

NEWS LETTER

The
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SOCIETY of
ANAESTHETISTS

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THE SCOTTISH SOCIETY OF ANAESTHETISTS

(Founded 20th February 1914)

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

“Ordinary membership will be restricted to members of the medical profession practising the specialty of anaesthetics.”

—Extracts from the Constitution.

Subscriptions

£1 per annum.

50p per annum for Senior House Officers and Registrars.

President's Newsletter

The coming year promises to be eventful. Changes in the administrative structure of the Health Service will have far reaching repercussions, and it is to be hoped that these will have been anticipated by Anaesthetic Departments.

The proposed new "Health Service Contract" appears to have been received with mixed feelings by anaesthetists but it should reassure some that it will contain a "no-detriment" clause. For others it may give hope that they will be paid for the work they do.

Council continues to be concerned over the number of merit awards that are allocated to the specialty. In one teaching centre in Scotland there would appear, at present, to be only one such award. Representations are being made through the appropriate channels, in this case through our representative on the S.C.H.M.S. Results, however, cannot be expected overnight, but the Council intend to pursue the matter actively.

It is disquieting to learn from several centres, of Registrars with the F.F.A.R.C.S. leaving the specialty for General Practice. There is no doubt that the financial rewards of General Practice, clearly set out by C. R. Sandison in "Hospital Medicine" earlier this year are making an impact on this and other specialties. Council intends to keep this most important matter under the closest scrutiny and to relay any pertinent facts to the appropriate authorities.

A "Working Party on Forensic Pathology Services in Scotland" has been set up, the equivalent of the "Broderick Committee" in England and Wales. The Society has been invited to give evidence to this Working Party and after

discussion the Council have considered it pertinent to do so. Evidence is being submitted indicating the difficulties encountered in some regions in obtaining relevant details of the results of autopsies carried out by Forensic Pathologists. At present no mechanism exists for relaying findings to those clinically involved.

A Society of Anaesthetic Laboratory Technicians has been formed to represent the interests of those invaluable members of our departments who in some places are called technicians and in others engineers but whose lot is the maintenance, adaptation and development of our equipment.

Your Council have given their moral support to this body and have made on behalf of the Society a small donation to assist with the inevitable initial expenses.

Support for a visit to the IVth European Congress of Anaesthesiology in Madrid in September 1974 has been poor. Council have decided that there is not sufficient interest to warrant organising a Society event. It has, however, been possible to negotiate a substantial reduction in costs for those who wish to travel with a Company making arrangements for the Association of Anaesthetists. Details will be in the hands of members at the earliest opportunity.

The Society now has over 300 members and it is of interest to note that the next Annual General Meeting, that in 1974, will mark the 60th year since its foundation. It is hoped that the health and strength of the Society will continue to flourish in the coming years with the help and support of its members.

Programme for 1973-74

REGISTRARS' PRIZE: Entries must be submitted to the Secretary by 28th February 1974. For conditions of entry, see the section on page 10 of the Newsletter.

ANNUAL GENERAL MEETING: The Post House, Aviemore 26th-28th April 1974. Guest Speaker Dr. John F. Nunn. As always, early booking of accommodation is recommended.

SCIENTIFIC MEETING: The Royal Infirmary, Edinburgh. May 1974.

REGISTRARS' MEETING: Dundee, October 1974.

NEUROSURGICAL ANAESTHETISTS' TRAVEL GROUP: The Group hope to hold a meeting in Spring 1974. Anyone interested should contact Dr. Harvey Granat, Southern General Hospital, Glasgow or Dr. S. W. McGowan, Royal Infirmary, Dundee.

Activities of the Past Year

THE ANNUAL GENERAL MEETING was again held in the pleasant surroundings of the Post House, Aviemore on 27th-29th April 1973. Unfortunately the notified guest speaker, Dr. John Nunn, was prevented by illness at the last moment from attending. The breach was ably and very acceptably filled by Dr. Hamish Simpson, the Royal Hospital for Sick Children, Edinburgh. Dr. Nunn has happily agreed to accept the invitation to be guest speaker next year. A full report of the meeting appears below.

THE SCIENTIFIC MEETING: This was held in Dundee in May 1973. The meeting was well attended and had as its theme Cardiovascular Measurement. The speakers were Dr. C. Prys Roberts, Dr. D. B. Scott, Dr. A. L. Forrest and

Professor G. R. Kelman. Summaries of the papers are included in the Newsletter.

REGISTRARS' MEETING: 19th October 1973. About seventy junior anaesthetists from all parts of Scotland gathered at the Western Infirmary, Glasgow for this meeting which was organised by Dr. A. A. Spence and members of the Department of Anaesthetics. The morning was taken up by demonstrations of monitoring equipment, closing volume and other methods of lung function assessment, the hyperbaric chambers and the statistical enquiry into possible consequences of operating theatre pollution. After an excellent buffet lunch, several short papers, all by junior staff, were read on a commendably wide range of subjects relevant to the second part F.F.A. examination.

Annual General Meeting — Aviemore

27th — 29th APRIL, 1973

For the second year in succession, the A.G.M. was held in the Post House, Aviemore. The many activities available in the Centre and its environs allow a wide variety of tastes and interests to be fulfilled. They also ensure that vagaries in the weather leave the visitor largely unaffected.

On this occasion the weather ranged from brilliant sunshine to a brief snow shower and though heavy rain struck the golfers, it did not appear to dampen their enthusiasm. Conditions for the curlers were more suitable though still somewhat unstable.

Dr. Bannatyne, on Friday evening, enthralled a good number of members with his slides of meetings long gone by and of more recent times. An historic wealth of memories have been captured by his lens.

Saturday, a full day by anyone's standards was punctuated by the brief return of families from their numerous activities to re-stock with energy, food and more depressingly, money.

The Trade Exhibition was both well attended and well endowed with equipment. We value this opportunity to meet old friends in the Companies who struggle to keep us up to date.

A late change was forced on the afternoon

programme by the sudden indisposition of Dr. John Nunn who was to be our Guest Speaker. The day was saved by the kindness of Dr. Hamish Simpson from Edinburgh who stepped in at the very shortest notice to undertake the task. Happily, Dr. Nunn made a rapid recovery and all being well, will be with us at our next A.G.M.

Saturday evening began with Mrs. Rollason presenting prizes to the victorious golfers, Mrs. Holloway and Dr. Bargh, and to Mrs. Grigor, Mrs. Parbrook and Dr. and Mrs. Holloway who were judged to be the successful curlers.

