

NEWS LETTER

The
SCOTTISH
SOCIETY of
ANAESTHETISTS

Founded
20th February, 1914

December, 1972
No. 13

THE SCOTTISH SOCIETY OF ANÆSTHETISTS

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Vice-President	-	-	-	-	-	Dr. W. N. ROLLASON
Past President	-	-	-	-	-	Dr. D. W. SHANNON

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Aberdeen	-	-	-	-	-	Dr. EDITH BEVERIDGE
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Honorary Treasurer

Dr. D. J. GRUBB

37 Stirling Road, Edinburgh EH5 3 JA

Editor of Newsletter

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13 Comiston Drive, Edinburgh EH10 5 QR

“The objects of the Society will be to further the study of the science and practice of anæsthetics and the proper teaching thereof, and to conserve and advance the interests of anæsthetists.”

“Ordinary membership will be restricted to members of the medical profession practising the speciality of anæsthetics.”

—Extracts from the Constitution.

Subscriptions

£1 per annum.

50p per annum for Senior House Officers and Registrars.

Presidents of the Society since 1950

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|------------------------------|------------------------------|
| 1950—Dr. John Gillies. | 1962—Dr. Margaret Muir. |
| 1951—Dr. H. H. Pinkerton. | 1963—Dr. Alex. C. Forrester. |
| 1952—Dr. T. J. C. MacDonald. | 1964—Dr. J. D. Robertson. |
| 1953—Dr. W. M. Shearer. | 1965—Dr. A. G. Miller. |
| 1954—Dr. I. M. C. Dewar. | 1966—Dr. J. A. Bolster. |
| 1955—Dr. F. G. Gibb. | 1967—Dr. A. W. Raffan. |
| 1956—Dr. H. Bruce Wilson. | 1968—Dr. J. R. Kyles. |
| 1957—Dr. R. Lawrie. | 1969—Dr. Malcolm Shaw. |
| 1958—Dr. R. N. Sinclair. | 1970—Dr. K. C. Grigor. |
| 1959—Dr. Alison Ritchie. | 1971—Dr. D. W. Shannon. |
| 1960—Dr. A. Tindal. | 1972—Dr. James Crawford. |
| 1961—Dr. J. W. L. Bain. | |

Guest Speakers at Annual General Meeting

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| 1951—Dr. W. W. Mushin. | 1962—Prof. W. D. M. Paton. |
| 1952—Dr. M. H. Armstrong Davison. | 1963—Prof. E. A. Pask. |
| 1953—Dr. Ivan Magill. | 1964—Dr. Martin Holmdahl. |
| 1954—Prof. R. R. Macintosh. | 1965—Prof. J. G. Robson. |
| 1955—Dr. T. Cecil Gray. | 1966—Prof. A. Crampton Smith. |
| 1956—Dr. M. D. Nosworthy. | 1967—Dr. Sheila Kenny. |
| 1957—Dr. J. Alfred Lee. | 1968—Dr. R. B. Goudie. |
| 1958—Dr. L. B. Wevill. | 1969—Dr. R. P. W. Shackleton. |
| 1959—Dr. Margaret Hawksley. | 1970—Prof. J. W. Dundee. |
| 1960—Sir Dugald Baird. | 1971—Dr. A. R. Hunter. |
| 1961—Dr. G. S. W. Organe. | 1972—Prof. J. P. Payne. |

Honorary Secretaries of the Society since 1950

- 1950-53—Dr. R. N. Sinclair, Glasgow.
1953-57—Dr. A. G. Miller, Glasgow
1957-63—Dr. M. Shaw, Glasgow.
1963-67—Dr. A. H. B. Masson, Edinburgh.
1967-71—Dr. D. Campbell, Glasgow.
1971- —Dr. W. R. MacRae, Edinburgh.

Honorary Members

- | | |
|---------------------------------|--------------------------------|
| Dr. D. Keir Fisher, Glasgow. | Dr. H. H. Pinkerton, Glasgow. |
| Dr. John Gillies, Edinburgh. | Dr. Alison Ritchie, Edinburgh. |
| Dr. D. S. Middleton, Edinburgh. | Dr. J. W. L. Bain, Aberdeen. |
| Dr. Margaret C. Muir, Dundee. | Dr. I. M. C. Dewar, Glasgow. |
| Dr. W. B. Primrose, Glasgow. | Dr. Andrew Tindal, Glasgow. |
| Dr. Winifred Wood, Coll. | Dr. R. N. Sinclair, Glasgow. |

Senior Members

- | | |
|-------------------------------------|-----------------------------------|
| Dr. Ellen B. Cowan, Glasgow. | Dr. R. G. Grieve, Glasgow. |
| Dr. Margot W. Goldsmith, Edinburgh. | Dr. Lillie S. Dummer, Edinburgh. |
| Dr. A. McCallum Millar, Edinburgh. | Dr. Frances Redhead, Pencaitland. |
| Dr. Elaine Stocquart, Glasgow. | Dr. Mary Richmond, Mauchline. |
| Dr. Sheina Watters, Edinburgh. | Dr. W. M. Christie, Arbroath. |
| Dr. A. M. Brown, Glasgow. | Dr. Elizabeth Martin, Brechin. |
| Dr. Mary Brown, Glasgow. | Dr. J. C. Easson, Glasgow. |
| Dr. W. H. F. Boyd, Edinburgh. | |

The Scottish Society of Anæsthetists

. . . Founded 20th FEBRUARY, 1914

A. CONSTITUTION

- (1) The name of the Society will be "THE SCOTTISH SOCIETY OF ANÆSTHETISTS."
- (2) The objects of the Society will be to further the study of the science and practice of Anæsthetics, and the proper teaching thereof, and to conserve and advance the interests of Anæsthetists.
- (3) The Society will consist of Honorary Members, Senior Members, Ordinary Members, a President, a Vice-President, a Secretary, a Treasurer, and an Executive Council formed by the above Office-bearers, together with seven Ordinary Members, two from each of the regions centred on Edinburgh and Glasgow, and one from each of the regions centred on Aberdeen, Dundee and Inverness.
- (4) Ordinary Membership will be restricted to Members of the Medical Profession practising the specialty of Anæsthetics.
- (5) Senior Members may be elected from Ordinary Members who have retired from active practice.
- (6) Honorary Members may be elected on the recommendation of the Council and with the approval of the Society. Such Honorary Members would be elected from those who, either as Anæsthetists or in other spheres, have contributed in some special way to the advancement of Anæsthesia.
- (7) A meeting will be held every year, at a time and place to be appointed by the Executive Council.

B. ELECTION

- (1) Ordinary Members may be elected by a two-thirds majority of those present, at any regular meeting, nominations by an existing Member to be sent to the Secretary one calendar month before the day of election.
- (2) Nominations for Vice-President, Secretary and Treasurer will be made annually by the Executive Council, and will be circulated to Members along with the notice of the Annual General Meeting. Any further nominations for these Offices may be submitted to the Secretary 14 days before the date of the Annual General Meeting.
- (3) Regional Representatives will serve on the Executive Council for a period not exceed-

ing three years, and on retiring from office will not be eligible for re-election to the Council within a period of one year.

- (4) Nominations for vacancies in the Executive Council created by retirement will be called for at the Annual General Meeting, and a ballot held if necessary.
- (5) The President who retires at the Annual Meeting will automatically become an additional member of the Executive Council for the ensuing year.

C. DUTIES OF OFFICE-BEARERS AND MEMBERS OF EXECUTIVE

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

D. SUBSCRIPTION

- (1) Ordinary Members will pay an annual subscription of £1; Registrars and House Officers will pay 50p.
- (2) Any Member who has not paid his subscription for the current year may, at the discretion of the Executive Council, cease to be a Member of the Society.

E. GENERAL

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

Programme for 1972-73

Registrars' Prize. Entries must be submitted to the Secretary by the end of February. For details see later in the Newsletter.

Annual General Meeting. The Post House, Aviemore, 27th to 29th April, 1973. Guest speaker—Dr. John F. Nunn.

Neurosurgical Anaesthetists Travel Group. It is proposed to hold the next meeting in Dundee probably in May 1973. Enquiries should be directed to the Secretary, Dr. S. W. McGowan, Royal Infirmary, Dundee.

Scientific Meeting. Dundee, May 1973.

Registrars' Meeting. Western Infirmary, Glasgow, October 1973.

Activities for the Year 1971-72

Registrars' Meeting Aberdeen

29th October, 1971

The Annual Registrars' Meeting of the Society was held in Aberdeen Royal Infirmary. The morning session was arranged in the form of laboratory and clinical demonstrations. Registrars were able to choose from anaesthesia for caesarean section, methods of outpatient dental anaesthesia, measurement of cardiovascular function during laparoscopy, neonatal ventilation, hypothermia in children and intra venous regional anaesthesia.

Lunch was of the high standard one has come to expect of Aberdeen, and was followed by papers by Dr. Kennedy on muscle relaxants and cardiovascular function, Dr. Smith on cardiac output determination, Dr. Grove White on effect on memory of muscarinic blocking agents and by Dr. Robertson on nephrotoxic effect of methoxyflurane. Dr. Rollason and his colleagues are to be congratulated on the interesting and varied programme which was much appreciated.

The Annual General Meeting was held at

the Post House, Aviemore, on 28th to 30th April, 1972, and is reported fully later.

The Scientific Meeting was held in the Western Infirmary, Glasgow, on 27th May, 1972, with an interesting symposium on "Toxicity of Anaesthetic Drugs." Papers were given by Dr. G. D. Parbrook and Dr. A. A. Spence of the University of Glasgow, Dr. F. R. Ellis of the University of Leeds and Dr. L. Strunin of The London Hospital. Summaries of the papers kindly provided by the speakers appear later in the Newsletter.

Registrars' Prize

The Registrars' Prize for 1972 was won by Dr. Elizabeth Bradshaw of the Department of Anaesthetics at the Royal Infirmary, Glasgow for a paper entitled "Diazepam as a Relaxant—a Peripheral Misconception." A summary of Dr. Bradshaw's paper which was delivered at the AGM is included in the Newsletter. Additional awards were made to Dr. E. L. Lloyd, Royal Infirmary, Edinburgh, for a paper on "Accidental Hypothermia treated by central rewarming through the airway," and to Drs. H. Bauld and A. S. Buchan, Royal Infirmary, Edinburgh, for a paper on "Blood gas changes during trichloroethylene and intravenous pethidine anaesthesia."

President's Newsletter

IN medicine, as in the world at large, change in existing order and anxiety as to whether decisions taken now will stand the test of time will continue to dominate the coming year. The Scottish Standing Committee of the Faculty of Anaesthetists is now established and has ceased to be the responsibility of the Society. It might be agreed that the Society should divorce itself from all medico political activity and revert to its original status. If one looks back on the development of the Society, one will see that it has evolved from what was in effect an annual social gathering of anaesthetists from all parts of Scotland to an organisation including not only the important social aspect but presenting worthwhile scientific and training meetings during the year. In addition to these two functions, which are in the constitution, has been thrust upon it the political which it would seem must be assumed to some degree by any craft association. How deeply involved the Society should get in medical politics must be decided by the members. At present it is committed only to sending one representative to the

Scottish Committee for Hospital Medical Services.

