priestley is remembered as a Unitarian minister and schoolmaster as well as for his gas research, but memories of Matthew Turner and Thomas Beddoes have slipped into the mists of time. Benjamin Brodie became well known for his work as a physiologist and surgeon, but not particularly for his early researches with ether. But Brodie is remembered by anaesthetists for another "first". In 1814, prior to his demonstrations of ether, Brodie worked with the Yorkshireman Charles Waterton, who was carrying out researches into "*wouralia*", the South American arrow poison (i.e. curare). Brodie was probably responsible for slitting the trachea and ventilating one of Waterton's donkeys with a set

of bellows following administration of the agent thus ensuring the beast's survival. This donkey was thereafter christened "*Wouralia*", and subsequently entered into anaesthetic folklore. *Wouralia* survived another 25 years after Waterton and Brodie's experiments, and became so famous that when it died it even had its obituary printed in the *St. James's Gazette*.

So what are we left with? These early pioneers undoubtedly described both the drugs and techniques of inhalational anaesthesia in England in the late eighteenth and early nineteenth centuries. However probably as a result of the uncoordinated way in which much of their research was carried out, their work did not progress into clinical medicine and surgery. Therefore this early history of anaesthesia is littered with a series of "What if's". What would have happened if Beddoes had thought of using his "airs" to induce insensibility, if Davy had continued his researches into nitrous oxide and tried to put his thoughts into practice, if Turner, Faraday or Brodie had continued their work with ether, or if Hickman had gained the support of Knight and Davy or been taken seriously by his medical colleagues. Their researches and experiments left them so very close to describing a state of "useful anaesthesia" and if any of them had been able to make the crucial breakthrough into true clinical work at this time, the early years of clinical anaesthesia might have been very different. Was it just fear of the unknown which prevented these gases being tried in humans undergoing surgery? After all their use couldn't have made surgery any worse. Perhaps it was simply that surgeons and society weren't ready for a discovery which would change the future of medicine. We shall never know. However, this period in the late eighteenth and early nineteenth centuries must represent the true origin of inhalational anaesthesia. It was Priestley, Turner, Beddoes, Davy, Faraday, Brodie and most especially Hickman who discovered the concepts of inhalational anaesthesia, and without them we would have waited even longer for the subsequent breakthroughs which were to completely change the course of medicine and surgery.

Acknowledgements

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MEDICAL EDUCATION IN MAURITIUS & BOTSWANA

DR RJ GLAVIN, VICTORIA INFIRMARY, GLASGOW

This article is an account of my experiences as a participant, representing the Scottish Society of Anaesthetists and the Association of Anaesthetists of Great Britain and Ireland, in the Anaesthetic Continuing Medical Education Programmes of Mauritius and Botswana. My fellow participants were Dr Bill Casey, Consultant Anaesthetist at Gloucester Royal Hospital representing the WFSA and co-ordinator of the visit, and two South African anaesthetists from Cape Town; Professor Michael James in Mauritius and Dr David Linton in Botswana. Dr Casey had been on a similar visit to these countries twice before and undertook the majority of organisational tasks, including the travel arrangements.

The co-ordinators in each country were invited to submit a list of topics for our lectures and demonstrations. Unfortunately this list was not finalised until late July which left only six weeks preparation and consequently I left on September 8th armed with slides, articles and books feeling less prepared than I would have liked to have been.

Approximately twenty four hours later we were met by Dr Jackaria, President of the Association of Anaesthesiologists of Mauritius along with two of his anaesthetic colleagues. A further ninety minute car drive took us to our very luxurious hotel in the Northwest of the island where we had some time to recover from the flight and indulge in some last minute preparation.

The main component of the Mauritius part of the visit was the Third Continuing Medical Education Weekend, held in Curepipe. The audience of 35 consisted not only of Mauritian anaesthesiologists but a contingent of twelve anaesthetists from Reunion. Some surgeons, obstetricians, nurses and midwives made up the numbers. We left our hotel at 7.30 to arrive for and 8.30 start. The programme was as follows:

Saturday 10th September

Biochemistry of diabetes and anaesthesia

Professor James

Update on postoperative pain management

Dr Glavin

Dealing with a major disaster

Dr Casey

Total intravenous anaesthesia

Dr Glavin

Update on intravenous fluid therapy

Dr Glavin

Control of intracranial pressure and

its application in anaesthesia

Professor James

Sunday 11th September

Update on pre-eclampsia

Professor James

An Unusual case of pre-eclampsia

Dr Suddason

Continuous spinal anaesthesia

Dr Casey

Update on blood coagulation and DIC

Dr Glavin

The main challenge was to pitch the lectures at an appropriate level. Our approach was to emphasise the basic principles underlying practice and this was justified because subsequent discussion revealed some quite marked deficits in their basic knowledge. The meeting ran late on both days such was the enthusiasm of the audience and the lively discussion sessions following each talk showed that any potential language barriers had been overcome. The case presentation gave an insight into many aspects of medical practice on the island and I would recommend more of these. The Chief Medical Officer attended the Sunday presentations and during lunch he explained that Mauritius has similar problems with regard to health care as most other countries; increased expectations without the willingness or ability to finance these expectations. There is also a problem of recruiting sufficient trained anaesthetists for the demands made upon the specialty. I was most impressed by the enthusiasm of the Mauritian anaesthetists to improve their knowledge. The meeting was held on a public holiday to allow as little upset to the Saturday morning elective lists as possible and despite competing domestic pressures the majority of specialist anaesthetists attended the meeting.

The remainder of our official duties consisted of two Hospital Visits which were intended to combine lectures and clinical demonstrations.

Unfortunately a lack of suitable patients in the Jeroo Hospital in Port Louis put paid to any clinical demonstrations. Dr Casey lectured to an audience of fifty or so doctors and nurses on advances in Basic and Advanced Life Support.

Our visit to the Nehru Hospital in Rose Belle was more successful in terms of our demonstrations. This hospital is relatively new - three years old and was donated and built by the Indian government. The actual building was in a style that could only be called functional. Where savings could be made and costs cut, they were. At the time of our visit it had 200 beds with an extension to house a further 250 under construction. It has four theatres; one of which is adjacent to the Accident and Emergency department, and an intensive care unit with six beds. It serves a population of 180,000. We demonstrated techniques in the morning. Dr Casey demonstrated continuous spinal anaesthesia and I demonstrated the use of total intravenous anaesthesia.

A patient scheduled to undergo elective removal of a popliteal cyst had been selected for the continuous spinal. Bill performed the block in very difficult circumstances and I was glad that I was not conducting the demonstration. The patient did not speak English and all the medical and theatre staff wanted to witness this procedure. I counted an audience of twenty two in the theatre. Eventually the block was established and surgery continued uneventfully. My demonstration took place in the gynaecology theatre where three women undergoing elective D&C had been selected. The demonstrations were well received but I think it unlikely that these techniques will feature largely in Mauritian anaesthetic practice. The visit in theatre was fascinating because it afforded an opportunity to witness actual anaesthetic practice. There were some quite substantial differences from practice in the UK, especially in the early post-operative management of the patient. For example, a lady who had undergone total abdominal hysterectomy had a total of 75 micrograms of fentanyl for analgesia (intra and post-operatively) and without an opioid premedication. Oxygen was not used routinely in the post operative period but oxygen saturation was measured intraoperatively and in recovery.