The Dinner Dance was a most enjoyable occasion and our piper Nigel Malcolm Smith was again in evidence. Although last year he was able to play "Amazing Grace" this year he found "Long haired lover from Liverpool" beyond even his capabilities, certainly at short notice. A tripodial member of the band soon overcame this minor disappointment, and there were many happy faces by the end of the evening. Fewer, however, were evident the next morning.

Next year the meeting will again be held in Aviemore and an invitation is extended to all members to sample the joys and beauty of the Highlands at the Annual General Meeting, and to maintain the momentum of this Society gathering.

SHOULD A DOCTOR TELL?

The only condition with 100% mortality is life and indeed the only certainty that we have is that one day we shall die. "To endure life be prepared for death". This implies that life only becomes meaningful when death is accepted realistically and the doctor himself should face up to, and emotionally accept, his own death.

There are two questions that are uppermost in the mind of doctors when they are dealing with the seriously ill patient, they are *firstly*, if a patient has cancer, should the truth be told, or concealed, and *secondly* should the doctor tell his patients if they are dying? It has been said that 80-90% of doctors are in favour of not telling the patients, while 80-90% of the patients want to know.

If the truth is not told the following complications may arise: *firstly*, if the patient's condition is deteriorating, it will be difficult or impossible to deceive him or her. *Secondly*, when the patient does realise the true condition, the doctor will be blamed by the patient for not diagnosing sooner the real condition which he has camouflaged as rheumatism or some other disease. *Thirdly*, there is evidence that the majority of patients prefer to know the truth, indeed only about 7% of patients resent being told the true diagnosis. *Fourthly*, in later years, if any relative of the deceased seeks medical advice, he or she will not believe the doctor that there is no evidence of cancer. They know quite well that earlier their relative was deceived. *Fifthly*, if patients who recover from cancer are never told, the belief that no case of this disease is ever cured will persist. Any patient who is afraid he has cancer will tend to consider that there is no object in going to a doctor. *Lastly*, to deceive a patient leads to complete loss of confidence between patient and doctor.

Clearly, the doctor must individualise and he must steer between stark truth and bland deceit. The important thing is to give the patient a chance to tell you or not as he chooses. Often the tacit understanding that both do know, that there is no need to mention it, is sometimes the most helpful approach. The truth dawns gradually on many, even most, of the dying even when they do not ask or are not told. They accept it quietly and often gratefully but some may not wish to discuss it and we must respect their reticence. The dying, in particular, require kindness and frequent visits

from a comprehending and sympathetic physician who should become a friend. The importance of the continuity of care, of voice and of touch right to the very end cannot be over emphasised. It is comforting to know that death is almost always preceded by a perfect willingness to die.

Although it seems that only about one person in eight is seriously troubled by pain in the terminal illness its correct management is one of doctor's most important functions in the care of the dying.

The agonies of terminal pain are not just extensions in time of something that is qualitatively the same as acute pain. Terminal pain has no useful function, serving neither as a warning nor for protection but when it occurs merely adding to a deteriorating illness something that is really an illness in itself — one that has to be considered and treated as such.

The terminal treatment can be summed up under three headings:

- (1) Listening
- (2) Attention to detail
- and (3) Skill and confidence in handling analgesics and other drug and nerve-block techniques.

In the first place, *Listening*: listening in order to analyse the situation and to attend as a person ready to be aware, not only of the nature of the pain on the physical level, but also of its implications for this individual in his own culture and background, past experience and present anxieties. A patient who said, "It seemed as if the pain went with me talking" speaks for many, and another who said, "It seems that all of me is wrong" is speaking of an inter-related complex of physical, emotional and social problems, while expressing the need for a feeling of security. This total pain — the pain which demands the patient's total preoccupation calls for understanding and an approach along each of these lines. The patients who keep saying, "I knew I needed attention" do not only refer to the physical side of their problems, but to the rest also. Riding has referred to his pain clinic as a "refuge for the rejected" and another medical colleague refers to "Those patients who are so often jettisoned by their doctors". Both of them emphasise that their main contribution may just be the fact that they are

able to listen. Such ability includes a readiness for real concern as well as time available.

Secondly, *Attention to detail* — attention not only to the details of the story and to all the facets of the physical part of the pain, but also to the various symptoms that may accompany it and to their treatment. Sometimes patients will complain bitterly of a minor trouble in order to distract the attention of the doctor — and their own — for more major concerns that are too threatening to look at. But often it is the apparently smaller thing that is the biggest problem. So much pain can be relieved by symptomatic treatment, by nursing measures, control of inter-current infections, attention to diet, and so on. Those who offer lists of such remedies are often hesitant because of their very simplicity. Each will garner his own that work for him and we all need a combination of enquiry, imagination and persistence. There is hardly anything that one cannot try to improve. To come to a patient with several different ideas to help anorexia, nausea, vomiting, dyspnoea, insomnia, dry mouth, bed sores, incipient incontinence and, perhaps above all, constipation, makes a visit very much easier for the doctor as well as more profitable for the patient. To say that "there is nothing more to be done" is inexcusable and seldom, if ever, true. Symptomatic treatment is here not only demanded but extremely rewarding.

Thirdly, *Skill and Confidence in handling Analgesics and their Adjuvants and Performing Nerve Blocks* — This involves the skill of knowing:

- (a) when to begin
- (b) what to choose
- (c) what route and what regime to use
- (d) what combination of drugs to employ.

(a) *When to begin* — Not all patients with terminal malignant disease have pain. Certainly among many patients who have no pain, or even little discomfort, there are many who have severe pain over long periods of time. One should do something about the pain as soon as it becomes a matter of complaint. The patient should be accustomed to expect relief rather than to expect pain.

(b) *What to choose* — This early relief can be carried out with mild analgesics, given regularly if pain is already constant, and many have remarked how useful they remain, often right through the whole course of such an illness. In spite of the newer drugs that are becoming available, aspirin, paracetamol, codeine and their combination, remain the stand-bys.

(c) *What route and what regime to use:* — Enthusiasm, instruction and the doctor's own

confidence often do more to relieve pain than any drugs. Treatment of pain may often overlap with definitive palliative treatment at this stage, and this in turn will often lead to the relief of pain. This includes surgery, radiotherapy and the use of cytotoxic drugs, barbotage, stereotaxic methods and nerve blocks.

Although it may not produce as great a degree or as long a duration of relief as the more radical neurosurgical operations, nerve blocking has the advantage that it is relatively simple, painless and free from serious complications.

Patients rarely wish to continue with drugs once the pain goes.

(d) *What combination of drugs to employ:* — The art of giving analgesics, mild or powerful, lies in handling drugs whose effects and side-effects we know, balancing the dose to the needs of the individual patient and adding adjuvants as they are called for, and our own confidence and interest at all times.