Anaesthetists will be asked to give serious consideration this year to many problems and the decisions taken may affect hospital practice for years to come. Already the referendum on the future of the Faculty of Anaesthetists has been taken. The new contract for consultants is under discussion, and it is suggested that while it might be suitable for those practising in England most anaesthetists in Scotland would not benefit from the change. Recent articles on the hazards of working in theatres and recovery rooms will have caused dismay to many, but a quick "clinical impression" of the families of many established anaesthetists may help to allay some of the anxiety.

For those in training grades it is worth noting that in Scotland anaesthetics has the second greatest number of consultants and the highest number of consultant posts to be filled annually, while the age of consultants in post is rapidly increasing.

Altogether the coming year promises to continue the thrill, excitement and wonder that characterises the anaesthetist's life.

Annual General Meeting — Aviemore

28th - 30th APRIL, 1972

THE Society held its Annual General Meeting in 1972 for the first time in the Aviemore Centre. The venue was the newly-opened Post House. The Hotel commanded a magnificent view of the scenery and the Centre provided a wide range of activities for children of all ages.

The golf outing was held at Boat of Garten by the courtesy of the Club Committee and was well supported. The ladies' prize was won by Dr. Bradford and Dr. Alec Reid triumphed in the gentlemen's competition.

On the Friday evening a new venture, that of curling, was introduced and a happy band gathered under the watchful eye of Dr. Kyles. It was clear from the outset that the standard of play varied from the zenith of perfection to the horizontal nadir. None could deny the prowess of the victors, a rink of Mrs. Bannatyne, Drs. Shannon, Allan Macdonald and Keith Holloway. Prizes in suitable liquid form were later presented.

The Business Meeting on Saturday morning was well attended and, as usual, provided an opportunity for Scottish anaesthetists to discuss views on a variety of topics. Nevertheless, the aim of being finished in time for lunch was achieved, and the afternoon saw the President, Dr. James Crawford, Professor J. P. Payne and Dr. Elizabeth Bradshaw give their papers to an appreciative audience.

A total of 174 people sat down on the Saturday evening to dinner and considerable energy was later expended on the dance floor. So intoxicated, with enjoyment, were the dancers it appeared that an anaesthetic piper played with amazing grace.

Sunday dawned bright and clear, and after a gentle stroll round the policies and an ample lunch those who had attended moved off homewards in their respective directions with, it is hoped, happy memories of the 1972 meeting.

ANÆSTHESIA FOR THYMECTOMY IN MYASTHENIA GRAVIS

ANÆSTHESIA for the operation of thymectomy in the treatment of myasthenia gravis and the post-operative care of these patients are subjects which have interested several of us in the Western Infirmary, Glasgow, for several years. My colleague, Dr. Hugh Wishart, and I have been responsible for the conduct of the anæsthetic in all but one or two cases. The Infirmary is in the unique position of being able to attract from a very wide area patients suffering from myasthenia gravis. On its staff is Professor John Simpson who has made a life-time study of the condition in London and Edinburgh before returning to Glasgow. The operative procedure was in every case performed by Mr. Kenneth Fraser who, prior to Professor Simpson's arrival at the Western Infirmary, had acquired a considerable experience in the surgical treatment of this illness.

To appreciate the problems facing the anæsthetist it is necessary to know something of the condition and its peculiar appeal to anæsthetists.

Myasthenia gravis is a specific disease of skeletal muscle characterised by the development of abnormal weakness, after action or tension, with partial recovery after rest. The first description of a case was given by Thomas Willis in 1672. In 1901 the connection between myasthenia gravis and the thymus was noted by Laquier Weigert. In 1934 Mary Walker demonstrated the beneficial effect of physostigmine and put forward the concept of neuromuscular block. Physostigmine had been tried unsuccessfully in the treatment of the condition in the mid 1890s. In 1969 Simpson suggested an acute immunological basis for myasthenia, but more recently has stated that the primary illness may be a viral infection.

The first thymectomy was performed in 1911 by Sauerbruch and the operation was reintroduced by Blalock.

The theoretical mechanisms involved in myasthenia gravis are—

1. Insufficiency of acetylcholine (either deficient synthesis or release).
2. Excessive acetylcholine breakdown.

3. Curariform block of transmission by "a substance in the blood."
4. The immunological hypothesis: an auto immune response.
5. Viral or bacterial effect on the end plate.

The thymus in 70-80% of cases of myasthenia gravis shows pathological changes—lymphoid hyperplasia associated with numerous germ centres and cells filled with glycogen. 10-20% of cases will have a thymoma. The epithelial thymoma is the type which is present with myasthenia gravis.

The condition affects all races, the prevalence being 1:50,000—1:10,000. The sex incidence varies with age, female twice as common as male, until over the age of sixty years when the incidence reverses. The modal age of onset in either sex is 20 years of age.

The onset may be insidious or sudden and the first sign may be an abnormal response to muscle relaxants used during anæsthesia. Precipitating factors may be stress (physical or emotional) or infection. The course is variable with either a rapid spread of weakness or an interval between succeeding symptoms. Remissions occur in less than half of the cases and with decreasing frequency. The active stage of the disease is usually 4-7 years. Most deaths occur within the first 5 years, rarely after 10 years.

The main feature of myasthenia gravis is weakness involving one or two muscle groups and variability in strength from day to day. Recovery with rest is incomplete. Permanent weakness with muscle wasting is not uncommon (myasthenia myopathy).

The commonest sign is unilateral or bilateral ptosis often accompanied by diplopia, blurring of vision or nystagmus. Laryngeal and respiratory muscle weakness may lead to loss of voice and ventilatory failure. The muscles of the shoulder girdle and hip are most commonly affected. The reflexes are always present. There may be pain in the affected muscles and this pain will get worse as the day goes on.

The diagnosis of myasthenia gravis may be confirmed by pharmacological tests—curare test—edrophonium test—neostigmine test. The

response to these tests should always be elicited from the respiratory and bulbar muscles.

The normal new-born infant shows most of the neuromuscular phenomena of myasthenia gravis including resistance to depolarising substances.

The anaesthetic problems associated with the surgical treatment of myasthenia gravis arise from (i) abnormal neuromuscular response to anaesthetic agents and muscle relaxants, (ii) respiratory muscle weakness, (iii) painful wound, (iv) difficulty of providing adequate analgesia without weakening the power of respiration, (v) necessity of not using drugs which will affect the size of the pupil of the eye.

Prior to anaesthesia all the usual pre-operative investigations are carried out, including thyroid function tests, cardio-respiratory assessment, and, of great importance, physiotherapy is started as soon as possible.

The criteria adopted in deciding to submit a patient to thymectomy usually will include one of the following—(1) symptoms present less than 5 years, (2) episodes of respiratory crisis, (3) failure of medical treatment to contain the disease, (4) presence of a thymoma.

In a series of 41 cases at the Western Infirmary the majority were female in 11-30 age group. The youngest was a girl aged two years and the oldest a woman of 59 years.

All patients submitted for surgery have been under medical treatment prior to admission to hospital where they come in to the medical division for assessment. At least one week prior to operation the patient is transferred to the surgical ward, so that he or she can meet the people who will be involved in the operation. Because of the peculiar psychological state of most of these patients the anaesthetist must become well known to them as it will be the anaesthetist on whom the patient will come to depend while in hospital. The anaesthetist must also accept the rôle of co-ordinator of the treatment provided by the disciplines concerned, nursing, medical, surgical.

In the Western Infirmary we have a fixed régime for these patients. The operation starts at 2 p.m. The patient has the normal hospital breakfast on the morning of operation and continues anticholinesterase therapy until 10 a.m. after which no more cholinergic drugs are given. The patient is kept in bed after

breakfast. The proposed plan of treatment prior to operation as well as the operation and post-operative treatment is explained to and discussed with the patient so that nothing unexpected is done which might increase their apprehension. The less cholinergic therapy pre-operatively the better. A mild sedative is given; for some years we have used Mandrax. A nasogastric tube is passed before transfer of the patient to the theatre from the anaesthetic room.

Over the years many techniques of anaesthesia have been used for thymectomy, usually induction with a barbiturate followed by a gaseous agent. Some workers have used suxamethonium for intubation followed by cyclopropane or nitrous oxide, oxygen and ether, or nitrous oxide, oxygen and a powerful analgesic. Because we do not use atropine pre-operatively, permit the use of diathermy and desire a quick return to spontaneous ventilation at the end of the operation we have not used any of these methods.

We induce anaesthesia with either thiopentone or propanidid followed by inhalation of nitrous oxide and oxygen with the addition of halothane. We assist ventilation until easy intubation can be performed. Controlled ventilation with 1% halothane follows and is maintained throughout the operation.

Pulse rate and blood pressure are monitored and a slow intravenous infusion administered. A watch is kept on the pleurae and, if a thymoma is being removed, on the pericardium and lung.

The halothane is turned off as the wound is closed and the patient ventilated by hand until respiration returns. Ventilatory assistance continues until adequate spontaneous ventilation is established. We allow unassisted spontaneous breathing when the tidal volume measures 300-400 ml. on a Wright Respirometer and the minute volume is 5-6 litres. After a meticulous tracheal and pharyngeal toilet the patient is extubated.

Delay in return to adequate ventilation may be due to (1) medullary depression by halothane, (2) hypoxaemia, (3) myasthenic state. No case in the series had a tracheostomy as part of the planned operation. If ventilation becomes inadequate following return to the recovery room the patient is reintubated and ventilated with intermittent positive pressure.

The treatment of post-operative pain in the sternotomy wound has always been a problem

because the physicians depend on the pupil as an indication of the cholinergic state. All powerful analgesics have a miotic effect. At present we use intravenous pethidine.

The post-operative anticholinesterase requirement varied—

- 1 had no drug,
- 1 had double pre-operative dose,
- 18 had half the pre-operative dose,
- 21 had the same amount as the maintenance régime.

In the series, four cases required re-intubation and ventilation. Cholinergic crisis developed in five cases, usually about 48

hours after thymectomy. Other complications included lung collapse, pneumothorax, pleural effusion and pericardial effusion. Eleven patients suffered one or more of these conditions.

Early in the series one death occurred in the immediate post-operative period as a result of cholinergic crisis. All other patients left hospital with their condition under control. Of these two have died at home, one four months after operation said to be due to respiratory failure and the other ten months after thymectomy following increasing requirements of cholinergic drugs and recurrent chest infection.

The Registrars' Prize

THE Society awards annually a prize of £50 for the best original paper submitted by an anaesthetist in Scotland, holding the grade of Senior Registrar or under. A second prize of £20 or a third of £10 may be awarded for other papers of particular merit at the discretion of the assessors. It is not necessary that the Registrar be a member of the Society.

The conditions attaching to the award are as follows:—

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

2. It is desirable that papers submitted show evidence of personal work, but papers consisting of surveys of the literature are eligible for consideration. The Council of the Society wishes to stress that intending competitors should not be discouraged through fear of their efforts being judged elementary. It is

fully realised that junior anaesthetists in some peripheral hospitals may not have opportunities to deal with special types of cases or to employ advanced anaesthetic techniques.