Mauritius has no medical school and those who wish to become doctors must train overseas. If one wishes to specialise, post graduate training must also be done overseas. The UK is probably still regarded as the best place to go for anaesthesia but India, France and Russia are popular choices. This means that there are no junior specialist staff. The hospitals have Resident Medical Officers (RMOs) who rotate for six to twelve months through the surgical specialties and anaesthesia. These RMOs provide first line care in the hospitals but because they are both inexperienced and not necessarily committed to their current specialty the standard of care is far inferior to that provided by the average UK trainee. The specialists provide an on-call service for not only general theatre work but also obstetric emergencies and intensive care.

For the afternoon session I lectured to an audience of seventy doctors, midwives and nurses on the subject of Neonatal Resuscitation and Principles of Anaesthesia for Neonatal Surgery. Discussion lasted for about forty five minutes and would have gone on longer if time had permitted. As an obstetric anaesthetist I was interested in their obstetric management. Approximately twenty per cent of deliveries are by Caesarean section with some one per cent by forceps or ventouse. Regional analgesia and anaesthesia is almost never practised. Maternal morbidity and mortality is much higher than in the UK.

The day was rounded off by dinner with the executive of the Association and their spouses and a very enjoyable evening was spent. Mauritian hospitality is of an exceptionally high standard and we were warmly welcomed and looked after everywhere we visited. That ended the formal educational part of our visit to Mauritius and allowed us a day to relax and sample the delights of Mauritius before flying to Botswana.

We left the hotel at 6.30 and arrived fifteen hours later in Gaborone, Botswana having stopped at Durban and Johannesburg. Although the programme had been provisionally arranged the final version was put together that evening, which meant further preparation for the meeting on the following day. This meeting was held under the

auspices of the Botswana Medical and Dental Association. The organiser for this event was Dr Elyssia Bates, a Polish doctor who had carried out her anaesthetic training in the United Kingdom and for ten years or so had been the only anaesthetist in the whole country. The final programme was as follows:

Saturday

Early management of head injury	Dr Casey
Sedation in the Intensive Care Unit	Dr Linton
Principles of Shock	Dr Glavin
Septicaemic Shock	Dr Linton
DIC	Dr Glavin
Update on ventilation in ITU	Dr Linton
ARDS	Dr Linton

Sunday

Eclampsia	Dr Glavin
Major disaster	Dr Casey
Red Cross transport scheme for Southern Africa	Dr Linton
Pain relief following burns	Dr Glavin

The conference room in which the meeting was held was packed to capacity with some seventy or so people in attendance including the Administrator of the Princess Marina Hospital, Gabarone. It was a very mixed audience with a few anaesthetists but many other medical staff, nursing staff and midwifery staff and nurse anaesthetists.

During lunch on Saturday, Dr Omassu, a Ugandan anaesthetist, described to me the nurse anaesthetist training programme which she runs with the University in Gabarone. This is a two year programme and nurses who wish to enter must have been fully qualified and in post for a minimum of two years. They are used in the fifteen district hospitals - which are really extended GP surgeries with A&E facilities. The commonest operation is emergency Caesarean section. She could not give figures for maternal mortality but readily admitted that anaesthetic disasters did occur. The problem facing those responsible for health care in Botswana is the sparsity of population for the size

of the country. This is a land the size of France with a population of one and a half million and this is why there is a need for these District hospitals. The current strategy is to attempt to deal with minor conditions in the district hospitals and transfer the more serious cases to either of the two main hospitals - the Princess Marina in Gabarone or Nyangabgwe in Francistown.

Our presentations were well received with many questions and as in Mauritius the enthusiasm of the audience meant that the meeting ran on later than scheduled.

During a visit to the Princess Marina Hospital in Gabarone we met Dr Moffat, the head of the medical department. He asked me to communicate to the ITU community in the UK that they would like someone - a recently retired consultant with ITU experience would be ideal - to come for one year and get their newly built ITU up and running in a proper manner. At present no one has overall medical responsibility and he feels that if some protocols could be established and nursing staff trained, the service would improve. Anyone interested can contact either myself or Dr Moffat directly.

After the meeting in Gabarone we flew to Francistown, some five hundred miles north east of Gabarone for our final meeting at the Nyangabgwe Hospital. This meeting was not well organised. Confusion between anaesthetists in the main hospitals in Botswana meant that our meeting had not be publicised until Friday 16th September. A programme had not been published and so from the topics that we had already presented, we selected those most suitable for an audience consisting mainly of non-anaesthetists. Dr Chansa, head of Anaesthesia in Nyangabgwe, chaired the meeting for which the programme was:

Early management of head injury	Dr Casey
Eclampsia	Dr Glavin
Difficult Intubation	Dr Casey
Neonatal Resuscitation	Dr Glavin
Pain Relief including burns	Dr Glavin
Adult resuscitation	Dr Casey
The bleeding surgical patient	Dr Glavin

Once more an audience of about seventy turned up. This was no mean feat given the fact that there are only seven anaesthetists at the hospital, one of whom was on call and one was up country. Our audience consisted of medical staff from other specialties and a large number of nurses and midwives. Audience participation progressed from a quiet start as the day went on and we exceeded our allotted time because of the length of the discussion periods. At the end of the meeting I offered my copies of review articles, book chapters and original articles to anyone who wanted them. Everything was snapped up; indeed I even had requests for the scripts which I had for my presentations.

After the meeting we toured the hospital looking at the theatres and the intensive therapy unit. Anaesthetic services in Botswana in the two main government hospitals are provided by trained anaesthetists from a variety of countries and backgrounds; the UK and India being the countries in which the majority were trained but there were also anaesthetists from China and Cuba. There are native Tswana doctors but none of them are anaesthetists. So ended our official duties.

The obvious question to ask is: Was it worth it?

The number of people asking us to come again next year meant that our audience certainly thought our visit was worthwhile. As for the Society and the Association, who jointly funded my visit, it helped in the following three ways.

Maintenance and Improvement of Standards

The standards of anaesthesia in the United Kingdom are very much respected in these two countries and by comparing their standards with ours we could demonstrate directions in which improvements could take place. Improvement will only occur if there is a willingness on the part of the local anaesthetists and I think that there is a large enough group of individuals who are committed to this. A visit such as ours provides an excellent opportunity for people to review existing areas of practice and in the light of new information, especially a better understanding of basic principles, reappraise current practice. My own

impression was that the intraoperative care by the specialist anaesthetists was on the whole quite good but pre and post operative care could be improved. This made the inclusion of other medical staff and nursing staff in the audiences appropriate, because changes in practice will only occur when all of the health care professionals are prepared to co-operate. I would advocate even more participation by local in case reports or discussion of hypothetical cases.