For *severe pain*, nothing has yet really replaced the opiates. Diamorphine should be tried for those patients who are made sleepy or nauseated by the other opiates, for those whose mental distress is not helped by synthetic drugs and for those for whom morphine produces dysphoria or nausea. The solution should be fresh and not be kept for longer than three months.

Atmosphere, confidence and the ready use of adjuvants lead to the correct pattern of dosage. Anticipation and imagination should avoid crises, and certainly should avoid the very heavy sedation that obliterates the patient's personality and can reduce him to a mere uncomplaining residue of himself.

The regime in which all these powerful analgesics are given is of paramount importance. The typical pain of terminal cancer is constant in character, and that means some form of regular giving of drugs. Here the usual teaching that doses of any such drug should be as widely spaced as possible does not apply. Drugs should now be given to prevent pain from occurring rather than to control it once it is present. It has been found over and over again that the same dose can be used effectively for weeks and months. Of course, constant attention is always needed to be certain that the degree of pain has not altered and that the dose should be adjusted accordingly. Pain may increase, as metastatic lesions spread, and it frequently diminishes at the end and the dose may need reducing, or the interval between doses lengthened, although this should never be done abruptly.

No discussion of the control of physical symptoms, or of the emotional distress of such pain, would be complete without mentioning the use of another drug — alcohol — one of the best sedatives for these patients and an excellent adjuvant in the relief of pain. Above all, it has the great advantage of the pleasure and gratification that accompany it, not to mention the possibilities for social exchange.

Mention should also be made of the Brompton mixture which also contains alcohol in the form of gin. Given regularly this mixture may control

depression as well as pain throughout an entire illness.

The final comment on the control of terminal pain should be upon the importance of social exchanges for these patients, so as to underline one of the most important factors in their continued relief. Every kind of suffering is intensified by the loneliness of isolation, and terminal pain perhaps shows this with exceptional vividness. Neither drugs nor procedures, nor anything else we may offer can ever take the place of that continuous interest, care and attention to the very end, which expresses the real commitment of one person to another.

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.

ASPECTS OF RESPIRATORY FAILURE IN
INFANTS AND CHILDREN

Introduction

Respiratory failure is a term which has been used increasingly in clinical medicine in recent years. It occurs when the delivery of oxygen and removal of carbon dioxide by the lungs fail to meet the metabolic needs of the tissues. Serious impairment of lung function is potentially lethal, yet in a large proportion of cases respiratory failure is reversible if proper treatment is provided. Such treatment is available in respiratory intensive care units, the development of which has resulted from advances in measurement and engineering technology and the clinical application of long available physiological information. The best results are obtained when medical, anaesthetic, laboratory and nursing personnel co-operate as a team to staff such units.

Most authors define respiratory failure in terms of an arterial oxygen tension (P_{aO_2}) or carbon dioxide tension (P_{aCO_2}) well outwith the normal range for age. The definition proposed by Campbell (1965) is widely used - i.e. the P_{aO_2} below 60 mm Hg or the $P_{aCO_2} > 49$ mm Hg in a resting subject breathing air at sea level. In infants outwith the immediate newborn period and in older children the lower level of normal P_{aO_2} is approximately 80 mm Hg and the range of P_{aCO_2} from 35-44 mm Hg. The separation of hypoxaemia with a normal or reduced P_{aCO_2} (Type I respiratory failure) from hypoxaemia with an elevated P_{aCO_2} (Type II respiratory failure, or ventilatory failure) is also proposed by the Campbell (1965) definition.

Mechanisms of Acute Respiratory Failure

The mechanisms which lead to failure of gaseous exchange vary with the diseases that produce respiratory failure. Type I respiratory failure, hypoxaemia with a normal or low P_{aCO_2} , results from abnormalities within the lung itself which cause an imbalance of ventilation and perfusion of some alveoli. This is usually due to partial obstruction or collapse of alveoli. Under-ventilation of alveoli causes a fall in P_{O_2} and an increase in P_{CO_2} of the effluent blood. Over-ventilation of other alveoli cannot compensate the oxygen deficiency as a further rise in P_{O_2} adds little to total oxygen content because

of the sigmoid shape of the oxyhaemoglobin dissociation curve. Carbon dioxide retention can, however, be compensated by over-ventilation as the carbon dioxide dissociation "curve" is linear and the excretion of carbon dioxide is directly related to alveolar ventilation. This maldistribution of ventilation with impairment of ventilation/perfusion ratios is the prime cause of hypoxaemia in acute lower respiratory tract infections, asthma, cystic fibrosis and certain forms of congenital heart disease. Its degree can be assessed by measuring the difference between alveolar and arterial oxygen tensions.

Type II respiratory failure occurs when there is "global" hypoventilation. It is common in the ventilatory depression which accompanies certain drug poisons or injuries which produce instability of the chest wall. Under certain circumstances, however, a minute volume twice or thrice normal cannot provide adequate ventilation. This arises when a large number of alveoli are ventilated but not perfused, resulting in "wasted ventilation" or an increase in physiological dead space. In extreme circumstances 70-80 per cent of each breath may be wasted. The work of breathing increases to overcome this inefficiency in carbon dioxide elimination. Ultimately, ventilatory requirements cannot be met and prompt intervention is essential if death from exhaustion or retention of carbon dioxide is to be prevented.

Causes of Acute Respiratory Failure

During the past 15 months patients admitted to the medical wards of the Royal Hospital for Sick Children, Edinburgh, with severe respiratory failure have been treated in a two-bedded respiratory intensive care unit opened within the hospital in January 1972. The commonest causes have been acute lower respiratory tract infections, upper airway obstruction (croup, laryngo-tracheo-bronchitis), status asthmaticus, congenital heart disease, poisonings, status epilepticus and septicaemia. Acute lower respiratory tract infections which occur mainly in infants under 6 months of age were by far the commonest cause of acute respiratory failure. Severe ventilatory failure occurs in many such infants (Reynolds, 1963; Simpson and Flenley,

1967) which contrasts with the findings in adults with pneumonia where hypoxaemia is usually accompanied by a normal or low P_{CO_2} (Meakins and Davis, 1925). In severe acute asthma also carbon dioxide retention is much more common in young children than in adults.

Susceptibility to Hypoxaemia and Carbon Dioxide Retention

The infant's susceptibility to hypoxemia and carbon dioxide retention during the course of acute respiratory illnesses may be explicable, at least in part, on the basis of anatomical and physiological (mechanical and regulatory) considerations operative during the period of post-natal lung growth and development. In some diseases, e.g. bronchiolitis, immunological factors may also contribute to the pathogenesis of respiratory failure.