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

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

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

THE EXPLOITATION OF RESEARCH

UNLIKE some other advanced countries such as the United States and Germany, no long tradition of support for research either by the State or by private endowment has existed in the United Kingdom despite the massive contribution of British scientists through the centuries. Traditionally, support for research in the United Kingdom has been at individual level; some British scientists have had the good fortune to possess private means, others supported themselves in routine work and pursued their research interests in whatever spare time was remaining, often at considerable expense and sometimes in conditions of real poverty. Even those who, like William Harvey, received royal patronage usually did so on the basis of friendship rather than on an appreciation of scientific merit.

RESEARCH AT NATIONAL LEVEL

The first step in the provision of public funds for medical research was taken almost by accident in 1911 when the National Insurance Act was passed through Parliament. Included in the Act was a sub-section concerned with the administration of sanatorium benefit, and which contained a clause authorising the Insurance Commissioners to retain, for the purposes of research, some of the funds allocated by Parliament. Presumably, this money, which amounted to one penny per head of the insured population in the United Kingdom, was intended primarily for research into tuberculosis. For this reason legal advice was sought on its interpretation by the medical research committee set up to implement policy. In accordance with the opinion that the application of the Medical Research Fund need not be restricted to any particular disease but could be applied to

any purpose covered by the words "Medical Research," the objects of the Fund were interpreted widely and expenditure was authorised over a wide range of medical activities.

The Haldane Committee

In 1917 a committee under the chairmanship of Viscount Haldane of Cloan was appointed by the Government to enquire into the responsibilities of the various departments of the central executive government and to advise in what manner the exercise and distribution of its functions should be improved. In the field of Health, the Haldane Committee concluded that improvement could be obtained by the further concentration of health services under a Minister of Health with responsibility for the general surveillance of all matters relating to health. However, the committee stressed that the powers under the National Insurance Act, 1911, whereby financial support was procured for Medical Research, should not be transferred to the new ministry but should become the responsibility of the Privy Council.

The Medical Research Council

These recommendations were accepted by the Government and the Ministry of Health Act, 1919, was approved by Parliament for the purpose of implementing them. The changes in the constitutional position of the Medical Research Committee as a result of the Act were made effective by an Order in Council in March 1920. A Second Order in Council enabled the members of the Medical Research Committee to be incorporated by Royal Charter as the Medical Research Council and the Council became an autonomous body supported by an annual Parlia-

mentary Grant-in-aid administered by the Privy Council.

The present position is that the Annual Grant-in-aid is administered by the Department of Education and Science. However, in one respect at least things have changed; in the first year of its existence the Medical Research Council spent £55,000. The allocation for the last financial year was £22.4 million. When expenditure reaches these proportions a strong tendency exists for governments to question whether or not value for money is being obtained, and as a consequence a group under the chairmanship of Sir Frederick Dainton, F.R.S., was appointed with the approval of the Secretary of State for Education and Science to advise on the most effective arrangements for organising and supporting pure and applied scientific research and postgraduate training. About the time the Dainton report was due to be published the Government commissioned Lord Rothschild, the head of the Central Policy Review Staff, to investigate Government Research and Development. Both reports were published together as appendices to a green paper entitled "A Framework for Government Research and Development" (HMSO CMND 4814) in December 1971. The terms of the Rothschild report were, to say the least, controversial and the resulting political furore compelled the Government not only to delay action but also to yield to demands for further consultations with interested bodies.

The Rothschild Report

The principal recommendation in the Rothschild report is that applied research and development commissioned by the Government should be controlled in accordance with a customer/contractor principle. Such an approach has superficial attractions, but it is difficult to envisage how it could ever play a dominant role in the organisation of medical research. Medicine is not an exact science and the fact that on the basis of known information it is possible to forecast the approximate expenditure in time and money needed to develop hardware such as aircraft—and even this has not been conspicuously successful—is scarcely relevant in medical research.

A further recommendation of Lord Rothschild which aroused anger was his suggestion that a substantial fraction of the Medical

Research Council's budget should be allocated from funds at the disposal of the Department of Health and Social Security. If implemented this proposal would make the M.R.C. effectively an agent of the D.H.S.S., and this conclusion was reinforced by the further proposal that if the M.R.C. was unable or unwilling to undertake a particular research project on behalf of the D.H.S.S. the relevant funds could be transferred to another agency. Such changes may be required but Lord Rothschild produced no supporting evidence and until this is forthcoming interference with the present system is unjustified, particularly as a Government department such as the D.H.S.S. must inevitably be influenced by political considerations.

It cannot be denied that a considerable need exists within the National Health Service for operational research on such problems as the optimum distribution of X-ray equipment in hospital groups, the proper type of instrumentation required for intensive care units, and the rationalisation of the ambulance service. In this connection a case could be made for the establishment of a National Health Service Research Council with the specific task of dealing with such problems. Such an N.H.S.R.C. could be funded separately, possibly by a levy on the overall N.H.S. expenditure, and would not overlap the responsibilities of the M.R.C. as at present defined. The nucleus of such a research council could be provided by transferring the M.R.C.'s Clinical Research Centre at Northwick Park to the N.H.S. with which it is already linked by its associated hospital.

Whatever the results of the present deliberations it is clear that many scientists are concerned about the organisation and management of Government research and development, and despite Lord Rothschild's repudiation there is much to be said for the Haldane approach, accepted by successive governments, that decisions on scientific research must be seen to be free from Departmental bias. Moreover, not all will agree with Lord Rothschild's view that however distinguished, intelligent and practical scientists may be, they cannot be so well qualified to decide what the needs of the nation are, and their priorities, as those responsible for ensuring that these needs are met. Again the evidence is lacking and in the present state of the Nation there must be many who believe that the opposite is true!

A related source of anxiety is that Lord Rothschild has virtually ignored the consequences of his recommendations on university programmes for postgraduate teaching and training. Although most medical scientists are trained in university departments only floor support is provided by the University Grants Committee; most of the support comes from the Research Councils and other organisations. Thus if the M.R.C. contribution is reduced, as it almost certainly must be under the present proposals, then the effects will be experienced most sharply in the university departments since it would be unrealistic to expect substantial reductions in the M.R.C.'s major establishments. But there can be no doubt that any contraction in the funds available to the universities must have a serious and detrimental effect on the ability of medical scientists to maintain standards and to provide the facilities for training on which the future excellence of medical research must be based.

RESEARCH AT DEPARTMENTAL LEVEL

In considering the clinical exploitation of medical research at departmental level, the activities of the Research Department of Anaesthetics in the Royal College of Surgeons provide a good example.

Theoretically, opportunities for research in anaesthesia are unlimited but in practice certain factors combine to restrict the scope of the potential investigator. These include the nature and location of the operation site, the duration of the surgical procedure and the complexity of the instrumentation. Nevertheless, the fact that the changes induced by anaesthesia are of relatively short duration, reversible and usually completely under the control of the anaesthetist, is a compensating advantage and in practice no other speciality in the clinical field can offer such opportunities for research in clinical pharmacology and physiology.

For reasons connected with staffing, budgeting and equipment, most departments seriously engaged in research must develop an overall policy. The Research Department of Anaesthetics is no exception, and when I became director in 1963 it was decided on the basis of our anticipated resources and the technical expertise available to concentrate the research effort in a number of related fields (Payne, 1970). Thus the activities of

the Department over the past years have been concerned first with developing methods of analysis suitable for gas mixtures, blood and other body fluids; second with increasing the effectiveness of sample-handling techniques; third with devising and improving methods of monitoring with particular reference to respiratory and cardiovascular dynamics in the unconscious patient, and fourth with assessing new drugs for use in anaesthesia and with re-appraising more established agents.

One result of the improvement in sample handling techniques and the evolution and extension of rapid, easily managed analytical methods together with the introduction of computer-based data processing procedures has been the development of a new approach to patient monitoring.

Stress Testing and Trend Prediction

Until the advent of computers, despite the many elaborate and elegant monitoring systems available, conventional monitoring has proved inadequate in the assessment of circulatory and respiratory efficiency since evidence of impending failure was rarely obtained until collapse was imminent. Accordingly a new concept, which utilises the computer's on-line facility, has been developed for patient assessment. This involves the analysis of certain responses to minor physiological or pharmacological stress (Bushman, Hope and Payne, 1970). The stress may take the form of a brief exposure to hypoxia or to inhaled carbon dioxide or to the application of a sustained positive intrathoracic pressure for a fixed time. The pattern of the response reflects the circulatory reserve and if the challenge is repeated at regular intervals evidence of improvement or deterioration can be obtained. With the benefit of on-line computer facilities it is possible to predict trends in the patient's state and therefore to initiate treatment before frank signs of deterioration have developed.

The potential advantages of computer analysis in patient monitoring have yet to be fully appreciated, but in addition to stress testing certain other fields of application have begun to be defined. Present developments suggest that such analysis may resolve some of the difficulties raised by non-invasive monitoring methods partly by providing a quantitative assessment of physiological variables not previously amenable to analysis

and partly by focussing attention on other variables not considered suitable for monitoring until now. For example, measurements of digital blood flow have been shown experimentally to reflect even slight changes in circulatory homeostasis during anaesthesia and if quantitative evaluation can be achieved on a routine basis should offer a valuable guide to the circulatory state.

Doctor-patient Relationship

It has been argued that pre-occupation with research methods must tend to separate the doctor from the patient and to destroy their personal relationship. Undoubtedly such a deterioration is taking place, but in my view the explanation is somewhat different. In the past the prestige and privileges enjoyed by the doctor in Society were earned by his willingness to be immediately available at all times not only to prescribe treatment and to provide reassurance but also to render advice as a family friend and counsellor. To-day, the doctor has regular off-duty, long holidays and a high financial reward. In addition, the young doctor in a training post expects to be paid overtime when his duties exceed a prescribed number of hours each week. Whether or not this trend towards a trade union pattern of conditions of service is good or bad, it must be clear that such a trend is incompatible with special privileges in Society. Moreover the lack of continuity of contact with individual patients engendered by this attitude has led to a loss of sympathy with the doctor on the part of the patient, which in turn has weakened the doctor's position at a time when his whole professional status is being threatened by political action on the part of national governments. Moreover, not satisfied with alienating their patients' support, various specialist groups of doctors are now dividing themselves in the name of independence. Recently a separate college of psychiatrists has been established and another body of opinion advocates a separate college of anaesthetists. At a time when unity is essential this present trend towards fragmentation must surely guarantee defeat in any confrontation with government.

CONCLUDING REMARKS

In this presentation I have set out to raise questions that need an answer and in so doing I have been deliberately provocative. My justification lies in the words of William Osler (1897)—

“No class of men needs friction so much as physicians; and no class gets less. The daily round of a busy practitioner tends to develop an egoism of a most intense kind to which there is no antidote. A few setbacks are forgotten, the mistakes are often buried and ten years of successful work tends to make a man touchy, dogmatic, intolerant of correction, and abominably self-centered. To this mental attitude the Medical Society is the best corrective, and a man misses a good part of his education who does not get knocked about a bit by his colleagues in discussions and criticisms.”

Thus, if in this address I have succeeded in generating dissent, in provoking anger or even in causing a pause for thought, then I have justified the existence of your Society.