Improvement of Morale

I don't think that the importance of this aspect can be underestimated. Anaesthetists in these countries have a hard time, they are not well paid and often work in difficult circumstances with little or no support from junior staff, with limited budgets and without the support of a national body such as the Royal College or the Association to assist the drive for higher standards and better conditions. Not only does our visit give them ammunition for these purposes but it helps confirm that they are part of the world wide community of anaesthetists and are not forgotten by the more recognised centres.

Enhancement of the Status of Anaesthesia

This is obviously related to the above category. The diversity of medical backgrounds of the medical staff in these countries has exposed them to a variety of models of anaesthesia. Anaesthetists in both countries wish to promote the UK model and when experts from a country with a recognised tradition in medicine speak on a variety of topics which extend beyond the confines of the operating theatre such as eclampsia and advanced life support this helps enhance the image of anaesthetists in general and by association the local anaesthetists. In other words we are reinforcing the message that we are no longer mere purveyors of sleep but clinicians who have to respond to a wide variety of clinical challenges by using our expertise. Not only is this of importance in helping to improve standards but it is essential if recruitment to the specialty is to continue. It is interesting to note that in both countries ours is the only specialty to arrange these visits. No other specialty receives foreign experts on a regular basis and so

our presence was regarded as a helpful way of raising the standing of the local anaesthetic community.

Was it worthwhile for me? Yes. It was tiring but very interesting and it gave me a valuable insight into working practices elsewhere. It was an experience which I would recommend to anyone who is fortunate enough to be offered such an opportunity.

I would like to place on record the generosity of

my anaesthetic colleagues at the Victoria Infirmary, Glasgow who agreed to purchase some £320 worth of textbooks to be donated to departments of anaesthetics in these two countries. The gratitude with which they were received was most touching but it was a small gesture of appreciation on my part for the overwhelming generosity, hospitality and friendliness shown to me by our anaesthetic colleagues in both countries.



Some of the delights of Mauritius

WFSA Refresher Course and SAEA Annual Conference Moshi, Tanzania

Dr Alastair JW Naismith, Monklands Hospital

The eighth annual refresher course, organised under the auspices of the World Federation of Societies of Anaesthesiologists (WFSA) and the Society of Anaesthesiologists of East Africa, and the twenty second annual scientific conference of the SAEA, were held from 8th to 12th August 1994 at the Co-operative College, Moshi, Tanzania. The overall theme of the week was 'Safety and Quality Assurance', and I was present as one of a number of guest lecturers from the UK, Ireland and the USA. The Association of Anaesthetists of Great Britain and Ireland and the Scottish Society of Anaesthetists jointly sponsored my trip, and Monklands and Bellshill Hospitals NHS Trust kindly granted special leave, and I am

very grateful to those bodies for the opportunity to attend this course.

Despite sampling some of the tribulations of overland travel in East Africa, I arrived at Moshi (and subsequently returned home) safely and in one piece in the evening of 7th August! I was met at the hotel by Dr Michael Dobson and Dr Gill Saville, the other UK anaesthetists, and Dr Dobson as the WFSA representative gave a short briefing on the plans for the week.

The refresher course was attended by about ninety delegates, with twelve lecturers including

Tanzanian physician anaesthetists and overseas visitors. The majority of delegates were anaesthetic officers, but there were also a number of nurse anaesthetists and physician anaesthetists.

Each day began with a lecture on a specific aspect of 'Safety and Quality' and this was followed by a series of group seminars and discussions. I felt that these were particularly valuable, since they allowed exchange of views and ideas among the anaesthetic officers. Subjects discussed included obstetric and paediatric anaesthesia, regional techniques, management of major trauma and intensive care as it related to conditions in East Africa. The standard of knowledge was high, and the participants were eager to contribute and willing to learn from one another.

The course was well planned, but subject to a number of enforced last minute changes which necessitated some visiting lecturers standing in at fairly short notice. For someone with previous experience of such circumstances this comes as no surprise, but the Association's written advice on these matters (as well as Dr Dobson's verbal advice) is a welcome and timely reminder to be well prepared for the vagaries of the Third World.

Although the accommodation at the Co-operative College was more than adequate for the numbers and the catering provided each day was of a high standard, there were occasional interruptions to the electricity supply, which made life interesting for those of us who had slides or overheads prepared. However all visiting lecturers seemed to be prepared for this eventuality, and demonstrated great flexibility - thanks again to the Association for advance warning of potential problems! I had great sympathy for one of the visiting delegates from Uganda, who was one of the few presenting papers for the Malinda Memorial prize competition who had slides. He was the last of fifteen to present, and just before he began his introduction, the lights went out. We did make allowances for this when judging, but he was not one of the eventual winners. I agree with Dr Dobson's assessment that the quality of papers presented was good,

although like him I would prefer to see less retrospective studies in future.

The theme of 'Quality and Safety' continued at the SAEA scientific meeting, although there were also several other papers on a variety of topics, including case reports, surveys and new equipment. A panel discussion featuring four of the visiting speakers generated some interesting debate, and the meeting was closed by the President of the SAEA, Dr N Matekere.

Our hosts' hospitality was of the highest quality, and our sincere thanks go to them for their kindness and help over the week. There were two 'formal' social events, a 'Sundowner' and meal at the end of the refresher course, and a dinner dance on the Friday night. These were both great successes, and simply reflected the warm welcome that for us extended from the moment of arrival until the time of our departure. I personally will retain very happy memories of my week in Moshi, and look forward to a return visit on some future occasion.

With my interest in obstetric anaesthesia, I was pleased that the theme for next year's course, probably to be held in Moshi again, will be 'Obstetric Anaesthesia in Developing Countries'. I think that this is a particularly relevant topic for such a course, and would echo Dr Dobson's recommendation that WFSA should continue to support this venture.

I have always felt that the UK anaesthetists should be encouraged to assist and participate in such schemes and having now had first hand experience myself, I am even more convinced of the value of this contribution, not only to the local anaesthetists, but also to the visiting lecturer. My hope would be that the Association, and the Scottish Society will continue to support and indeed increase their support for such ventures.

My thanks again to the Association and the Scottish Society for affording me this opportunity to make a modest contribution to the development of the specialty of anaesthesia in East Africa

TRAINEES AND THE SCOTTISH SOCIETY OF ANAESTHETISTS

TRACY DUNN & WJ KERR

Last year concern was expressed at the poor attendance at the Registrars' Meeting and Council considered a number of suggested changes to improve the situation. In 1994 the meeting took place in the Southern General Hospital in Glasgow in June. The initial application to attend in response to a poster advert was poor and therefore the registration fee was reduced from £30 to £5 and a circular was sent to trainees in Scotland encouraging them to attend the meeting. We decided to produce a questionnaire to ascertain any factors which may contribute to poor attendance.

Of 70 trainees who attended the 1994 meeting, 44 (68%) returned completed questionnaires. Replies were received from 20 Senior House Officers, 18 Career Registrars, 2 Research Fellows, 6 Senior Registrars, 1 Staff Grade and one of unknown grade. There was a reasonable representation from most parts of Scotland.

Of the respondents only 19% were members of the Society. None of the Senior House Officers were members and interestingly only 33% of registrars and 20% of Senior Registrars were members. Of the 39 who were not members 77% would like to join and only 13% did not wish to join.