Even in the full-time infant lung development is incomplete. The number of alveoli increase after birth in an exponential manner up to the age of 8 years (Dunnhill, 1962). During this period there is a ten-fold increase in the number of lung alveoli. Lung surface area increases some twenty-fold which is about the same as the increase in body weight. The metabolism of the infant is nearly double that of the adult, however, when expressed per kilogram body weight, which suggests that the infant has less reserve surface area for added metabolism than the adult.

Hogg et al (1970) have made important observations on the distribution of airways resistance in the lungs of infants dying from non-respiratory causes and also in the lungs of patients who died of bronchiolitis or cystic fibrosis. In normal lungs the contribution of peripheral airways resistance to total resistance is much greater under the age of five than later. These authors attribute the decrease in resistance to airflow after that age to an increase in diameter of existing peripheral airways rather than an increase in the actual number of small calibre peripheral airways. In abnormal lungs peripheral airway disease leads to clinically recognisable disease in life, and death from respiratory failure in the young child, whereas identical autopsy lesions are virtually unrecognised clinically during life in the adult. It seems, therefore, that the narrow peripheral airways of infants and young children increase susceptibility to hypoxaemia.

The tendency to maldistribution of ventilation leading to imbalance of ventilation and perfusion is facilitated by an increased tendency of small airways to close in infants and young children even during tidal breathing. Mansell et al (1972) found

"closing volume" values in children comparable to those found in middle-aged adults. This is probably due to incomplete development of elastic tissues in the lungs of young children, a view supported by physiological measurements of elastic recoil and also histological studies.

The combination of high peripheral airways resistance, maldistribution of ventilation (in part a consequence of small airway closure) and rapid rates of respiration may result in frequency dependence of dynamic compliance and further impairment of gaseous exchange. This phenomenon has been demonstrated in infants with acute bronchiolitis (Krieger, 1964).

The high incidence of ventilatory failure in infants with obstructive airway disease suggests an abnormality of ventilatory control. Why otherwise does the combination of carbon dioxide retention and hypoxaemia fail to provoke sufficient alveolar ventilation to restore the P_{CO_2} to normal? Diminished ventilatory response to chemoreceptor stimuli has been observed in patients with chronic obstructive airway disease in studies of populations native to high altitudes and in infants with congenital cyanotic heart disease. There have been no systematic studies of this kind, however, either in normal children or in children known to develop carbon dioxide retention during the course of respiratory illnesses.

Possible Role of Immunological Factors

In recent years there has been a growing suspicion that immunological factors play a role in the pathogenesis of respiratory failure associated with respiratory syncytial virus (R.S.V.) infection in infancy. Serious R.S.V. disease occurs in the young child in the early months of life and the frequency of the disease decreases sharply after the age of one year. In some series this virus has been isolated in over 60 per cent of infants with bronchiolitis and in a smaller proportion of infants with pneumonia. Channock et al (1970) suggested that immune mechanisms enhance the virulence of R.S.V. in the early months of life and that there is an interaction of the virus and circulating antibody in the lung resulting in the most severe manifestations of the disease (i.e. Type III reaction). An alternative explanation suggesting a Type I reaction has been proposed by Gardner et al (1970). At present there is no direct evidence to support either hypothesis. The question is of extreme importance, however, and its elucidation may lead to methods being devised to protect infants in the first few months of life.

Diagnosis and Treatment

The diagnosis and treatment of acute respiratory failure in infancy has been the subject of a recent review (Downes et al, 1972). The authors emphasise, and my own experience supports their views (Simpson, 1973), that infants with acute respiratory failure can tolerate a degree of carbon dioxide retention which is unacceptable in the adult with acute respiratory failure. Recovery with conservative treatment is usual, provided P_{CO_2} does not exceed 65-70 mm Hg in patients with acute respiratory infections or status asthmaticus. When the P_{CO_2} exceeds this limit mechanical ventilation should be considered. Out of a total of 351 infants under two with severe respiratory infections admitted to Royal Hospital for Sick Children, Edinburgh in the preceding 15 months, 85 were ill enough to warrant sequential measurements of blood gas tensions and pH. Of these 15 were transferred to the Respiratory Care Unit where 11 were treated by mechanical ventilation. There was only one fatality. Our experience in other areas is not yet large enough to report in detail but we are convinced that the management of acute respiratory failure is often an essential adjunct to treatment in children with encephalitis, intractable convulsions, poisonings, septicæmia and some forms of congenital heart disease.

Current Area of Investigation

So far I have discussed the degree of failure of respiration in terms of blood gas tensions and pH. This method may, however, fail to register the degree of cerebral hypoxia — an important determinant of immediate survival as well as of long-term prognosis. In various forms of experimental hypoxia in rats, cats and dogs, Siesjo et al (1968) have demonstrated that the lactate/pyruvate ratios in the cerebrospinal fluid seem to reflect changes in the cerebral NADH/NAD system. The usefulness of measuring these variables in patients has also been assessed (Svenningsen and Siesjo, 1972).

During the past year we have carried out studies in some 50 children between 3 and 24 hours after convulsions or presumed "hypoxic" insult. CSF acid-base variables, lactate and pyruvate were measured and the results compared with those in simultaneously sampled arterial blood. A preliminary analysis indicates that there was no significant cerebral hypoxia in patients following convulsive episodes as judged by the criteria of an increased lactate concentration in the CSF ($> 2\text{mM}$) or an increase in CSF lactate/pyruvate ratio (> 16). In 12 severely ill children an increase in

lactate and lactate/pyruvate ratio was found. Only one patient with a CSF lactate exceeding 4mM survived and on follow-up he had a mild hemiparesis. Of the remaining 5 survivors none showed evidence of neurological impairment at follow-up. It is hoped to pursue this area of research and to relate CSF lactate and acid-base findings to clinical assessments and electro-encephalographic recordings made during the acute phase of illness.

Concluding Remarks

In this presentation I have attempted to increase your awareness of the problems associated with acute respiratory failure in young children and to highlight differences between children and adults in their susceptibility to hypoxæmia and carbon dioxide retention. I have also indicated an area of current investigation which may prove to yield important prognostic information.

I wish to emphasise that optimal management of respiratory failure in infants command a team approach. A 24-hour laboratory service close to the patient area and supervised by personnel closely concerned with intensive care is essential to provide rapid micro-determinations of blood gas tensions and pH, electrolytes, osmolality and haemoglobin. Such a service is extremely expensive and should not necessarily be duplicated in every hospital. There is a need for regional distribution of intensive care where multi-disciplinary skills can be harmonised most effectively. Consideration must also be given to the safe transportation of patients to such centres.