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Diazepam as a Relaxant — A Peripheral Misconception

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DIAZEPAM, a benzodiazepine derivative, is widely used in psychiatry for the management of anxiety states and in anaesthetics as a premedication. The drug also possesses skeletal muscle relaxant activity and this property is utilised clinically for controlling abnormal muscle spasms, e.g. tetanus.

Although the tranquillising action has been localised in the limbic system, the exact nature of the observed skeletal muscle relaxation remains uncertain. Many workers consider an action on spinal reflex pathways the most probable explanation, whereas others indicate that supraspinal sites are involved. A peripheral action has also been implicated.

An interaction between diazepam and neuromuscular blocking drugs was first suggested by the work of Stovner and Endreson, and later, more emphatically, by Feldman and Crawley. The ease with which non-depolarising neuromuscular blocking drugs cumulate with repeated doses is likely to complicate studies involving these compounds and could provide an alternative explanation for the findings of Feldman and Crawley.

Therefore, this study was undertaken in cats to investigate the possible peripheral activity of diazepam at the neuromuscular junction, including any interaction with the neuromuscular blocking drugs, gallamine and tubocurarine.

Methods

Cats were anaesthetised, as in the clinical situation described by Feldman and Crawley, with a thiopentone induction, N_2O/O_2 (70/30) and halothane (0.5–2%) maintenance. Maximal twitches of flexor hallucis longus (FHL) and soleus muscles were evoked at a frequency of 0.1 Hz by stimulating the peripheral portion of the severed sciatic nerve with rectangular pulses of 100 μ sec duration. The contractions were recorded by attaching

the cut tendons of FHL and soleus to isometric strain gauges coupled to a Grass (Model 79) pen recorder.

Drugs were injected intravenously through a cannula in the external jugular vein and the blood pressure monitored throughout from a cannulated common carotid artery.

Results

A constant dose of either gallamine (0.75–1 mg/kg) or d-tubocurarine (0.1–0.4 mg/kg) was injected intravenously at intervals of 30 minutes to two hours. Control experiments to determine the optimal dose interval revealed that at the shorter intervals of 30 minutes or one hour marked cumulative effects were evident. By increasing the dose interval to two hours these effects were minimised. The dose and interval between doses were constant in any one experiment.

Diazepam in doses of 0.2–0.4 mg/kg intravenously was without effect on the maximal indirectly elicited twitches of either soleus or FHL muscles. Diazepam injected either five minutes prior to the neuromuscular blocking drug or at the maximal depth of block did not alter in any way the depth or the time course of the blocks produced by tubocurarine or gallamine in either muscle.

Larger doses of diazepam within the range of 1.5 mg/kg intravenously slightly enhanced the rate of recovery from the neuromuscular blockade produced by gallamine or tubocurarine, but there was never any sign of enhancement of the block. Control experiments with the diazepam solvent showed that the whole of this weak antagonist action could be attributed to the solvent.

The effect of diazepam on post-tetanic twitch augmentation (PTA) in soleus muscle following high frequency stimulation was investigated using the methods of Standaert. Intra-arterial (sural artery) injections of

gallamine (4–50 μ g) and tubocurarine (10–100 μ g) administered 30 seconds before tetanus depressed PTA, but diazepam in doses of 0.05–0.2 mg intra-arterially was without effect on either PTA or maximal twitch height.

Discussion

No interaction of diazepam with the neuromuscular blocking drugs, gallamine and tubocurarine, was evident in these experiments and this is in contrast to the findings in man of Feldman and Crawley. These findings are supported by the work of Dretchen et al who investigated the effect of diazepam on the neuromuscular blockade produced by gallamine, tubocurarine and decamethonium in animals and humans. Also, Southgate and Wilson, using the cat sciatic nerve-gastrocnemius muscle preparation, failed to find any significant alteration in the neuromuscular block produced by gallamine and succinylcholine in the presence of lorazepam or diazepam.

As the enhanced recovery rate from tubocurarine and gallamine block seen with the high doses of diazepam could be reproduced by the solvent alone, this effect must be attributed to the drug solvent. As the solvent system for the commercially available diazepam injection (Valium-Roche) contains approximately 50% propylene glycol, it is of interest that several workers have reported significant pharmacological activity associated with this "inert" compound.

The finding that there is no interaction

between diazepam and neuromuscular blocking drugs suggests that diazepam is without peripheral activity on skeletal muscle in the therapeutic dose range. In these experiments diazepam up to 5 mg/kg intravenously was without effect on neuromuscular transmission. The twitch tension produced by motor nerve stimulation was unaffected by diazepam, confirming the "in vivo" findings of others. "In vitro" studies may reveal a direct effect of a large concentration of diazepam on neuro-muscular apparatus, but how much relevance this bears to the "in vivo" situation is questionable.

On the basis of their results, Feldman and Crawley suggested a presynaptic site of action for diazepam, possibly by limiting the release or synthesis of acetylcholine.

As the PTA in the "slow twitch" soleus muscle following high frequency stimulation is considered pre-junctional in origin, this preparation provides a suitable "in vivo" system for studying drug effects on motor nerve terminals. Diazepam was without effect on the PTA and it is therefore considered unlikely that this drug possesses pre-junctional activity in the therapeutic dose range.

The peripheral activity of diazepam on skeletal muscle under normal conditions is unimpressive. This emphasises the importance of central sites, either spinal or supraspinal, to account for the observed muscle relaxant activity of diazepam in "in vivo" animal experiments, surgical patients and such isolated cases of associated drug overdose.

CELLULAR TOXICITY OF ANÆSTHETICS

Dr. G. D. PARBROOK

ANÆSTHETICS are selected for their lack of toxicity and are unlikely to give rise to necrosis or death of cells. Nevertheless, alterations of function in the components of the cells occur with anæsthesia and this in turn may contribute to morbidity in patients. Knowledge of the effects of anæsthetics at cellular level is at present very limited. Consequently, much research is in progress.

When considering the general effects of anæsthetics on cells it is perhaps easiest to consider their effects on various cell components. A major component of the cell is cell membrane. In addition to surrounding the cell, membrane is found in the nucleus, mitochondria, in the endoplasmic reticulum and other sites. Membranes have a bimolecular structure, hydrophilic portions outside and hydrophobic chains within, and it is probable that anæsthetic molecules are attracted to the hydrophobic part and lead to slight distention of the membrane and effects on diffusion through it.

It is too early to say to what extent the effects of anæsthetics on cell membrane are responsible for other effects in the cells. Nevertheless effects on membrane provide a suitable link with which to associate the effects of anæsthetics. Mitochondria are composed, to a large extent, of infolded membranes, and both barbiturates and, to a lesser extent, volatile anæsthetics give a depression of oxygen uptake at this site associated with a move towards anaerobic glycolysis. Membrane is a major component of granular endoplasmic reticulum which is the area where protein production, including enzyme and antibody production, occurs. It has been shown that anæsthetics can lead to an enzyme induction effect and that shorter

exposures to higher levels can lead to an impairment of the production of antibodies by lymphocytes. Alterations in the property of surface membrane may contribute to changes in phagocytosis, although there are many other factors involved in this case, such as chemotaxis and motility.

In the case of motility of the cell, this is aided by the presence of contractile protein in the form of microtubules. Protein microtubular units have a distinct structure which can be broken down by volatile anæsthetics if these are of high enough concentration. Microtubules are found in cilia and it could be that suppression of their function is an important factor in suppression of cilia by volatile anæsthetics. Microtubules are also found in the nuclear spindle and high levels of all kinds of anæsthetics lead to arrest of mitosis in the metaphase, so called C-mitosis. These effects may underly the depressant effect of long term anæsthesia on the bone marrow. However, there is an additional effect of anæsthesia on mitosis in the interphase period, between mitosis, and it is probable that anæsthesia inhibits the formation of DNA during this phase. The effects of anæsthesia on mitosis may also underly the suppression of lymphocyte multiplication which would normally occur in response to stimulation. This latter is part of the cell mediated immunity response which is impaired by high levels of anæsthetics. Finally, another site at which mitosis is important, in relation to anæsthesia, is in the effects of volatile anæsthetics on the early foetus and there is evidence that anæsthetics can lead to a teratogenic effect in some circumstances.

Much more research is required before one can obtain the full picture regarding cellular toxicity of anæsthetics.

HAZARDS TO OPERATING THEATRE PERSONNEL

Dr. A. A. SPENCE

EVEN under the best conditions of ventilation, the use of gaseous anaesthetics in conventional circuits results in contamination of the operating room air. The concentrations of contaminants are usually small: typical values being 170 p.p.m. (0.017%) for N₂O and 15 p.p.m. (0.0015%) for halothane. In the course of a working day, the anaesthetists' tissues equilibrate with these concentrations and there have been several attempts to imply an association between operating theatre work and certain types of morbidity.

Several studies have attempted to determine whether this causes any hazard to the health of theatre personnel. Notable among these was the study of Vaisman (1967) and Bruce and others (1968). None produced reliable evidence of morbidity. Vaisman had suggested that exposure to inhalational agents might cause obstetric mishap; certainly a small group of pregnant anaesthetists surveyed by him had an alarmingly high frequency of spontaneous abortion. This aspect was pursued by Askrog and Harvald (1970) who surveyed approximately 70% of Danish nurse anaesthetists, women physician anaesthetists and wives of male anaesthetists. They compared obstetric histories before and after commencing work in anaesthesia. This was a poorly controlled study, notably as regards the effect of ageing, but it showed an increased frequency of spontaneous abortion apparently associated with anaesthetic practice. The first study with adequate controls came from Cohen, Bellville and Brown (1971) in California. They interviewed operating room nurses, general duty nurses, women anaesthetists and non-anaesthetist women physicians. The groups who worked in the operating theatres had three times the frequency of spontaneous abortion in the other groups.

In our own study, obstetric histories from 563 married women anaesthetists and 828

women doctor control subjects were analysed for the frequency of spontaneous abortion, congenital abnormality and involuntary infertility. Anaesthetists working during the pregnancy had a significantly higher frequency of spontaneous abortion (18.2%) than the control group (14.7%), but not significantly different from those anaesthetists who were not at work during the pregnancy (13.7%). The frequency of congenital abnormality of liveborn children was significantly higher in those at work (6.5%) than in those not at work (2.5%), but not significantly different from the control frequency (4.9%). Involuntary infertility was twice as common in anaesthetists (12%) as in the controls. Thus there appears to be a range of obstetric mishaps in which abnormality of foetal development could be a common factor.

It is concluded that our findings taken together with those from Denmark and California afford convincing evidence of a real problem. Although there is nothing in the data to implicate the volatile anaesthetic agents directly, it seems reasonable to regard tissue toxicity as a possible factor.

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MALIGNANT HYPERTHYREXIA

Dr. F. R. ELLIS

MALIGNANT hyperpyrexia is a rare and potentially fatal condition which is almost specific to anaesthesia. A fulminating rise of body temperature occurs in response to an idiosyncratic reaction of the body to certain drugs used in anaesthesia. Almost all anaesthetic drugs have been implicated, but the most frequent are the inhalational anaesthetic vapours, halothane, trichloroethylene and methoxyflurane, and suxamethonium. In at least 70% of cases the voluntary muscles develop clinically recognisable spasm or contracture. As the syndrome progresses patients develop tachycardia, extrasystoles, cyanosis and are found to have hyperkalaemia and metabolic acidosis due to lactacidaemia and respiratory acidosis. Death occurs with cardiac arrest in over 60% of cases and is often preceded by bradycardia.