The majority, 52%, learned about the meeting from the poster advert. Only 8% had been advised of the meeting by a consultant, 8% heard about the meeting from a combination of sources. However, a further 27% attended the meeting because of the subsequent circular.

Of the 20 who were not registrars only 7% did not realise that the meeting is aimed at all grades of trainee. However, 60% of these individuals still

felt that the title should be changed. In contrast 56% of the registrars felt there was no need for a change. In general, the suggestion 'Scottish Society of Anaesthetists Trainees' Scientific Meeting' was acceptable, however several respondents felt that 'Scientific' should be omitted. Indeed one commented that a blend of scientific and clinically orientated presentations would help maintain interest.

There did not appear to be a problem in receiving study leave expenses, 55% received study leave with expenses to attend the meeting. Of the 18 who did not receive expenses, 17 did not ask for reimbursement. Although 58% did not feel that reducing the fee influenced their decision to attend the meeting, 40% felt that it did.

It has been suggested that the meeting in a more central location would increase the attendance. Only 19% agreed with this suggestion and 73% felt it would make no difference.

In general trainees were satisfied with the content of the programme. 75% did not feel it could have been improved and the majority felt it was appropriate to their stage of training. It was suggested that presentation on a current clinical issue or an update on a specific scientific topic of interest would have been valuable. One respondent suggested a few 'lighter subjects' such as a presentation of an experience of anaesthesia in another country would be advantageous. It would seem that the programme was well designed and indeed, one individual commented that the content was good with up to date topics and that the 'level was well pitched'.

Only 4% of the respondents were unaware that the

control of study leave funds for trainees has moved from local managers to the Postgraduate Dean's Office. The majority felt that so far the changes had had no effect on the granting of study leave or expenses. Special problems encountered included study leave not being granted for private study prior to examinations, a limited number of staff being allowed to take study leave at a certain time and an increased length of time between applying for study leave and it being granted.

It was pointed out that research fellows are not considered to be trainees and that their funding for study leave is still controlled by local managers.

Only 9% felt that the Society does enough for trainees but 62% were unaware what the Society actually does for trainees. Suggestions included more educational meetings, more regular meetings and more regional meetings. Comments seemed to emphasise the need for more communication between the Society and the trainees, especially in the district. Interestingly, one suggestion was that the Society should promote and keep a register of research posts related to anaesthesia. Further, one individual felt that the Society should monitor the standards of education in the district.

It has been suggested that a more central location for the meeting would increase the attendance. The delegates at this year's meeting in Glasgow represented most parts of Scotland and the majority of respondents felt that moving the location would make no difference to the attendance. However it should be noted that there were no trainees from Inverness, Perth or Fife.

The present title of the meeting did not seem to inhibit other grades of trainees from attending but it was felt that the title should be changed. It would appear that either the Scottish Society of Anaesthetists Educational Meeting for Trainees or Scottish Society of Anaesthetists Trainees

Meeting would be appropriate.

There appears to be no problem at present getting study leave with expenses to attend the meeting. Despite this fact, reducing the cost of the meeting did seem to encourage more trainees to attend.

As yet, the movement of control of study leave funds from local managers to the Postgraduate Dean's Office from April 1994 does not seem to have had a significant effect on the granting of study leave and expenses. However, it is early days and this should perhaps be reassessed at the next meeting.

It was encouraging to discover that the majority of trainees found the content of the meeting relevant to their stage of training. This served to emphasise the need for a wide variety of topics both clinical and scientific to maintain interest in this meeting.

It was surprising to find such a small percentage of the respondents are members of the Society. This is presumably related to the uncertainty about what the Society does for trainees. If the Society wishes to encourage trainees to join, there should perhaps be more encouragement from consultants and also for increased dissemination of information about the Society to trainees. Further, it is interesting that some trainees felt that the Society should become more involved in monitoring trainees' education as well as continuing to provide educational meetings.

The movement of control of study leave may in future lead to a limitation in the number of meetings trainees will be permitted to attend, especially meetings which are distant from base hospital. It is therefore important that the Scottish Society Meetings continue to provide a forum for educational, clinical and scientific debate for trainees in anaesthesia.

NEWS FROM THE REGIONS

CENTRAL

Falkirk

There have not been any staff changes in the past year and the workload continues unaltered. The building work for the new ITU/HDU is finished. This consists of four ITU beds, four HDU beds and one isolation room and, with any luck, we should be able to start admitting patients early in 1995.

Stirling Royal Infirmary

There have been no appointments or retirements from senior medical staff during the last year. However, with the appointment of an acute pain sister, the department now runs a full time acute pain service, with the consequent improvements in post-operative care. The Intensive Care Unit has been participating in the Scottish Intensive Care Society audit project since August 1994.

GRAMPIAN

Aberdeen

In its 500th year the University of Aberdeen has at last established a Department of Anaesthesia and Intensive Care. Professor Nigel Webster has moved from St James' University Hospital in Leeds to head the unit, which will eventually become part of the proposed Institute of Medical Sciences. He will be joined by Vivek Kulkarni as Senior Lecturer who is presently working in Baltimore. They can be guaranteed the full support of their clinical colleagues.

The building of new General and Cardiac Intensive Therapy Units is now complete and the transfer of patients and staff was made relatively smoothly. The new operating theatres are being commissioned as surgical specialties move in from peripheral areas to a single complex.

Greg Imray retired in September. His contribution to anaesthesia in the North East and particularly to the establishment of Intensive Care in Aberdeen has been considerable. The latter is commemorated by a plaque at the entrance to the new ITU. At his retirement reception, Mr Alex Cumming, the

new Chief Executive of Aberdeen Royal Hospitals NHS Trust, was left in no doubt by Dr Imray of the problems he has inherited from his predecessor. Unfortunately, the inadequate provision of intensive therapy beds in a hospital of this size has been confirmed in the first few months of the new unit's operation. Initial impressions are that Mr Cumming is receptive to advice from medical staff.

In the consultant ranks, we were all delighted and not a little relieved to welcome Dr Margery McNab back to work after undergoing major surgery. She is not alone in having been admitted to one of the wards and operated on in a theatre in which she regularly works and perhaps this gives added, if at the time unwelcome, insight. Pradeep Ramayya resigned in January to take his clinical and computing skills to Health Care International in Clydebank. In spite of all the problems at that institution they can be guaranteed the best information technology advice available. The shortage of consultant anaesthetists in Aberdeen has partially resolved with the appointments of Andy Ronald, Paul Martin and John Read from local senior registrar posts. Sally Crofts and Fiona Bryden have been appointed to consultant posts elsewhere; Dundee and Vale of Leven have been beneficiaries of our loss and our best wishes go with them.

1994 also saw another visit of the Anaesthetic Research Society to Aberdeen. This highly successful meeting was organised by Alastair Chambers and will be remembered not only for the quality of presentations, four of which were from locals, but also the urgent evacuation of the lecture hall halfway through the morning session when the fire alarm sounded. Fortunately the cause of this was readily recognised and an early resumption meant that the programme was not unduly disrupted.