In these days when integration is a main theme in medicine I hope that I have convinced you that paediatric and anaesthetic integration directed towards the care of critically ill children with respiratory failure is a worthwhile goal.

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Registrar's 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 Registrars' Prize for 1973 was won by Dr. A. W. Wildsmith, the Royal Infirmary Edinburgh for a paper entitled "Post operative hypoxaemia and the effects of maintaining pulmonary nitroxygenation". Additional awards were made to Dr. George Smith, The University Department of Anaesthesia, The Western Infirmary, Glasgow and to Dr. Jean McMillan, The Department of Anaesthesia, The Western Infirmary, Glasgow.

POST-OPERATIVE HYPOXAEMIA AND THE EFFECTS OF MAINTAINING PULMONARY NITROGENATION

It has been known for many years that arterial desaturation may follow intra-thoracic operations, but it is only in the last ten years that it has been appreciated that it may also follow other types of surgery. This fall in arterial oxygenation occurs in the apparently uncomplicated case and may last for several days.

Normally oxygen in the inspired gas is drawn through the airways by the act of ventilation and enters the alveoli. From there it diffuses into the pulmonary capillaries in exchange for carbon dioxide, and re-oxygenated blood returns to the heart. However even in the healthy subject this mechanism is impaired in two ways. Firstly, desaturated blood from bronchial and thebesian veins joins blood coming from the lungs (anatomical shunting), and secondly imbalance of ventilation to perfusion at alveolar level may occur (physiological shunting).

Hypoxaemia may be caused by a fall in inspired oxygen concentration, hypoventilation, airways obstruction, collapse of alveoli or increased shunting. Circulatory changes may also produce hypoxaemia by increasing the proportion of the cardiac output passing through anatomical shunts. However, hypoxaemia will occur in the post-operative period even when there is no detectable hypoventilation, airways obstruction or fall in cardiac output. It has been suggested that the condition is due to the opening up of large sub-pleural vessels which increase the anatomical shunt, but no anatomical basis for this has been demonstrated. There are left the possibilities that it is due either or patchy alveolar collapse or to an increased physiological shunt.

These are relatively minor derangements and it is pertinent to ask what kind of fall in arterial oxygenation is likely post-operatively, and what factors affect it. As is well known, operation site has a major effect on respiratory function and the Figure shows the changes in P_{O_2} (mean \pm range) in two groups of ten patients, one having operations in the upper abdomen and the other on the lower limb.

All the patients were fit and had apparently uneventful post-operative courses. The mean figures for P_{CO_2} are shown (above the range for P_{O_2}) and indicate that these changes in

oxygenation are independent of pulmonary ventilation.

The other major factor affecting the severity of post-operative hypoxaemia is the age of the patient. The fall in P_{O_2} is greater in the elderly, probably because of a greater degree of physiological shunting. Smoking habits, physical fitness and length of operation may also be important.

The present study was undertaken to assess the importance of the carrier gas used during anaesthesia. It has been suggested that substitution of nitrous oxide for nitrogen in the lungs during anaesthesia leads to alveolar collapse, which may persist post-operatively and increase shunting. Nitrogen is an insoluble gas which is absorbed slowly if the airway to an alveolus becomes blocked thus providing a "skeleton" to hold it patent until the obstruction is relieved. Nitrous oxide however is much more soluble and more rapidly absorbed if airways obstruction occurs. The alveolus thus collapses.

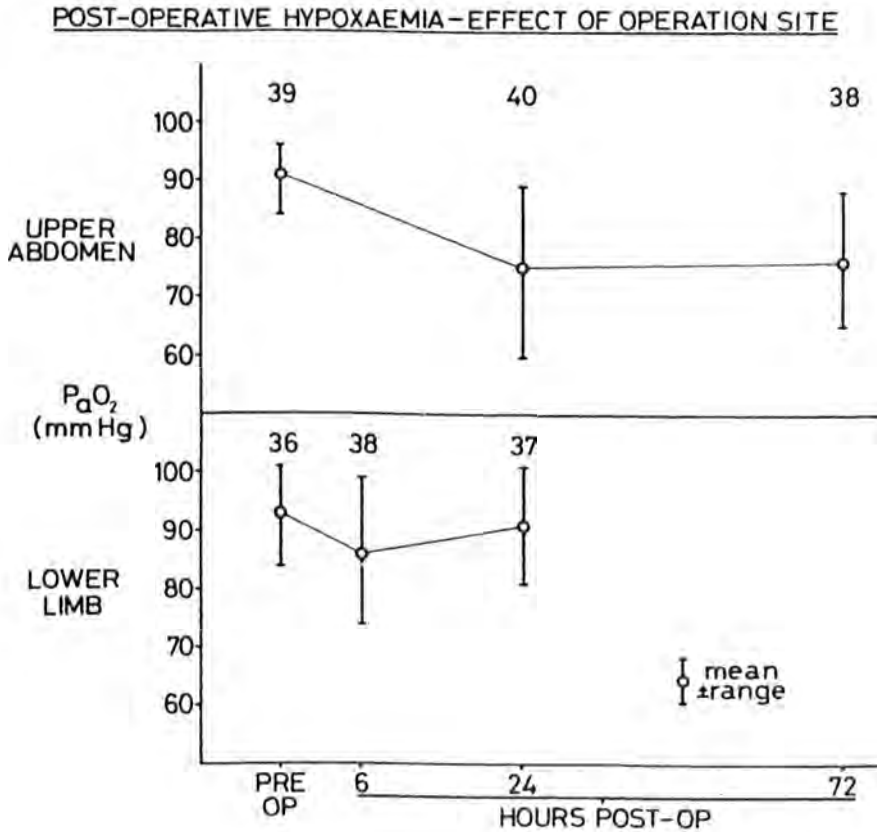
Venous admixture (an estimate of the sum of anatomical and physiological shunts) during anaesthesia and post-operative P_{O_2} were compared in two groups of patients, one receiving nitrous oxide with oxygen as a carrier gas for halothane and the other nitrogen and oxygen. Two categories of patients were studied, one having abdominal operations and the other varicose vein surgery.

It was found that substitution of nitrogen for nitrous oxide did not benefit either venous admixture during anaesthesia or post-operative hypoxaemia. It would seem then that nitrous oxide is not contributing to post-operative hypoxaemia.