Treatment of malignant hyperpyrexia will only be successful if the thermal runaway can be checked. Surface cooling is usually available in operating theatres but is not often adequate on its own; blood cooling is far more effective and if available should be started as soon as possible. Peripheral vasodilation can be encouraged by a large dose of hydrocortisone which also has positive inotropic action on cardiac muscle. Cardiac

output can be improved also with isoprenaline, and bicarbonate should be given to control metabolic acidosis. Recently procaine has been found to be useful particularly in the control of the muscle contracture. It may be necessary to give dextrose and insulin to control hyperkalaemia.

It has been suggested that patients susceptible to malignant hyperpyrexia can be identified by a raised serum creatine phosphokinase (CPK) activity. Unfortunately there are many relatively common causes of raised CPK activity and this test is comparatively non-specific. A specific test of the susceptibility of patients to malignant hyperpyrexia has been developed for which a motor point muscle biopsy is required. Susceptible patients have a histologically recognisable (though subclinical) myopathy, and it has been found that their muscle tissue *in vitro* develops contracture in response to halothane. Details of this test are reported elsewhere (Ellis *et al.*, 1972).

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CURRENT VIEWS ON THE HEPATOTOXICITY OF HALOTHANE

Dr. L. STRUNIN

UNEXPLAINED liver dysfunction following uneventful anaesthesia and surgery justifiably gives rise to anxiety as to the aetiology. The anaesthetic agents used—as with all drugs—must come under suspicion, but in general it is rare for them to be involved as causal agents.

A difficult situation, however, has arisen as regards halothane. Despite the fact that this agent is administered to most patients undergoing anaesthesia, there is a regrettable tendency to accept a cause and effect relationship between halothane and postoperative liver dysfunction—especially jaundice. Examination of the evidence for this relationship reveals many discrepancies and shows that further investigation, in many instances, will reveal a

cause other than anaesthesia and halothane in particular.

Much of the information is derived from individual case reports or retrospective surveys. It should be remembered that many authors are faced with the difficulty that their data may be at best second hand and often incomplete. For example, cases have been reported as "halothane hepatitis" when it is clearly stated in the text that halothane was not administered; the case of a factory worker, who allegedly developed hepatitis while working in a plant manufacturing halothane, showed on further investigation that there was considerable doubt as to whether he had ever been exposed to halothane.

One finding which seems consistent in the literature is the increased incidence of post-operative jaundice and death associated with multiple anaesthetics. This occurs regardless of the anaesthetic agent used and suggests that non-specific changes associated with surgery and anaesthesia may be more serious than was previously believed.

Four possible mechanisms for the hepatotoxicity of halothane may be considered. Firstly a direct toxic effect; this is unlikely as one would then expect the entity to be common and dose related. It should also be possible to demonstrate liver damage in animals. None of these criteria apply to halothane. Secondly, some relationship to the metabolism of halothane; however the present evidence of halothane metabolism in animals or man has not revealed any potentially hepatotoxic metabolite either during "normal" metabolism or as a result of microsomal enzyme induction. The evidence that halothane induces its own metabolism, for example in anaesthetists, is not convincing. Among the many causes of death in a group of American anaesthesiologists, liver disease was no higher than in the general population. Thirdly, hypersensitivity remains a possibility. It has yet to be shown that either halothane or a metabolite is capable of acting as an immunogen.

The lymphocyte transformation test is an accepted method of demonstrating cell mediated hypersensitivity responses. This test was used to study 10 patients and 5 physicians whose jaundice following halothane was unexplained and whose overall case records indicated a high index of suspicion that halothane might be incriminated. The results showed that there was no significant difference between them and a control group.

Nevertheless there is increasing evidence that anaesthesia and surgery are associated with profound changes in the body immune responses. It may be that halothane is more active in this respect than other anaesthetic agents.

Finally, the position of viral infection, pre-existing or acquired during surgery, must be considered. The incidence of viral hepatitis is unknown, although some improvement in this position will occur in the future in regard to serum hepatitis (virus B), as a result of the finding of hepatitis associated antigen (HAA—Australia antigen) in this condition. But it should be remembered that no satisfactory test exists at present for infective hepatitis (virus A) or other viruses causing hepatitis, and a negative HAA does not rule out serum hepatitis. Therefore it is unwise to exclude viral infection in the patient with postoperative liver dysfunction.

There is, therefore, no clear evidence at present to support the concept of a cause and effect relationship between halothane and postoperative liver dysfunction. Consideration of direct toxicity, metabolism, immunity and viral infection makes it difficult to see clearly how halothane may be directly implicated. These factors operate with all anaesthetic agents and techniques, and equally all have been associated at some time with hepatic dysfunction. Further work is needed to distinguish whether halothane is or is not hepatotoxic.

"When the dust passes, thou wilt see whether thou ridest a horse or an ass."—
Oriental Proverb.

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Retrospect

JOHN GILLIES, C.V.O., M.C.

IN committing to print a review of a long professional life personal reminiscence, if fulsome and boring, is an indulgence that must be restrained. Nevertheless, some relevant biographical details providing undertones of human interest are necessary as background to an otherwise objective commentary on the hard way up to a specialist career in Anæsthetics in my time.

As a start, a reference to my early adulthood may be appropriate. In October 1913, aged 18, I entered Edinburgh University, then less than half its present size but with a more cosmopolitan student population largely representative of the still great British Empire. Looking back sixty years life seemed good and carefree, but I must heed my opening warning and moderate nostalgia for times remembered. In August 1914, having completed three terms studying mathematics and natural philosophy, I, like thousands of others, charged light-heartedly into the Army thinking naively that the Great War could be over before the beginning of the new session in October and meanwhile we would enjoy a holiday with pay at a shilling a day in the finest Autumn for years.

"Bliss was it in that dawn to be alive,
But to be young was very heaven."

We were soon disillusioned! Then, at long last, by the end of 1918, we straggled home endowed with but one consolatory worthwhile asset, a mature knowledge of mankind which would have taken twenty years of civil life to acquire. In that respect one might truly say the four years of active service had not been entirely wasted because of the value of such basal maturity in the practice of medicine.

The medical curriculum was of five years duration, but we late starters contrived, usually successfully, to compress it into four by elective integration of conveniently timed classes in the extramural School of Medicine at Surgeons' Hall with those taken at the University and thus compounded our first and second years.

There were about 340 students in my year and teaching accommodation, apart from the large lecture theatres, was severely strained.

Laboratory benches in practical anatomy, physiology and pharmacology were congested, a state frequently eased, however, by the truancy of colleagues who preferred the smoky, claustrophobic fag of the lower ground floor of the Union or the wide open playing fields of Craiglockhart. Despite the adverse conditions and initial mental rustiness most of us passed on to our clinical training fairly uneventfully, although I must confess to having been "ploughed" once in physiology, but this, at the hands of such an eminence as Sir Edward Schaefer, amounted almost to distinction. The fatalistic spirit engendered in one by wearisome trench warfare and fortified by a pint of draught stout was more than adequate to counter a minor lapse of that kind.

The press of fourth and fifth year students was felt worst of all in the clinics at the Royal Infirmary. There was no Western General Hospital then to share the teaching load. Daily we jostled for vantage points from which to observe patients and hear their cases discussed. From the outermost fringe of a three-deep circle one learned but little and the compensatory distracting vision of a soft-footed passing nurse did not help. For those who were willing, however, and perhaps lucky enough there was always the possibility of being taken on as a Junior or dog's-body to the resident house officer. In the surgical charges particularly, assistance, even from neophytes, was always welcome. A single house surgeon had to care for 30 male and 30 female patients. Above him the honorary staff comprised one full-surgeon or chief, one assistant surgeon, and a clinical tutor who taught us the rudiments of the craft and was the equivalent of a senior registrar of to-day. The Juniors, usually three in number, took case histories, shaved and prepared male patients for operation, trundled them to and from the theatre, gave anæsthetics for routine operations under instruction from the honorary anæsthetist of the unit, and for emergencies, supervised by the surgical tutor who, on occasion, might even be doing the surgery at the same time. It was a testing experience for all, which to some extent explained the long-persistent

proprietary interest of surgeons in the management of the anaesthetic procedure—frequently justifiable as respiratory arrest was fairly common and they were fair dabs at resuscitation. On waiting nights a menial chore for the Junior was to be sent hotfoot to an all-night coffee stall nearly a mile away on Princes Street for fried egg sandwiches. The hospital did not feed volunteer transients, hard working though they might be. Only the operator was allowed tea and biscuits but occasionally a kindly night nurse supplemented the meagre ration, sometimes with romantic consequences.

Each term, by way of reward, the chief would invite the Juniors to his home for dinner, a borrowed black jacket and tie being "de rigueur" for this usually prim affair. Coming under a chief's notice one might hope to be invited to be his resident house surgeon after graduation, the post, although unpaid, being much coveted.

For the majority of students instruction in anaesthetics, especially in their practical application, was inadequate. A course of six lectures and supposedly six administrations, which often simply meant signing the anaesthetic register, was a travesty of preparation for engaging in the most critical form of applied pharmacology in the whole field of medicine. It was possible for the fledgeling doctor to be confronted alone with such a responsibility immediately after qualifying. In contrast the Junior served an apprenticeship in anaesthetics, and with 50 to 100 cases to his credit he got over the excusable timidity of the novice and became reasonably proficient in the simple methods of the day. His modest equipment was a gauze-covered "open" ether or chloroform mask, a drop bottle, a screw wedge with which to open the patient's mouth if necessary, traumatic but effective tongue forceps, a glossotilt unknown outside Edinburgh, and an oral airway such as still survives to-day. In rare cases, for example the removal of a pituitary tumour, the honorary specialist anaesthetist might set up special apparatus for "intratracheal insufflation" of ether. To insert the semi-rigid narrow bore tube a laryngologist was summoned. His performance with temperamental batteries, trailing flexes and popping laryngoscope bulbs was "quite something."

Like driving on motorways, the dropping of potent volatile vapours on a mask was

dangerously monotonous, for not only was the patient rendered unconscious but all in the theatre shared, in inverse proportion to their distance from the patient's head, a torpid ambience, the anaesthetist with his nose often close to the mask being the most affected. Addiction was not unknown and there was perhaps a grain of truth in the hoary tale perpetuated by Richard Gordon of the distraught surgeon's complaint to his colleague at the top end "if the patient can keep awake surely you can, doctor." Anaesthetists had to withstand much surgical banter and anecdote at that time!

Compared with the plenitude of personnel in the surgical units of teaching hospitals under the National Health Service, the staffing in the voluntary hospitals was virtually skeletal and consequently during an operation the Junior giving the anaesthetic was liable to be asked to slip a hand under the sterile drapes and "hang on" to an abdominal retractor while continuing to drip ether on the mask with the other hand. Perhaps it is unkind to reflect that the request might have been a ruse to acquaint the anaesthetist of a state of inadequate muscular relaxation—often a contentious matter before the advent of curate and other agents of "physiological trespass" eliminated it along with the even more familiar grouch about excessive bleeding. Once, however, years later when traditional carping had become a thing of the past, I was confounded by a surgeon complaining of too much relaxation making enucleation of the prostate difficult because "there was nothing to press against." What a shame!