Elgin

The first phase of the twenty two million pound development of Dr Gray's Hospital will be commissioned in May 1995, and the second phase eighteen months later. The process of appointing anaesthetists continues but, as elsewhere, the lack of fully accredited applicants is a problem.

HIGHLAND

1994 has been a more stable year in staffing terms with only one change to the permanent staff. Dr Ian Skipsey joined the department from a senior registrar post in Dundee on 1st May 1994. He has taken over the sessions vacated by Dr John Machin who has been appointed as Medical Director of the Raigmore Trust. All four SHO posts have now been filled enabling a full Epidural Service to get underway. So far the service is going well with numbers increasing rapidly.

SOUTH EAST

Edinburgh

Last year's edition carried details of the impending development of a new Royal Infirmary of Edinburgh to be built on a site at Little France. This must have filtered through to St Andrews House as Lord Fraser has recently issued a statement confirming it. Just in case any of the existing staff were unaware of the proposal, every department in the hospital received a fax with the details on the afternoon of the announcement. Our mole tells us that the fact that the proposed site is riddled with old mine workings is regarded as a challenge by modern civil engineers. The tunnels may actually be a godsend for those who failed to obtain a parking permit when applications closed early last year.

The planners are currently struggling with the novel concept of whether or not to make the new hospital 'Patient Focused'. With Iain Davidson heading the medical representation on the Trust, our specialty should have one ally in the attempt to get reasonable facilities for our patients even if they are out of focus.

The Lothian Trusts are starting to consolidate their positions as independent units. First off the mark, St Johns at Howden is forging ahead with a staff that gets on well with the management. They provide a broad range of services and are attracting many patients from the West of Edinburgh. It is possible to park cars in the hospital grounds and be seen and treated at A&E in less than two hours. The 'park and be seen' facility is a feature not found in the centre of town.

The Royal Hospital for Sick Children has opened a large new wing which when fully operational will include four theatres, sixteen ICU and HDU beds and two wards. Appropriate increases in staff are planned but not appointed at the time of writing.

The balance of specialties in the largest trusts is of some concern. The Western General has a mainly elective workload at present, with almost all of the acute services being provided by the Royal Infirmary Group. The impending merger of the Eastern General Hospital, and its large Maternity unit with the new Royal Infirmary is causing some disquiet amongst the local citizens.

Now that the patients are following market forces, there is some evidence that the anaesthetists are following suit. Karen Watson has moved from the City Hospital to St Johns, and Donald Galloway has come back from Carlisle. These gains have been partially countered by Jane Chesnut's move to Crosshouse. Mike Brockway is going to exchange jobs for a year with Anabelle Dickson from Christchurch.

The Trusts are keen that anaesthetists do not work in more than one Trust and several moves have occurred as a result. Lynda Rutledge has transferred all of her sessions to the Western General and Evan Lloyd will shortly follow suit. Colin Sinclair will no longer travel to the Western where he keeps abreast of modern anaesthetic techniques and enjoys a weekly break from cardiac surgery.

Partial retirement remains popular with Vaughan Martin, Clark McIntyre and Brian Slawson who all confirm its beneficial effects on one's lifestyle. Brian took the opportunity to move to the Eastern General in the process.

Gerry Keenan has come from Leeds to a consultant post with predominantly vascular surgery sessions and Anne Macrae has obtained a consultant post in the Simpson Memorial Maternity Pavilion. Now that there are two lady consultants on the RIE site we can truly say that anaesthesia is an equal opportunities employer. Margaret Cullen has consolidated her initially temporary consultant post at the Western.

The University Department of Anaesthesia has

seen considerable changes in the last year. Ed Doyle joined Nikki Maran as a lecturer in time to see her depart on a successful maternity leave. David Weatherill has moved to an NHS job in Durham, with Gordon Drummond moving from part-time to full-time Senior Lecturer. We congratulate Tony Wildsmith on his recent appointment to the Chair in Dundee. It may be of interest to Dundonians that it is Tony's left ear that is deaf. If he makes no response when you speak from his right, then he really is ignoring you. Attempts to count the number of Professors of Anaesthesia who have worked with Alastair Spence are thwarted by insufficient fingers, but he must be close to getting into the Guinness Book of Records. The PPRCA has returned to his Edinburgh duties with great gusto. He has been seen regularly in the surgical corridors and claims he can still turn over a list at great speed.

Our other past president, Willie Macrae has volunteered to put his considerable skills to work for the local good by becoming the Clinical Director of Anaesthesia, Theatres and ITU. We feel slightly sorry for the managers but they deserve all that they are about to get!

We are very grateful to our colleagues in the Cardiac Surgery Unit of Glasgow Royal Infirmary for returning Bob Ratnasingham to us following his successful coronary bypass grafting. Bob's only problem has been a neurological abnormality which has convinced him that 'Edinburgh's Slightly Superior', at least in terms of where you should live if you work there.

Magnus Garrioch, who has been investigating a blood substitute for Baxter as a senior registrar in the Royal is about to cross Princess Street to continue similar work as an Honorary Consultant at the Western General. Alastair Nimmo is broadening his experience working at the Charity hospital in Berlin. We are delighted to welcome Paul Goggins from Melbourne as a replacement while Charles Morton enjoys a year in Auckland.

Chris Thorpe returned from Christchurch to become one of this year's new senior registrars. Joining him are Linda Stewart, Arnie Arnstein, Heather Spens, Keith Kelly and Colin McFarlane. Having completed his MBA, Graham Walker our first officially part time male senior registrar has moved full time, leaving the part time field to

Lydia Burcher from Birmingham and our own Mary Dickson.

We offer our best wishes to Ruth Stevenson, Leslie Duncan and Zia Arfeen who are off to senior registrar jobs in Aberdeen, Dundee and Newcastle respectively.

While we are delighted to see our Senior Registrars progressing on to the job of their choice, we are very concerned about the imbalance caused by the current reforms. A major block exists at the entry to the SR grade and there is an unprecedented shortage of 'troops on the ground' at all levels. The continued reduction of Junior Doctor's legal hours of work means that many consultants are having to increase their work load and quite a few are working hours that would be illegal if they were juniors. The situation in Lothian Anaesthesia is probably no different from many specialties in other areas, where we have several unfilled consultant posts with no realistic prospect of filling them.

We end this report by noting the major contribution that Geoff Sharwood-Smith made to Forensic Science by reporting the effects that atropine laced tonic water had on his family. Had he not diagnosed the likely cause of his wife and son's tachycardia, dry mouth and delirium, an alleged criminal might still be at large.

BORDERS

It looks as if the controversial split of hospital medical services will be realised and that there will be two trusts from April 1995. There have been no changes in the senior staff this year. Dr Ian Yellowlees, the most recently arrived consultant, and Dr Janet Braidwood have recently launched a much needed pain clinic service and like the acute pain service this is the subject of audit. The registrar rotation with Edinburgh is functioning well.

The old problem of inadequate office accommodation for anaesthetists has arisen again, largely due to the expansion in staffing since the hospital opened.