If post-operative hypoxaemia cannot as yet be avoided, what should be done about it? Oxygen therapy will certainly restore arterial P_{O_2} to normal, but is it necessary to spend money on oxygen equipment and to worry the patient further at a stressful time by giving oxygen. It will be noted from the Figure that in this group of fit patients the lowest P_{O_2} found was 60 mm Hg. This coincides with a haemoglobin saturation of 90 per cent and increasing arterial P_{O_2} makes little difference to the quantity of oxygen carried.

The importance of the condition is that it must always be remembered that when any further cardiovascular or respiratory complication

pre-exists or occurs in the post-operative period it is superimposed on an already abnormal situation.



ASPECTS OF MYOCARDIAL FUNCTION

THE MYOCARDIUM AS A SOURCE OF POWER, AND ITS
IMPAIRMENT BY ANAESTHETICS.

Dr. C. PRYS-ROBERTS

Because we have been accustomed to assessing the effects of anaesthesia on the cardiovascular system in terms of traditional indices of function which are easily measured, our concepts of impairment of such function have been limited. Recent advances in our thinking about impairment of cardiac performance have been based on attempts to correlate clinical observations with experimental data relating the mechanical function (myocardial contractility) of cardiac muscle in isolation, the behaviour of ventricular muscle as an energy transforming unit, the behaviour of the ventricle as a pump, and the modification of its pumping performance by changes in its load, the latter being represented by the impedance to pulsatile blood flow offered by either the systemic or pulmonary vasculature.

Most of the anaesthetic agents in everyday use impair the inherent contractile state (contractility) of isolated cardiac muscle, and their effects have been shown to be quantitatively similar in the heart of the intact animal. The degree of impairment, though dose dependent for each agent, is not related to equipotent doses of anaesthetic agents required to produce surgical anaesthesia (based on 1 M.A.C.: minimum alveolar concentration). At 1 M.A.C., diethyl ether (1.9%) and cyclopropane (9.2%) cause significantly less impairment of myocardial contractility than do halothane (0.77%) and methoxyflurane (0.16%). Since nitrous oxide is normally administered to man in concentrations which represent 50–60% of the estimated M.A.C. for this agent, we can extrapolate experimental findings with concentrations of 50% nitrous oxide in oxygen to indicate that impairment of myocardial contractility with this agent is similar to that produced by cyclopropane or diethyl ether.

If we consider that in the supine anaesthetised patient, the left ventricle is the major source of energy in the circulation, the power developed by the ventricle during contraction and ejection is a

function of the transfer of chemical energy (from glucose and oxygen) to mechanical energy. This power development is determined by two main factors: the inherent contractile state of the muscle (contractility), and the resting or pre-contraction fibre length (The Frank-Starling mechanism). The velocity and hence the flow of blood leaving the heart with each beat is a function of the total power developed by the ventricle during its contraction, and the dissipation of that power in overcoming the viscous or frictional resistance to blood flow through the small vessels of the systemic or pulmonary circulations. Thus the load against which each ventricle works is as important a determinant of the pumping efficiency of the relevant ventricle as is the mechanical performance of the ventricular muscle.

The effects of anaesthetic agents on the pumping performance of the heart as estimated by our traditional index: cardiac output, can thus be explained not only in terms of their known effects on the myocardium, but also their effects on the 'whole' systemic vascular bed as reflected by changes in systemic vascular resistance (S.V.R.).

Diethyl ether has a minimal effect of decreasing myocardial/contractility when administered at 1 M.A.C., but causes a reduction of S.V.R., hence its effects on the cardiac output are minimal. Cyclopropane has a similar effect on myocardial contractility to that of ether, but it causes arteriolar constriction and an increase in S.V.R., hence cardiac output is less well maintained than with ether. The effects of nitrous oxide (70%) are not dissimilar to those of cyclopropane at 1 M.A.C. By contrast, halothane markedly decreases myocardial contractility, whereas its net effect on S.V.R. is minimal, thus there is a predictable reduction of cardiac output, a reduction which is maintained because this agent also depresses the main barostatic mechanisms which would tend to restore arterial pressure. Although halothane causes dilatation of some vascular segments

(notably cutaneous and cerebral), it causes constriction of others (splanchnic and skeletal muscle), and the net effect of halothane in terms of ventricular loading does not warrant the popular belief that halothane is a vasodilator and that the effects on blood pressure can be

attributed to this mechanism.

We may summarise that a heart whose function is impaired by anaesthetic agents fails to develop enough power to maintain its output against an unchanging or increasing load, and therefore rather than failing to fill, it fails to empty.

THE PHYSIOLOGY OF VENTRICULAR FUNCTION

Professor G. R. KELMAN

The force of cardiac contraction depends on the interplay of two mechanisms: the Frank-Starling mechanism, and the contractility (inotropic state) of the myocardium. Starling (1915) stated that "... the energy of (cardiac) contraction, however measured, is a function of the length of the muscle fibre". Confusion about this law arises on two counts: first, Starling did not suggest how the "energy of contraction, however measured" should be measured; and second, the strength of myocardial contraction depends, not only on Starling's law, but also on the heart's biochemical environment (its inotropic state).

Clinically, there is much to be said for expressing the energy of contraction as cardiac output, and plotting this against R.A.P. Changes of inotropic state are then reflected in movements of this cardiac function curve, either upwards and to the left by positive inotropic influences such as sympathetic stimulation, or downwards and to the right by negative inotropic influences such as hypoxia, ischaemia etc. As Guyton has so elegantly shown, an individual's position on his cardiac function curve depends on the interplay of his cardiac contractile ability and the state of his peripheral circulation.

The other important way to assess the energy of cardiac contraction is the ventricular function curves of Sarnoff (1955). These relate ventricular stroke work to filling pressure, and thus take

account of both the pressure and flow components of ventricular function. For example, an increase of arterial pressure, provided the ventricle is able to pump blood against this increased pressure, is reflected in a movement of the left ventricular function curve upwards and to the left. Difficulties of interpretation arise with drugs such as ether, which have differential effects on the vascular resistances of the systemic and pulmonary circulations, and thus cause changes in the right and left ventricular function curves which may be wrongly attributed to a differential effect of the drug on the two ventricles (Etsten and Shimosato, 1964).

There is unfortunately still no universally accepted definition of myocardial contractility; still less a noninvasive technique for measuring this elusive parameter.

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NON-INVASIVE INDICES OF MYOCARDIAL FUNCTION

Dr. A. L. FORREST

Recently there has been a growing interest in the use of non-invasive methods for the assessment of myocardial function.

A pioneer of these techniques was Sir James Mackenzie whose book on "The Study of the Pulse and of the Movement of the Heart" appeared in 1902. His findings were aided by his development of the polygraph.