Venepuncture, blood counts and catheterisation of patients were additional "perks" for the ambitious Junior and a call to donate blood in an emergency was a possibility, there being no blood-bank and a registered donor from outside might not arrive in time. Such a situation arose when a patient to whom I was giving the anaesthetic for splenectomy started to bleed dangerously. Being nearest to the operator I instinctively sensed that he might be after my blood and he was! A simple compatibility test took only seconds and soon a pint of the best was on its way into the patient's circulation. Ambidexterity enabled me to keep the ether dripping. Both the patient and the donor survived. In his distinctive short white jacket the Junior gained valuable practical experience in caring for sick people and

realising the responsibility attached thereto. He could be better known sometimes than the Chief himself as instanced by the patient who asked, "Wha's the auld gentleman wi' the hauf-specs that comes roon at times and gies ye a haund?"

In their fourth or fifth years many students, again because of overcrowding, had a short break from Edinburgh when they scattered to various centres (London, Paris, Dublin, etc.) for practical obstetrics. Along with two others I went to Brownlow Hill Maternity Hospital, Liverpool, where, apart from watching normal and abnormal deliveries and occasionally trying, with open ether, to induce anaesthesia in perspiring, salivating mothers-to-be (Atropine was forbidden), one scurried to domiciliary calls of which the prescribed quota was twelve. Those I did in and around Scotland Road, Liverpool's notorious Irish quarter. One learned much more than obstetrics there and as a bonus collected a multitude of blood-thirsty agile fleas hell-bent on emigrating. The experience crowded into two weeks was tiring so we enjoyed all the more the relaxation of an afternoon in the fresh air of Aintree where we saw a horse named Music Hall win the Grand National and a welshing bookie get a ducking in the nearby Leeds and Liverpool canal.

After graduation my much looked forward to resident surgical post in the R.I.E. had to be reluctantly declined for financial reasons and instead I went as a paid house-physician to the Cumberland Infirmary at Carlisle. Despite the title the duties were extremely diverse. They embraced, as extras, paediatrics, casualties, extractions of teeth, estimations of blood-sugar, and most of all the administration of anaesthetics for the surgical lists. Such varied experience stood me in good stead when, in 1924, I joined a three-doctor general practice verging on the Bronte Country in the West Riding of Yorkshire.

The partnership was typical of many in the congested industrial areas south of the Border where for reasons climatic and otherwise the doctor/patient ratio was low. A small private surgical practice had been built up by the senior partner and he was willing to share this side-line with his colleagues after he had "trained" them. So I came to do simple operations such as removal of tonsils, adenoids and nasal polypi, various paracenteses and emergency treatment for accident cases in the mills and elsewhere. For me there was the additional interest of giving the

anaesthetics in the practice and after a time for dentists in the neighbourhood. The range of major operations performed by the senior practitioner was sensibly restricted by cautiously acquired experience over the years, and although he did not hold a surgical fellowship he had been a prosecutor for Cunningham and knew his anatomy well—the prime commendation then for a surgeon. Undoubtedly in the twenties so long as there were sufficient cases to sustain good technical standards the combination of surgery with general medical practice was justifiable and could be of advantage to patients who had faith in their family doctors. Not least important was the fact that general practitioner "specialists," unlike distant hospital consultants, had to live alongside the subjects of their handiwork and thus a salutary curb was imposed on too venturesome ambition.

To take part in such wide-ranging professional service was both mentally stimulating and physically exhausting. Yorkshire folk were demanding but grateful patients, most of whom preferred doctors' bottles to prescriptions and paid their bills on the day they got them. They were mostly plain-spoken and embodied an ethos expressed by the proverbial injunction "if tha does owt for nowt do it for thysen." The cotton and wool mills where they worked were strung along the narrow valley with road and rail criss-crossing river and canal. That part of the West Riding certainly was not "England's green and pleasant land," and the mills, if no longer "satanic," were still "dark" like everything else from the grimy black smoke belching from their chimneys. The few sheep on the uplands flanking the valley were difficult to spot for they, too, were black, although born white. Such pollution combined with an almost constantly damp atmosphere due to high rainfall was responsible for the serious incidence of respiratory and other infections in the locality. The life-saving anti-biotics were still many years away and challenging problems of ill-health taxed to the limit our therapeutic resources and sometimes induced a sense of inadequacy. I cite the case of a policeman's ginger-haired wife to whom I was called several days after her appendix had burst. The delay in seeking help was instigated by her old Irish mother, a local "howdie" who regarded doctors as natural enemies of her profession. The patient was in a toxic coma and gravely ill. There was nothing curative

that one could do. Each morning and evening I climbed the steep footpath to the hilltop cottage expecting the end, but as the days passed I began to hope. This optimism was sustained by a suddenly remembered aphorism of a former surgical chief that "red-haired people don't die from peritonitis"—and she didn't!

Because of an anaesthetic connotation another excerpt from the tragi-comedy of life in general medical practice may be quoted. It concerns the same "howdie" who, having been stuck for three days with an elderly primipara in arrested labour, had at last gloomily agreed that a doctor should be summoned. On arrival I found all the *dramatis personae* for a contemporary nativity play present, namely, and in order of appearance, an anxious husband, a distressed patient, and, retreating backstage into a corner of the paraffin-lit room, the shadowy, non co-operative sibyl who, throughout the act, alternately crossed herself and sought solace in a tattered little "classic" from the Charing Cross Road entitled "Aristotle's Book of Nature"—her textbook no doubt!

There was need for haste. So, while the husband boiled the axis-traction forceps I quietened the patient with chloroform, rolled her over on to her left side, slung her right leg round my neck, gave more anaesthetic, washed my hands in water from the portable steriliser, applied the "tongs," delivered the babe and placenta, and finally, followed by a baleful scowl from the dark corner, I went off to rejoin the dinner party from which I had been called an hour earlier.

Space does not permit further digressions on the ups and downs of general practice except to emphasise its value to aspiring specialists. To-day, although the long years of technical instruction in hospital are already overfull, a humanising leavening of domiciliary medicine would help to develop the nous which is 50 per cent. of successful professional achievement and panache. This factor has been recognised in South Africa where, apart from the usual basic training programme, two years in general practice is a pre-examination requisite for intending specialists in anaesthesia.

After some strenuous years in industrial areas an urge to move to a more congenial working environment would arise in the minds of doctors still young enough to re-direct their careers. Some went to coastal resorts in Lancashire or Yorkshire, others to the sunnier South. The odd Scot might return to

his native heath. Two erstwhile partners of mine became radiologists. For me the career signpost indicated specialisation in anaesthetics and the resolve to follow that path, accelerated by health reasons and the encouragement of a lifelong surgical friend in Edinburgh, made me take the high road to London where I was fortunate to find helpful mentors in the late John Hunter, Ivan Magill and others. There, I became acutely aware that my anaesthetic experience throughout 8 years in general practice had remained elementary and static, good enough for the limited operations performed by my partners but wholly inadequate to cope with the wide range of surgery met with in the teaching hospitals to which I hoped to be appointed. So there was much to learn, indeed everything, and, in realising that, I felt the more pleased at having chosen to serve my second apprenticeship in a region significantly remote from the surgeons and others with whom in time I expected to work.

In the absence of organised post-graduate courses the best way to acquire essential specialist skills was to watch established experts at work. From such attendance one gained practical experience in the use of anaesthetic apparatus and agents, and in the techniques of blind intubation of the trachea, laryngoscopy and bronchoscopy, all new to me. At that time, forty years ago, deep ether or chloroform anaesthesia, despite much improved methods of administration, was being increasingly recognised as a major cause of the prevailing high incidence of post-operative morbidity and mortality particularly after abdominal surgery. Awareness of the lower complication rate and better end results reported from most surgical clinics of Europe and of many in North America where regional analgesia was preferred contributed largely to the investigation being directed in this country to reducing excessive sometimes irreversible saturation of tissue cells with toxic agents. Important, too, was the need to eliminate patients' fears and discomfort before and during induction of anaesthesia by inhalation. Basal narcosis produced by rectal injection or bromethol (Avertin) became popular for a time and served the dual role of allaying anticipatory trepidation and modifying the quantity of general anaesthetic required. Alternatively paraldehyde or ether in oil by the rectum proved unacceptable to patients because of their odorous excretion through the lungs. Later few venturesome

anaesthetists carried out intravenous trials of bromethol and paraldehyde which fortunately were totally eclipsed by the introduction in 1932 of the short fast acting barbiturate led by hexobarbitone (Evipan) and followed soon after by sodium thiopentone.

Contemporary with the work on basal narcotics was the search by pharmacologists for gases with anaesthetic properties which might be less poisonous than chloroform or ether. There was, of course, still in common use nitrous oxide, the first and for nearly a century the only inorganic anaesthetic gas and which by the end of the First World War had acquired a reputation as a safe agent for seriously ill patients because of its lack of toxicity. Unfortunately its limitations were not always understood particularly by physicians who in those days were frequently called upon to assess a patient's pre-operative condition and were prone to pronounce the dangerous cliché—"fit for gas only." Demands for its use in unsuitable cases threw a considerable strain on anaesthetists who knew its inadequacy particularly for abdominal sections. Often this led to the illicit addition of ether which thus masqueraded as "gas and oxygen" and stretched the credulity of all but the anosmic among the bystanders. Occasionally a sly lacing with chloroform euphemistically referred to as "holy water" enhanced the credit of "pure" nitrous oxide and of the not so pure administrator. Such subterfuges could be justified as they ensured better operating conditions and prevented the additional trauma associated with poor relaxation. For a similar purpose but quite overtly without recourse to volatile adjuvants McKesson of Toledo, Ohio contrived to demonstrate the self sufficiency of nitrous oxide for abdominal operations by his technique of "secondary saturation." In this the patient was given a hundred per cent. of the gas until he became blackish grey in the face and then at the critical moment the colour was reversed by a hundred per cent. oxygen under positive pressure—a truly dramatic sequence which in a few minutes reduced the patient's physical category from A1 to C3 and provided full muscular relaxation; but what a dangerous brink for both patient and anaesthetist to teeter on!

From the researches of pharmacologists in the Twenties emerged two gases which proved suitable for clinical use—ethylene and cyclopropane. The former probably on account of its lingering pungency and highly explosive

character was tried sporadically for only a short time in this country, but cyclopropane became much favoured and indeed still is even now forty years after its introduction. Apart from the disadvantage of flammability within certain limits its properties were such as made it without aid from relaxant adjuvants the most controllable, effective and self sufficient of all general anaesthetics not excluding its post-war rival halothane. Administered in a closed system with carbon dioxide absorption it brought single agent inhalational anaesthesia to the highest ever peak of efficiency, and in the late Thirties facilitated the development by Waters (Madison) and Nosworthy (London) of the technique of controlled respiration which made pulmonary and cardiac surgery possible.