FIFE

It has been a *Trusty* year. Both Kirkealdy Acute

Hospitals and Queen Margaret Hospital, Dunfermline are getting settled in as new trusts from April 1994. Forth Park Hospital is now the sole maternity hospital in Fife. It also houses a midwife-led unit which is under close scrutiny for a two year period with a view to possibly instituting one in Dunfermline. At long last, Fife Health Board as purefaser group, have acknowledged the need for consultant anaesthetic sessions in the obstetric service and an additional post has been created. Unfortunately, we have lost one of our consultants after six years, namely Janet McKean - a very popular member of staff. She went on maternity leave (and produced a fine son) but resigned as her husband accepted a senior lecturer post in surgery in New Zealand. Her departure was an 'all-black' day for the Victoria Hospital. These are not easy times to find two new consultants. Dr Callan Wilson is now Clinical Director for Theatre and Anaesthetics. Amongst the development plans is a larger size Enhanced High Dependency Unit (a Fife expression for the intermediate between HDU and ITU).

Dr Eve Pitt retired after 25 years service as a consultant in Dunfermline. Her departure coincided with the end of her term of office as President of the Edinburgh and East of Scotland Society of Anaesthetists. Eve has had a truly holistic approach to medical practice and has been in great demand as a speaker on various aspects of complementary medicine. Her replacement is Peter Curry, who has a special interest in the management of trauma.

TAYSIDE

Dundee

1994 proved a particularly eventful year for Anaesthesia in Dundee. Following several years of discussion and negotiation, a Chair of Anaesthesia was established, funded by the Dundee Teaching Hospitals Trust, with the promise of a Senior Lectureship in early 1995. The appointment of Tony Wildsmith from Edinburgh as the first incumbent has been widely welcomed both here in Dundee and throughout the country at large. His particular expertise and research interests in regional anaesthesia and acute pain relief can only help with our post-graduate training and research and improve the undergraduate medical and dental student teaching. His

professed desire to do a regular vascular list had apparently nothing to do with his appointment! We await his choice of senior lecturer with keen anticipation.

Three new consultants have also joined the Department over the last year. Willie McClymont and Praveen Manthri from our SR ranks and Sally Crofts returned from Aberdeen via Toronto. On the debit side, Rae Webster has left her ICU post in Dundee for a similar position in Northampton and Sandy Forrest has retired. Sandy has made an enormous contribution to Anaesthesia in Dundee, clinically, administratively as past chairman of Division, and educationally as University Head of Department. In this last capacity he has been instrumental in setting up the Chair of Anaesthesia and for this we owe him a great debt of gratitude. He has certainly gone out in style as President of the Society and winner of its Golfing Cup and we wish him all the best in his well earned retirement in St Andrews.

At Senior Registrar level, four of our accredited trainees have moved on. Ian Skipsey to Inverness and Duncan Forbes to Perth in addition to the two Dundee appointments. They have been replaced by Fergus Millar back from a traumatic year in Baltimore, Cliff Barthram, Sandy Binning and Charles Wallis. A new seventh SR post has been established and filled by Lesley Duncan, an Astra Research Fellow from Edinburgh. Our career registrars have acquitted themselves extremely well this year with five out of five passing the F.R.C.A. Congratulations to Drs. Baxter, Cameron, Cox, Lacoux and Peel.

The directorate structure is now well established in Dundee with major anaesthetic input from Iain Gray as Director of Anaesthesia and Farquhar Hamilton as Director of Critical Care Medicine (encompassing cardiology, clinical haematology and nephrology as well as intensive care). Both are actively involved in the discussions concerning the planned closure of Dundee Royal Infirmary with transfer of all acute services to the Ninewells site. Building is due to start in April with completion by late 1997 and there is considerable concern about the proposed large reduction in overall bed numbers and theatre capacity.

The anaesthetic nurse service is now up to full complement of 74 WTEs, under the control of the

Directorate of Anaesthesia, and ensures skilled assistance in all areas where anaesthesia is administered. This includes the recently opened outpatient dental suite in Ninewells where all day case dental anaesthesia is performed, replacing less than satisfactory facilities in a variety of community dental clinics and the Dental Hospital. The Acute Pain Service continues to flourish with three dedicated consultant anaesthetic sessions, consolidated funding for a pain sister and a formal trainee rotation through acute and chronic pain. The sterling work of the Chronic Pain Team has finally been recognised by Tayside Health Board with the allocation of £100,000 recurrent funding to allow its expansion. This will provide additional consultant input to help Bill Macrae and Tom Houston and also enable them to become more involved in primary care.

Other notable events included a highly successful meeting of the Neuroanaesthesia Society in Dundee in the Spring organised by Bill Bisset and the winning of the Society's Registrars' Prize by Cliff Barthram.

Perth

This has been a year of change at Perth Royal Infirmary. There have been two retirements, Dr Peter Brown and our Associate Specialist Dr Sybil Simpson. In addition there was a small reduction in the number of trainees in line with 'Achieving a Balance'. This has led to an expansion of the Consultant grade in the hospital to join Drs Magahy, Kutarski, Coe and Ratcliff. Dr Will Elsdon who has an interest in paediatric anaesthesia has moved from a consultant post at Law Hospital and Dr Duncan Forbes who has moved the length of the Carse from Ninewells with an interest in Intensive Care. Dr Dil Kapur who has interests in paediatric and obstetric anaesthesia arrived from a senior registrar post in Newcastle and Dr Mike Bell will be joining the department early in 1995 from a consultant post in Dumfries and Galloway bringing experience of Intensive Care. There has been one substantive Staff Grade appointment in the past year with Dr Barbara Reay moving to this post.

WEST OF SCOTLAND

Glasgow

There has been much speculation over the past

year regarding the reasons for the delay in the publication of the Greater Glasgow Health Board revised Acute Strategy to cover the period 1996 to 2000. The original proposals published approximately two years ago involved major hospital closures and the spending of large amounts of money. It now seems that the Health Board will opt for a strategy of minimal change with virtually all units remaining open and with very little capital expenditure. Although this may please many people, it will leave Glasgow anaesthesia with the major problem of covering five adult intensive therapy units, probably four maternity units, up to six acute adult sites plus emergency and ITU cover for a major children's hospital and a major neurosurgical centre. It will be extremely difficult to do this and reduce junior doctors' hours and introduce Calman type training.

An additional complication to this is the failure of the Health Care International Hospital at Clydebank. This hospital will not easily fit into the existing NHS framework, if that is to be its ultimate role.

There has been considerable concern in Glasgow regarding the future of the University Chair of Anaesthesia. At the moment the Chair is frozen but there are hopes that funding will be released in the near future. Dr John Asbury has taken over from Professor Fitch as acting Head of Department and Professor Fitch remains the Professor of the Department.

The past year has also seen the commencement of Trust status for the Western Infirmary, the Royal Infirmary and Stobhill Hospital. The other acute hospitals became Trusts in 1993. At present we are not aware of any major problems but the situation is likely to become increasingly difficult over the next year or two as Glasgow reaches share parity with the rest of Scotland. It will be little short of a miracle if this is managed and all of the acute hospitals remain in a healthy state.