In 1921 Carl Wiggers defined the subdivisions of ventricular-systole, the isometric contraction time extending from the beginning of the pressure rise to the opening of the semi-lunar valves.

External measurement of isometric contraction time (I.C.T.) can be estimated by subtracting the left ventricular ejection time, (L.V.E.T.) derived from the carotid pulse, from the interval between the first and second heart sounds, ($S_1 S_2$) obtained by phonocardiography (Frank and Kinlaw, 1962).

Interest now centres on the pre-ejection period (P.E.P.), the ejection time (E.T.) being subtracted from the interval between the Q wave of the E.C.G. and the second heart sound (QS_2). Thus $I.C.T. = S_1 S_2 - E.T.$; $P.E.P. = QS_2 - E.T.$ (Kumar and Spodick, 1970).

The P.E.P. (average value 100 m.sec) correlates well with internal indices like the I.C.T. The inverse square of P.E.P. is also correlated with peak aortic blood flow acceleration in the dog. The ratio of P.E.P./L.V.E.T. correlates well with cardiac output and stroke volume; a higher ratio being associated with a lower cardiac output, particularly in heart disease.

The influence of heart rate, left ventricular end-diastolic pressure and aortic diastolic pressure on these time intervals must be remembered (Talley, Meyer and McNay, 1971).

These indices were applied to a study of the actions of two vaso-active drugs, methoxamine and ephedrine, which were given to restore, to resting levels, the fall in blood pressure which accompanied epidural analgesia in twenty patients about to undergo lower abdominal surgery.

Methoxamine had an adverse effect on the measured time intervals, while ephedrine produced a beneficial response.

The non-invasive indices discussed may thus provide additional information about ventricular function, particularly as the patient is not inconvenienced by their measurement.

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HAEMODYNAMIC EFFECTS OF INDUCED HYPOTENSION

Dr. D. B. SCOTT

In spite of the fact that any morbidity or mortality resulting from the use of induced hypotension would be the result of acute circulatory failure, surprisingly little work has been done on the changes occurring in the circulation when this technique is employed. Two series of patients were therefore studied, trimetaphan being given to one and sodium nitroprusside to the other. The experimental protocol was similar in both. General anaesthesia (thiopentone, nitrous oxide and halothane 1-1.5%) was induced and respiration, following intubation after a single dose of suxamethonium,

was spontaneous throughout. Cardiac output (dye dilution) arterial pressure, central venous pressure (indwelling cannulae) and heart rate were measured four times at 2 minute intervals as a control. Thereafter the arterial pressure was reduced to around 60 mm Hg systolic and four more recordings made.

In the trimetaphan series (10 cases) mean arterial pressure was reduced on average by 34%. Cardiac output fell in five cases and rose in five. In no case was the fall thought to be of serious clinical significance (maximum fall in any single case was 27%). The heart rate rose in three and

was unchanged in seven. Stroke volume fell in seven cases, rose in two and was unchanged in one. All the cases in whom output fell had a reduced stroke volume. Peripheral resistance fell by 33%. Central venous pressure fell in nine out of the ten cases, the average fall being 2.2 mm Hg.

Tilting the patient head-up caused a reduction in cardiac output varying from 9 to 29%.

Of the five patients who received sodium nitroprusside, four showed an increase in cardiac output, (with one unchanged) in spite of an average fall in mean arterial pressure of 42%. Heart rate increased in all cases by 22%, stroke volume was unchanged, and central venous pressure fell 5mm Hg. In the case of sodium nitroprusside all measurements returned to the control values within 5 minutes of stopping the infusion.

Thus with both drugs the main cause of reduced pressure is a fall in peripheral resistance with little or no effect on cardiac output. Providing the patient is not tilted head-up there is no fall in venous return in most cases. Sodium nitroprusside actually increases cardiac output, probably because its site of action is directly on blood vessels as opposed to ganglionic blockage. Thus compensatory reflexes can still operate on the myocardium, increasing heart rate, whereas they will be blocked by trimetaphan.

Induced hypotension may be less dangerous than hitherto believed because of the maintained cardiac output. On clinical and experimental grounds, sodium nitroprusside is the agent of choice.

CENTRAL COMMITTEE FOR HOSPITAL MEDICAL SERVICES

ANAESTHETISTS' SUB-COMMITTEE

Members of the Scottish Society will perhaps recall that I commented, briefly, on the formation of this new committee, at last years A.G.M. of the Society at Aviemore. Subsequently our Editor has suggested that I expand on this for the Newsletter.

I am happy to do so as it is becoming more essential that hospital doctors and particularly anaesthetists should be taking a greater medico-political interest than heretofore.

Members of our Society who are members of the B.M.A. will remember in the past of the work of the Anaesthetists' Group Committee and, of course, its Scottish Sub-Committee. In May 1972, the B.M.A. asked them to consider whether the interests of anaesthetists might not be better served by the formation of an Anaesthetists' Standing Sub-Committee for the C.C.H.M.S. in place of the B.M.A. Group Committee.

Having previously discussed this with representatives of the Association of Anaesthetists and the Faculty to ensure that the views of all groups within the specialty were heard, the B.M.A. Group Committee decided to approach the C.C.H.M.S. to form the present Standing Sub-Committee.

In January 1973 the first meeting of the new committee was held in London and consisted of (a) those anaesthetists who, for the time being, are members of the C.C.H.M.S. (b) an equal number of anaesthetists appointed by the Association (c) those anaesthetists who are members, for the time being, of the Central Council of the B.M.A. (d) the Dean of the Faculty or his nominee to represent academic interests.

Scottish members of the new sub-committee are Dr. George Smith, appointed by the Association and Dr. D. Beaton, member of the Council of the B.M.A.

Work of the Sub-Committee

Up to the present, the sub-committee has discussed:

(1) *Pollution in Operating Theatres.* Discussion continues with the D.H.S.S. on this subject.

(2) *Dental Anaesthetic Fees.* Discussion continues with the B.D.A. on this subject where presently payment is as for a dental service and difficulties would arise in the possible development of differentials.

(3) *Anaesthetic Manpower.* The sub-committee have formed a Working Party to look into the shortage in our specialty and to investigate in this respect, expansion of the Consultant Grade, the impact of surgical work and the more efficient use of theatre time on the overall staffing position. Further, they will consider the implications of all of these on a proposed new contract for consultants and training grades.

This, then, is the short account of this new sub-committee and of the work it is attempting on your behalf.

If members of the Society have any medico-political problems for this committee, Dr. Smith or I will be glad to pass them on for consideration.