In 1932 I returned to Edinburgh with a wife and three children and started work as an anaesthetist at the Royal Hospital for Sick Children with an honorarium of £50 a year. Soon this was augmented by a further £150 yearly for undertaking three emergency waiting days (8 a.m. to 8 a.m.) a week at the Royal Infirmary in which clinically rewarding but tiring duty I served for seven years. An obvious financial objective of such service was to make oneself known to surgeon colleagues in the hope of being called upon to anaesthetise their private patients in nursing homes. The amount of remunerative private work for an anaesthetist varied according to the busyness or otherwise of the surgeons who employed him, although in time he could build up an independent reputation among the profession generally and the laity and so ensure a substantial amplification of income.

For physicians and surgeons the conditions in nursing homes for the care of their patients were reasonably good except that there were no resident doctors to deal immediately with respiratory and circulatory exigencies which occurred from time to time. Anaesthetists by contrast worked under considerable economic and professional stress, rushing as they frequently did from one nursing home to another lumbered with heavy equipment to anaesthetise three or four cases between 8 a.m. and 11 a.m. when they were due to start lists in hospital. Although possibly unaware of it, private patients, whilst they had some extra creature comfort, might not always fare so well as those treated in hospital where essential facilities and close medical supervision were constantly available. Little imagination is required of the reader to

realise the unsatisfying character of such pressurised competitive private practice, and to understand the general welcome to the national health service when it came and gave to the now highly developed speciality of anaesthetics consultant parity and equality of opportunity to earn an adequate living in a fulfilling and ethical way.

During the period 1939 to 1945 work in both the private and hospital sectors became increasingly strenuous because of shortage of staff and the opening up of Emergency Medical Service surgical units in many parts of the region. In the Royal Infirmary, however, I must mention that for the first time ever three resident anaesthetists had been appointed—Morrison, Wheeler and McKinlay—the self-styled "Muskateers"—and they proved a god-send. Incidentally unlike the other residents they were paid a salary, a fact which branded them as professionals in the eyes of the diehard apostles of amateurism in the residency. Clinically also it was an eventful time for the first ligations of patent ductus arteriosus in Britain were being done by Sir John Fraser and notable advances made in vascular surgery by Professor J. R. Learmonth.

Service on various committees was an obligation which one regarded as a contribution to the war effort; naturally it was time-consuming because of the travelling involved. Similarly, membership of the Council of the Association of Anaesthetists of Great Britain and Ireland and of the founding Board of Faculty in the Royal College of Surgeons of England were privileges which enabled one to represent Scottish interests in the activities of those national organisations. Not least in importance was the task of advising on and ensuring a proper status for anaesthetists in the staffing structure being set up in the teaching and area hospitals of the region. In 1948 this was difficult because the dominating planners were senior physicians and surgeons, many of them nearing retirement and unlikely to participate in the new service. In fairness to them, one had to admit that at the time there were no higher

anaesthetic qualifications comparable to the fellowships of the Royal Colleges which were the standard criteria acceptable for consultant ranking. Thus it happened that only four consultant anaesthetist posts were initially proposed for the Edinburgh hospitals, an allotment that was raised to 12 before the Service started. With the setting up of a two-part fellowship examination of a high standard by the Faculty of Anaesthetists and of mandatory practical training regulations the struggle for equitable educational recognition of the speciality was won.

Down the years, supported by a band of loyal colleagues, it has been a unique privilege for me to share in the rapid and striking progression of anaesthetic practice from a dubious restricted art to a broad-based comprehensive discipline for which a wider embracing definition and title is long overdue. Watching from the side-lines for the past 12 years, comment now by me on the many, perhaps too many, complex trends in the speciality is quite beyond my competence or entitlement.

I would end this swan-song by expressing my gratification on the realisation of a long-cherished ambition, namely, to see the integration of training in basic sciences, clinical medicine and surgery with the theory and practice of anaesthetic administration and its important ancillary, patient care. By virtue of such training a well-merited elevation to equality with other disciplines has been achieved. No longer need there be any inferiority complex in choosing a career in our speciality, and I trust that all of us, especially the younger generation, appreciate the finely poised position we have reached in being accorded a responsible, respected and rewarding share in the care of patients which I believe is adequate for not having any of our very own. In consolidating this favourable status and working harmoniously with our surgical, medical and obstetrical associates, we can enjoy an eminently acceptable executive and advisory function and indeed the best of professional worlds.

Professor Alex. Forrester

PROFESSOR Alexander Clarkson Forrester retired in September, 1972, from the Chair of Anæsthetics at the University of Glasgow and the Royal Infirmary, Glasgow. His career in anæsthesia commenced in 1936 when he joined the staff of the Royal Infirmary, Glasgow, as a visiting anæsthetist. This was the start of an unbroken association with the Royal Infirmary covering some 36 years. His skill and ability were soon recognised by his surgical colleagues and his services, both within the Infirmary and in private practice, were much in demand. Even so, Professor Forrester published one of the first papers on the use of curare in anæsthesia in 1946, reported early studies in the use of hypothermia and the use of plethysmography. In 1954 he turned to the academic life on his appointment as Senior Lecturer in Anæsthesia at the University of Glasgow. Subsequently in 1960 he was promoted Reader in Anæsthesia, and his academic career culminated in his appointment in 1967 as the first Professor of Anæsthesia in Scotland at the University of Glasgow and the Glasgow Royal Infirmary.

Professor Forrester obtained his D.A. in 1945 and was elected F.F.A.R.C.S. (Eng.) in 1952, F.R.F.P.S.G. in 1957 and F.R.C.S. (Glas.) in 1962. In addition to these academic distinctions, he has served for many years on the Councils of all the local and national anæsthetic societies. He is a past President of the Glasgow and West of Scotland Society of Anæsthetists, the Scottish Society of Anæsthetists and the Anæsthetic Section of

the Royal Society of Medicine, London. He is presently a Member of the Board of the Faculty of Anæsthetists and from 1968 to 1972 was an examiner for the Final F.F.A.R.C.S.

During his long career in anæsthesia he has always worked to raise the status of anæsthesia and the standards of training in the speciality. To this end he has served on many committees dealing with the development of anæsthesia in the Health Services.

Professor Forrester is well known internationally, having travelled extensively and delivered papers at many international meetings, the most recent being in Kyoto in September, 1972, at the Fifth World Congress of Anæsthesiologists.

In spite of all these many commitments his first priority has been the establishment of a Department of Anæsthetics in the Glasgow Royal Infirmary based on the well-known Macintosh principles of service, teaching and research. His efforts in these directions have been outstandingly successful, not only due to his organising ability, but also to his willingness to delegate to his consultant colleagues the responsibility for organising special anæsthetic services for cardiac surgery, respiratory intensive care and obstetrics.

At a recent meeting of the Anæsthetic Research Society, Professor Forrester was described as one of the three men of ability and imagination who had done most to establish anæsthesia in Scotland. Such a tribute, heartily endorsed by all his colleagues, would be difficult to better.

Dr. W. M. Shearer

DR. WILLIAM M. SHEARER retired on 30th September, 1972, from his position as Administrative Anæsthetist, Dundee Teaching Hospitals, and Head of the Department of Anæsthetics, University of Dundee.

Born in Galashiels, Dr. Shearer entered Medicine comparatively late. He was first employed in Boots the Chemists, starting in 1921. He still recalls the indignation aroused among Boots' competitors when they styled

themselves "*the Chemists*." He acquired the M.P.S. in 1928 and left Boots to begin Medicine in 1932, qualifying B.Sc. in 1935 and M.B., Ch.B. in 1938 at St. Andrew's University. The following year saw his introduction to Anæsthetics when he took a post at Swansea General Hospital. During the War he served in the R.A.M.C. in West Africa and in India, becoming a specialist anæsthetist. In 1943 he took his D.A. and ten years later was elected F.F.A.R.C.S.

On leaving the Army he worked in Law Hospital, and in 1946 was appointed Lecturer in Anæsthetics to St. Andrew's University and Anæsthetist in charge of the Department of Anæsthetics at Dundee Royal Infirmary, a post funded jointly by the University and the hospital. He assumed a whole-time consultant post on the inception of the National Health Service in 1947. He has seen the Department grow from one resident anæsthetist and himself, together with a few general practitioner anæsthetists, to a total to-day of 24. In 1948 he proceeded M.D., the subject of his thesis being "The Use of Atropine and Narcotic Alkaloids in Anæsthesia."

Dr. Shearer is a staunch supporter of the Scottish Society of Anæsthetists, attending every annual meeting since the Society was re-started in 1948. He was elected President in 1953, the subject of his address being "A Pipe-line Problem." No one who saw his meticulous preparations for this paper will

forget his expeditions over the roofs and into the lofts of D.R.I. in search of leaks. He is also a founder member of the North-East of Scotland Society of Anæsthetists and was its second President.

Dr. Shearer's publications include "Calibration of a Boyle Machine," "The Evaluation of Premedication" and "Establishing a Feature-card Index." He is primarily responsible for the setting up and maintenance of a feature-card index in Dundee and we hope that he will find time in his retirement to continue this service.

Dr. Shearer has built up a happy Department in which his adherence to the traditional values of Medicine has been an example to all who passed through it. With Mrs. Shearer, he is a most hospitable person, a fact to which many visiting anæsthetists can testify. He has done an immense amount of work for Dundee and all his colleagues wish him a long and happy retirement.

Professor R. A. Millar

DR. R. A. MILLAR has been appointed to the Chair of Anæsthetics at Glasgow University and Glasgow Royal Infirmary from 1st October, 1972. Dr. Millar graduated in 1947 at Edinburgh where he spent the early part of his anæsthetic career. After a period of research at the University of Pennsylvania, he worked at the Montreal Neurological Institute and McGill University from 1956 to 1961. Thereafter he became Consultant Anæsthetists to the United Cambridge Hospitals, with responsibility for neurosurgical anæsthesia. For three years he held research

sessions which were spent at the Institute of Animal Physiology, Babraham, Cambridge, where he undertook further research in 1967-68. He joined the M.R.C. Division of Anæsthesia at the Clinical Research Centre in May, 1970.

Dr. Millar's main research interests have been in the effects of blood gas changes, the neurogenic control of the cerebral circulation, and the action of general anæsthetics on neuro-circulatory regulation.

We welcome his return to Scotland and wish him well in his new appointment.

WE live in a period of great change. The Scottish Standing Committee has come into being; in our hospitals we are having to accommodate to alterations in nursing practice following the Salmon restructuring, and we ourselves are grappling with the possible outcome of reorganisation of the Health Service following the Brotherstone Report. Shortly we are to lose our old local boundaries and soon we will be a member of the European Economic Community.

Amidst all these changes, some eagerly anticipated, others looked on with dread or dismay, one tends to cling to things permanent and yet we have been further assailed by a questionnaire on the future of Anaesthetic organisations in this country. While in this period of flux old structures have a special appeal, it is important that such structures are suited to the future and to recognise that outside changes may, in fact, be one argument for change in our own organisations.

There is, however, no future without a past and we are indeed fortunate to be reminded

of this in Dr. Gillies' reminiscences (Newsletter p. 20). To a few his "Retrospect" will bring back memories, but to most it will rather give a greater appreciation of our forebears in the specialty. There was not the life of training courses or organised off-duty but somehow they won through. Medicine, and Anaesthesia in particular, has come a long way since then and it is right that those of us who benefit recognise our debt to those who laid the foundations of our specialty. To Dr. Gillies for giving us this insight our gratitude is great.