Royal Hospital for Sick Children

There have been no major changes to senior staff at the Royal Hospital for Sick Children. We are developing a new build of seven theatres to start in 1995 and opened four new intensive care beds in late 1993 to take our total to fourteen.

Royal Infirmary

The Royal Infirmary became a Trust in April 1994 and thus far the most obvious change around the hospital has been the instillation of new, much wider, signposts to accommodate the new official Trust title, the Glasgow Royal Infirmary University NHS Trust. In addition to becoming a Trust, 1994 has been a very important year for the Royal Infirmary and a number of events have been held to mark the bicentenary of its foundation. A Scientific Meeting was held in the Royal Concert Hall at the beginning of September and other events have included a Civic Reception in the City Chambers and a dinner in the Royal College of Physicians and Surgeons of Glasgow.

As always, there have been a number of staff changes over the year but these have been, at least at consultant level, smaller than of late. Dr John Reid has retired from his consultant post having given many years of outstanding service to the hospital, in the early days as one of the consultants with responsibility to the Intensive Care Unit and, more recently, as a founding member of the Chronic Pain Relief Service. We wish John good health to enjoy a long and happy retirement. There have been a sizeable number of changes to our senior registrar establishment. Dr Susan Geddes has been appointed to a consultant post within our own directorate and Drs Fred Davies and Alison Kirkpatrick are about to take up consultant posts at Monklands District General Hospital. A number of new senior registrars have joined the ranks over the past year. Dr Susan Nimmo has arrived from the Western Infirmary and Dr Fiona Pearsall was promoted from a career registrar post in the Royal. In addition, Dr Chris Taylor has joined us from the Army for approximately twelve months to allow him to complete his Higher Specialist Training. His last posting before his arrival in Glasgow was in Bosnia and he tells us that, in many ways, there are great similarities between Sarajevo and the East end of the City.

Needless to say, we have all lost count of the multitude of staff changes which we have experienced at Career Registrar and SHO level. It seems to be increasingly difficult to establish any stability in the junior ranks as our junior colleagues make their way up the career ladder and perhaps the only reliable method of monitoring the progress of our junior staff would be by the introduction of

electronic tagging.

Regrettably, this report must end on a much more serious note as we record, with great sadness, the death of Dr Fiona McGilvray. Fiona joined us as a senior house officer from Paisley and was a very popular member of the department. Having gained the FRCA she became a career registrar in the Victoria Infirmary and undoubtedly had a bright future in our specialty. Sadly her career in anaesthesia was cut short by serious illness and she became extremely unwell over a relatively short period of time. Despite intensive treatment, which she endured with amazing fortitude, Fiona died in October. She will be remembered by all who knew her as a dedicated and caring young anaesthetist.

Southern General Hospital

The past year has been reasonably uneventful. There have not been any major budgetary problems and the honeymoon of Trust status seems to be continuing. From April 1995, it is probable that Anaesthesia will become part of a Directorate including Anaesthesia, Intensive Therapy, the Day Case Surgery Unit and Theatres. There is even the prospect that management will start paying the Clinical Director.

Dr Chris Sugden moved from Monklands Hospital in September to join us as a Consultant. Dr Sugden is presently establishing a pain management service at this hospital. Dr Rosemary Cochrane was appointed to the post of Staff Grade Anaesthetist in April.

Dr Lynn Newman is now fully recovered and back at work after being severely ill following the birth of her baby. She had the unfortunate experience of sampling the delights of her own ITU on the wrong end of an endotracheal tube but has survived this extreme form of quality assessment.

The Department of Neuroanaesthesia is now part of the Directorate of Neurosciences. During the last year the Chairmanship has passed to Dr Jim Borthwick and the secretary is now Dr Alison Wagstaff. There have been no consultant staff changes over the last twelve months but the research registrar in the Department is now Dr Drew Inglis. With the National Spinal Injuries Unit in full flow there is an increased involvement

with patients with cervical spine injuries including their ventilatory management and anaesthesia for cervical spine stabilisation. Interventional radiology for the management of intracranial vascular lesions has played an increasing part in our service as has the increase in paediatric neurosurgery. The Department also plays a large part in the research of the intensive care management of patients with severe head injury.

Stobhill Hospital

Stobhill became a Trust in April 1994 and since then the Health Board appears to have lifted the threat of closure. As a result, new consultants in Urology and Gynaecology have been appointed and we are to advertise for a new Consultant Anaesthetist post. There have been no senior staff changes in the last year.

Victoria Infirmary

We have appointed two new consultants this year, one is Dr Alan Davidson from the Royal Infirmary who will be coming to join our Intensive Care team and the other is Dr Alan Brown from our own Department who will be joining our Obstetric team. Dr Bryce Randalls, one of our senior registrars, has now left Scotland for the softer, sunnier pastures of Torquay and Dr Ian Davidson has arrived to take his place. Neil O'Donnell went earlier this year to a consultant post at the Western Infirmary. Among our career registrars, Jackie Howes and Paul Wylie have both obtained senior registrar posts in Newcastle and David Clough and one of our research fellows, Catherine Brydon, have moved to senior registrar posts in the Western Infirmary.

Western Infirmary

The Western Infirmary/Gartnavel General Hospital became an NHS Trust in April 1994 and the first Clinical Director is Dr Peter Wallace. The chairmanship of the Department has passed from Dr Tom McCubbin to Dr Douglas McLaren.

The only consultant appointment in the last year was Dr Neil O'Donnell who took up the post created by the retiral of Drs Charles Cairns and

Jimmy Collins. Dr Shiona Stott was appointed to a part-time Senior Registrar post in the Department. Drs David Clough, Alan Hope, Jackie Donnelly and Catherine Bryden were also appointed to Senior Registrar positions.

At long last, new more spacious accommodation has been found for the Department of Anaesthetics and it is hoped that our move to the old Western Infirmary Nurses Training School will take place early in 1995. This will provide much needed office accommodation for Consultants and Senior Registrars but may mean that Department meetings will have to take place in the Rubaiyat or Aragon instead of the Exchequer.

AYR

The Anaesthetic Service in South Ayrshire is delivered via a Directorate under the leadership of Dr Ken McKenzie. Vacancies at consultant level continue to exist but we were pleased to welcome Dr Connie Watt at Staff Grade. The opening in November 1994 of a new Day Surgical Unit means that all surgical services will now be centred in the Ayr Hospital.

Crosshouse Hospital

Dr J Hildebrand continues as the Clinical Director of Anaesthesia/Theatre/ITU in the North Ayrshire Trust. Dr Jane Chesnut, previously a Consultant at St John's Hospital in Livingston, has joined the Division taking up a new Consultant post.

DUMFRIES AND GALLOWAY

Our Acute and Maternity Unit became a Trust in April 1994 with Anaesthetics, Theatres and Intensive Care forming one of six clinical directorates. Dr David Bennie has been appointed as Clinical Director.

We welcome Dr Calum McClymont to the department to replace Dr John Mason who retired last year. Calum is a native of this area, a graduate of Aberdeen University and received his anaesthetic training in Newcastle, Christchurch and Melbourne. On the other hand we have lost Dr Mike Bell to Perth. He takes up a consultant post there in January and we wish him well in the future.