The Newsletter records elsewhere the retirement of Professor Alex. Forrester and Dr. William Shearer who have contributed materially to the development of the specialty nationally and in their own centres. We would wish them well in their retirement and extend our good wishes to their successors, Professor R. A. Millar and Dr. Murray Lawson.

Finally we must record our thanks to our contributors without whom there would be no Newsletter. It is hoped that your appreciation is just reward for their efforts.

Payment of Annual Subscription by Banker's Order

FROM time to time, members have requested that they be allowed to pay the annual subscription to the Society by Banker's Order. It was realised that this would be of benefit to the member and to the Society alike, but with successive secretaries operating through different banking accounts it was not considered workable to inaugurate such a scheme.

Arrangements have now been made whereby those members who prefer to pay the annual subscription by Banker's Order may do so

through the Head Office of the Bank of Scotland, The Mound, Edinburgh. The Society's financial year ends 31st March, and payment by Banker's Order may therefore begin with the subscription for the ensuing year, payable 1st April. The scheme is commended to members for their own convenience, for the Society's financial situation, and for the facilitation of the Hon. Treasurer's duties.

A form suitable for use is available on application to the Hon. Treasurer.

News from the Regions

Eastern Region

This Autumn has marked the retirement of Dr. W. M. Shearer, Consultant in Administrative Charge of the Department since its inception. A tribute to Dr. Shearer appears elsewhere in this issue.

We welcome as Dr. Shearer's successor Dr. J. I. Murray Lawson, who is well known to members of the Scottish Society. Having charge of a department is not a new experience for Dr. Lawson, as he spent a year at the head of a teaching hospital department in San Diego, California, recently.

He has published papers on a wide range of subjects over the years, his current interests being dental anaesthesia and epidural analgesia in obstetrics. The rapid development of this service in Dundee is due largely to Dr. Lawson's energy and teaching.

Presently chairman of the Dundee Hospitals Medical Staff Association, Dr. Lawson has a wide experience of medical committee work. Our good wishes are with Dr. Lawson as he assumes this new responsibility.

We congratulate Dr. Iain Gray, both on his Consultant appointment here and on his successful completion of an M.D. thesis. Our good wishes go to Dr. Betty Cornwell who leaves shortly to take up a Consultant appointment in the London Chest Hospital.

The junior staff teaching programme has borne fruit with three of our candidates gaining the primary F.F.A. this year. An additional course for the second part has now commenced.

North-East Region

Anaesthetists in the North-East Region have enjoyed a busy year since the last Newsletter appeared.

There has been the usual number of changes in the junior ranks of the department: we have also welcomed Dr. Greg Imray as a Consultant. Greg seemed to have difficulty for a time deciding whether to be an

Anaesthetist or a farmer, but we are glad he decided on the former. He was replaced as Senior Registrar by Dr. Tom Ogg who had been with us as a Registrar.

Two members have travelled far afield. Dr. Edith Beveridge spent six months in Sarawak as Adviser in Anaesthesia to the Malaysian Government. As there are no medically qualified anaesthetists in Sarawak, this was a distinct contrast to conditions in the United Kingdom. Dr. Ian Smith went to the Department of Anaesthesia of the Toronto General Hospital in March of this year and is apparently enjoying life "on the other side." Another five are about to depart for the Fifth World Congress in Japan.

Work is proceeding slowly (thanks to the current building strike) on the new wing of the Royal Infirmary. This is now due to be completed in 1975 and incorporates a suite of four operating theatres. This should not mean an increase in operating sessions, as the surgical unit at Woodend is going to be phased out, so that all acute general surgery will be dealt with on the Foresterhill site. Doubtless, however, we will have to cope with the usual requests for extra sessions, for which there seems to be an insatiable demand.

South-East Region

The past year has seen a number of staff changes. Dr. Jim Jenkinson has been appointed to a Consultant post at the Western and in Neuro-surgery. Dr. Nick Gordon has moved to fill his post in Dental Anaesthesia. Dr. Chris Evans has joined the Department for a year from New Zealand. We are pleased to welcome back Dr. Jimmy Wilson after his sojourn in Leeds. Further afield Dr. A. G. Davies has been appointed to Peel. We wish them all well in their new appointments.

We learned with deep regret of the sudden death of Dr. Tony Redhead on 9th January, 1972, whilst on holiday in Canada. Dr. Redhead was a very popular member of the Department whose future in the specialty was well assured.

We congratulate Professor J. D. Robertson on his election to the Council of the Royal College of Surgeons, Edinburgh. During

February and March, Professor Robertson acted as examiner in the overseas primary examinations for F.R.C.S. and F.F.A.R.C.S. in Cairo and Khartoum. At the moment of writing he is once more on his travels to the World Congress at Kyoto.

One of the highlights of the year was the "Course in Clinical Measurement" held in February and attended by Anæsthetists from all regions. The course was organised under the supervision of Dr. A. G. Cliffe and was a great success.

The In-Service Training Courses held throughout the year have once again produced good results. We feel that these results bring great credit to the organisers—Dr. Nick Gordon for the Final and Dr. John Dewar for the Primary—and to their colleagues who helped with the teaching. The high standard is reflected in the award of the Nuffield Prize to Dr. G. B. Drummond in the recent Primary.

Dr. Drummond has been awarded a Research Grant by the Association of Anæsthetists to study the relationship of small airway closure to gas trapping in the lungs and of absorption collapse during anæsthesia.

The Christmas Party was once again a great success and Bulldog Drummond's one-man band helped to make the evening a memorable one. Miss Taylor is working hard to make this year's party even better and it will be held at the same venue on 9th December.

The golf outing was held in July at Kilspindie, and this year the winner was Dr. David Bennie who received the Silver Tankard presented by Bobby Burt.

Northern Region

It has been a very settled year in the Northern Region. It has largely been a year of quiet improvement rather than change. There have been no resignations or new appointments to permanent posts. The main part of the New Central District Hospital for Inverness has at last after many delays been given a definite starting date for building—Spring 1973. The hospital will finally be completed by 1977 when Raigmore will finally be closed.

West Region

Two former Presidents of the Scottish Society of Anæsthetists from the West of Scotland have retired.

Professor Alex. Forrester had the unique honour of being the first occupant of the first chair of Anæsthesia in Scotland, and also distinguished himself in many other spheres. As a past President of the Anæsthetic Section of the Royal Society of Medicine, member of the Council of the Association of Anæsthetists, member of the Board of the Faculty, and Adviser to the Medical Defence Union, he has done an enormous amount to help the development of our specialty.

Dr. Alistair Miller, noted for his kind and gentlemanly treatment of everybody and everything with the exception of golf balls, will at last have the time to get down to scratch.

Dr. Clifford Eason has also retired to his fastness in St. Catherine's.

After working in Edinburgh, Montreal, Cambridge and Northwick Park, Professor R. A. Millar has taken the reins of the University Department of Anæsthetics at the Glasgow Royal Infirmary.

At the Western Infirmary, Dr. Graham Smith has returned from his year in Seattle in rude health, while Dr. John Alexander has returned to Bristol after his year of research. Bristol have sent another research fellow in the shape of Dr. D. A. Logan to carry on the good work.

Hospitals seem to come and go with unprecedented frequency. The Sick Children's opened again in Spring and appears very lush to one working in a century-old building. Even lusher are the new theatres at Stobhill. The panoramic view from the Western Infirmary Anæsthetic Department is now blocked by Phase I of the new Western. Killearn Hospital is rapidly running down, and the new Gartnavel General Hospital opens in December. A third attempt will then be made to close Oakbank.

On the lighter side, the Glasgow and West of Scotland Society of Anæsthetists has added a golf competition for the Gallie Silver Salver to its more onerous commitments.

EDINBURGH AND EAST OF SCOTLAND SOCIETY OF ANÆSTHETISTS

Syllabus 1972-73

Saturday, October 21, 1972

Combined Meeting with the Glasgow and West of Scotland Society in the Large Surgical Lecture Theatre, Royal Infirmary, Edinburgh.

5.00 p.m. 1. Professor J. J. Bonica, University of Washington, Seattle. "The effects of uterine contractions and maternal hypotension on intervillous perfusion." 2. Dr. F. Cockburn, University of Edinburgh. "Nutrition, neurones and neonates."

Tuesday, November 14

Dr. R. T. Brittain, Head of Pharmacology Department, Allen and Hanburys, Ltd. "New Non-Depolarising Muscle Relaxants."

Tuesday, December 12

Dr. J. Alfred Lee, Southend-on-Sea. "Fifty Years of Anæsthesia in the U.K."

Tuesday, January 9, 1973

Dr. C. F. Hider, Symposium on "Coronary Artery Surgery."

Tuesday, February 13—Members' Night.

Friday, February 23—Annual Dinner.

Tuesday, March 13

Dr. Mark Mehta, Norfolk and Norwich Hospital. "Chronic Pain."

Tuesday, April 24—Annual General Meeting.

Meetings will be held in the Royal College of Surgeons, Nicholson Street, on the **second Tuesday** of each month unless specified otherwise. Tea at 7.45 p.m. for 8 p.m. Telephone 031-556 6207.

GLASGOW AND WEST OF SCOTLAND SOCIETY OF ANÆSTHETISTS

Syllabus 1972-73

Tuesday, October 10, 1972—Golf Outing.

Saturday, October 21

Combined Meeting with the Edinburgh and East of Scotland Society of Anæsthetists in the Royal Infirmary, Edinburgh.

Obstetric Anæsthesia—Professor J. J. Bonica. Nutrients, Neurones and the Newborn—Dr. F. Cockburn.

Friday, December 8

The Physiology of Acupuncture—Dr. F. Mann.

Wednesday, January 10, 1973

Research in Various Environments: a Personal Communication—Professor R. A. Millar.

Tuesday, February 13

Advances in Paediatric Anæsthesia. Members of Anæsthetic Division, Royal Hospital for Sick Children, Glasgow.

Tuesday, March 13

Hypnotism—Hoax, Hazard or Help?
Presidential Address.

All meetings, unless otherwise intimated, will be held at the Royal College of Physicians and Surgeons of Glasgow, 242 St. Vincent Street, Glasgow, commencing at 7.45 p.m.

Visitors wishing to attend should contact the Hon. Secretary, Dr. J. M. Reid, Department of Anæsthetics, Royal Infirmary, Glasgow, G4 0SF, prior to the meetings. (041-552 3535 Ext. 212).

NORTH-EAST OF SCOTLAND SOCIETY OF ANÆSTHETISTS

Syllabus 1972-73

Thursday, October 5. Stracathro.
Registrars' Papers.

Thursday, November 16. Aberdeen.

"Neonatal Depression and a Fresh Look at the Apgar Score."—Dr. J. Selwyn Crawford.

Thursday, April 5, 1973. Dundee.

"Relief of Intractable Pain: Medical, Surgical and Stereotaxic Methods."—Dr. S. Lipton.

Thursday, May 17. Stracathro.

Annual General Meeting.

Presidential Address—Dr. S. W. McGowan.

Meetings are held at 8 p.m. in Aberdeen Royal Infirmary, Dundee Royal Infirmary, or in Stracathro Hospital, Brechin, unless notified otherwise.