Inverclyde Royal

There have been no changes of senior staff in the Department of Anaesthetics at Inverclyde Royal during the first year of Trust management.

The Rankin Maternity Unit has moved into the main hospital complex. This brings all the anaesthetic services under one roof and has helped the continuity of the epidural service. The Day Surgery Unit is expanding with input from most branches of surgery and the pain clinic. Inverclyde intensive care staff are to participate in the Scottish Intensive Care Audit. There are new regular teaching sessions for both our trainee anaesthetists and medical students.

Monklands Hospital

The Division of Anaesthesia at Monklands remains part of the extremely large Directorate of Surgery which has Dr Alastair Naismith at the helm as Clinical Director.

We started the year on a gloomy note with the resignation of Dr Chris Sugden who left to take up a new post at the Southern General Hospital in Glasgow. This left us with two vacant consultant posts, although we have been fortunate to have Dr Paul McMurray as a long term locum. Matters however began to improve with the agreement for funding by the Trust Board for two additional consultant posts, three staff grade posts and two new senior house officer posts. When these posts are all filled, it is envisaged that the Division will cover Bellshill Hospital throughout the week on a 24-hour basis.

To date, our new senior house officer posts have been filled and Drs Ruth Sinclair, Dawn Harrison and Lesley Baird have taken up the staff grade posts. Three consultant appointments have been made and we are looking forward to being joined by Drs Alison Kilpatrick, Fred Davies and Chris Greenhalgh early in 1995. We are hopeful of filling the last consultant post before the end of the year!

Royal Alexandra Hospital, Paisley

After the excitement engendered as a result of

hosting the Annual Scientific Meeting of the Scottish Society last year, 1994 has been relatively quiet for the Division of Anaesthesia in Paisley. Dr R McDevitt has assumed the mantle of Chairman from Dr B Scorgie. Dr S Madsen continues as Clinical Director of Theatre Services. There have been no new consultant appointments or retirements. A new Staff grade post has been created but has yet to be filled.

Dr T Goudie is in the process of instigating an Acute Pain service for the hospital and a sister has been appointed. We look forward to a successful expansion of this service in 1995. The potential for Day Surgery has yet to be fully explored and the HDU continues to treat a high proportion of Intensive Care patients. Hopefully we will move forward to upgrading the Unit in 1995.

Vale of Leven Hospital

We are on schedule to become a Trust in April 1995 and the shadow Anaesthetic and Theatre Services Directorate formed in 1993 is running well, headed up by Adrian Tully as Clinical Director and supported by John Kelly as Directorate Manager; Bill Easy continues as Chairman of the Division. A fifth consultant post in anaesthetics has been funded and we hope an appointment will be made soon. The appointment last year of two University linked Research Assistants to the middle grade staff has been very successful, both having a good number of papers with published or accepted for publication. Eleanor Guthrie was appointed as Staff Anaesthetist at the beginning of the year; and an SHO makes up the complement of four middle grade staff.

The dividing line between our High Dependency Unit and an Intensive Care Unit becomes ever more difficult to distinguish and the Unit, now open for 18 months, has revolutionised care of seriously ill patients in the hospital. The new outpatient department has had little impact on us as anaesthetists but the new casualty department due for completion at the end of February 1995 certainly will. Plans for the extension of our orthopaedic service are gathering momentum and we hope soon to be appointing additional orthopaedic staff with an accompanying further increase in the Anaesthetic Division, to work in a brand new orthopaedic theatre.

Edinburgh and East of Scotland Society of Anaesthetists

*(Honorary Secretary - Dr G Jones, Eastern
General Hospital, Edinburgh)*

- Oct 11 High Altitude Medicine and the Everest
Experience
Dr A Peacock, Glasgow
- Oct 28 Joint Meeting with the Glasgow &
West of Scotland Society of
Anaesthetists
The Professor JD Robertson Memorial
Lecture
Robbies Years. Dr WR MacRae
- Dec 14 Do you make your patients sick?
Dr DJ Rowbottom, Leicester Royal
Infirmary
- Jan 12 Trauma Care Systems
Dr A McGowan, Leeds
- Feb 7 Presidential Address - All in the Day's
Work
Dr A Whitfield
- Mar 7 Members' Night
- Mar 11 Annual Dinner
- May 2 **Annual General Meeting**

North East of Scotland Society of Anaesthetists

*(Honorary Secretary - Dr C Allison,
Stracathro Hospital, Brechin)*

- Oct 27 Regulation of cerebral blood flow and
the effects of anaesthesia
Dr PJ Andrews, Western General
Hospital, Edinburgh
- Dec 8 Members night
Stracathro Hospital Mansion House

- Mar 2 The history of thoracic anaesthesia
Dr Charles Gilbe, Royal Brompton
Hospital
- June 3 All day meeting at Madras College, St
Andrews
Presidential Address, **Annual General
Meeting**, Registrars' Prize Papers and
the 3rd Norman Rollason Lecture by
Dr Stuart McGowan.

Glasgow and West of Scotland Society of Anaesthetists

*(Honorary Secretary - Dr J.C. Howie,
Victoria Infirmary, Glasgow)*

- Oct 28 Joint Meeting at the Edinburgh & East
of Scotland Society of Anaesthetists
- Nov 22 A modern approach to epidural
analgesia in labour
Dr B Morgan, Queen Charlotte's
Hospital
- Dec 8 Combined meeting with the Glasgow
Anaesthetic Research Club
- Jan 16 Members night - presented by the
Department of Anaesthesia, Royal
Alexandra Hospital, Paisley
- Feb 14 Light and heavy in chronic pain
Dr H McQuay, Churchill Hospital,
Oxford
- Mar 13 Presidential Address
- Apr 25 **Annual General Meeting**
- May 5 Informal Dinner - Art Club
- May Annual Golf Outing
Milngavie Golf Club

TRAINEE'S PRIZE

The Society annually awards a prize of £250 for the best original essay submitted by a trainee anaesthetist in Scotland. A second and third prize may also be awarded for papers of particular merit at the discretion of the assessors. It is not necessary that entrants be members of the Society.

The conditions attaching to the award are as follows:

The paper or essay should be original i.e. it should not have been read previously at any meeting or published in any journal.

It is desirable that entries show evidence of personal work, but surveys of the literature are eligible for consideration. The Council of the Society wishes to stress that intending contenders should not be discouraged through fear of their efforts being judged elementary. It is fully realised that trainees in some peripheral hospitals may not have opportunities to deal with special types of cases or

employ advanced anaesthetic techniques.

Four Copies of each entry MUST reach the Honorary Secretary by the end of February.

The Hon Secretary places all entries in the hands of the Awards Committee which consists of the President, Vice-President and Past-President. These individuals wish to adjudicate without knowing the name or the hospital of the entrant; it is therefore requested that these details be submitted on a separate covering page and that the essay itself give no indication of its source. Acknowledgements to named colleagues should not be included.

The winner of the prize will be required to give a digest of the paper at the Annual Trainees Meeting in June. His/her expenses for the Annual General Meeting at Peebles and those of a partner will be met by the Society.

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