Dr. Beaton

Editor's Note

Dr. I. A. DAVIDSON

As observant readers of the Newsletter will have noted, this year's issue has been produced by a process other than the customary printing. The decision to change was taken last year because of increasing costs. A publication with the circulation of the society's Newsletter, about 350, is uneconomic to produce and in addition printing costs have risen dramatically over the past few years — by a factor of 70% since the present editor took over — not that a causal relationship is implied. Although the printing costs we were incurring were highly competitive (approximately half that of some estimates last year) the change to the present form should effect substantial savings. In addition it should permit more flexibility and the possibility of photographic reproductions. Improvements which it is hoped to take advantage of in the next issue.

Of the organisations to represent anaesthetists and their interests, a further one has come into being, the Central Committee for Hospital Medical Services, Anaesthetists' Sub-committee. Elsewhere in this issue Dr. Donald Beaton writes of its genesis, functions and early achievements. We are fortunate, in Scotland, in having on it such energetic and approachable members.

Of the problems which beset anaesthetists at present potentially the greatest is that of staffing. The financial position of the career grade is apparent as is the relative affluence of general practice, the working conditions of which have

improved greatly of late. It is not then surprising that able and well qualified junior hospital doctors are moving out to general practice. Anaesthesia, a large specialty requiring a regular large recruitment and with little direct contact with students will always be in a critical position in times of shortage in the hospital service. There is evidence too, of difficulty in filling registrar posts and once this occurs a vicious circle of increased workload, less attractive working conditions and diminished recruitment occurs. Whether the proposed new consultant contract or a drastic reappraisal by the Review Body can redress the situation remains to be seen. At the recent Association of Anaesthetists Meeting in Bristol a session was devoted to the staffing of anaesthetic departments. No royal solution to the problem was forthcoming. The contribution of the married woman and the general practitioner will be limited and unless it includes emergency cover will further increase the emergency load of the career grades. Cutting out all activities outside of the operating theatres is a solution with which few would find favour as most would regard the extension of an anaesthetist's practice to post-operative care, intensive care, and the epidural service among others as being logical and interesting extensions of his skills. From the overall manpower viewpoint one is left wondering if we should not be looking more closely at the use of anaesthetic nurses — nurses in the Continental rather than the American mould, firmly under the control of the anaesthetist. Whatever the solution, the problem is there and it is vital that we face up to it and consider possible solutions.

News from the Regions

West Region

Professor R. A. Millar has completed his first year in office at Glasgow Royal Infirmary and is now installed in the new accommodation provided for the University Department. This, together with the existing Tutorial and Instrument Laboratory areas provides much needed increased laboratory and office space. Professor Millar is the recipient of a grant of approximately £20,000 over 3 years to study the effect of anaesthetic agents on neuro-circulatory control.

This year has also seen the election of Dr. Donald Campbell of the Glasgow Royal Infirmary, as an examiner for the Final part of the F.F.A., while D. A. A. Spence of the Western Infirmary, Glasgow, has taken over as Editor of the British Journal of Anaesthesia. Dr. W. G. Anderson and Dr. W. Fitch are Assistant Editors.

The "Course in Clinical Measurement" organised in conjunction with the Westminster Hospital was held in Glasgow in February, 1973, and was again very successful.

The Region, as a whole, continues to have its fair measure of success in both parts of the Fellowship and other examinations.

Phase I of the redevelopment of Glasgow Royal Infirmary has at long last started to be built and is hopefully expected to be completed by the end of the decade. Gartnavel General Hospital is now functioning and Phase I of the redevelopment of the Western Infirmary continues building. Other hospital developments are continuing apace throughout the Region and are in various stages of progression, from the just completed new hospitals at Dumfries and Greenock to the just laid foundations of the Maternity Unit at Rutherglen.

New Consultant appointments have been made to various departments in the Region. To the appointees, congratulations are offered. Drs. D. Thomson and R. Marshall have gone to the Victoria Infirmary, Dr. David Miller and Dr. D. S. Arthur to Glasgow Royal Infirmary and the Sick Children's, Dr. Kirsten Dewar to the Western Infirmary, Dr. D. J. Eveleigh to Ballochmyle Hospital and Dr. Parik to Stobhill Hospital.

Turning to more serious pursuits, the Gallie Memorial Silver Salver Golf Competition organised by the Glasgow and West of Scotland Society of Anaesthetists was won by Betty Bradford in October, 1972 and by Bill Bargh in June, 1973.

North and East Regions

This year in Aberdeen has seen a more severe staffing crisis than your correspondent can remember, when for the first time it has proved necessary to cancel operating lists with ever greater frequency. A gradual increase in regular commitments over a period of years, without a corresponding rise in the numbers of permanent staff is the main reason. But in addition, the demand for anaesthetists does not seem to fall off during peak holiday periods, since the surgical registrars are only too happy to step into the shoes of their masters. Anaesthetic registrars are altogether rarer birds than their surgical counterparts! The problem is, one fears, going to recur as the financial and social attractions of general practice divert potential specialists.

We await with considerable interest the report of a Review Committee appointed by the Regional Board to investigate the workings of the Anaesthetic Department. This was called for when demands for our services far outstripped what we could supply in spite of much internal re-organisation. One wonders whether a properly conducted work study by professional experts might not have helped as a first step.

There have been no periods of overseas working for any members of the Department this year. The obstetric epidural service started in 1972 is much appreciated by the general population (or at least the female half of it), and is also quite a popular stint with the anaesthetists in training. We have managed to improve the standard of care in the Respiratory Unit by allocating registrars and senior house officers more specifically to it. This has undoubtedly increased the load, but also the interest, of the working week.

The birth rate among wives of staff has been satisfactory — Mrs. Dick Davidson-Lamb supplying twin girls and Mrs. Tom Ogg a single of the same. Farquhar Hamilton and John Adams helped to restore the balance with a son each. Gillian Adey already has, and Karl Buchmann soon will have taken the matrimonial plunge. Donnie Ross and Helena Yates have become F.F.A.R.C.S., and George Robertson has graduated M.D. Congratulations to all!

Eastern Region

This has been a year of consolidation for the department. Much hard work has been done by all

concerned in making arrangements for the opening of Ninewells early next year. Visits were made to Edinburgh, Glasgow, London and Cardiff to study theatre and intensive care facilities. Equipment has been ordered for these areas, as well as for the department's laboratories.

We greatly enjoyed being hosts to the Scottish Society's Scientific Meeting in May, which attracted a large and lively audience.

An opportunity was provided to several members of the department to work with Dr. John Kirklin from Birmingham, Alabama, visiting praelector in Surgery. We even provided an emergency pericardectomy for his first evening in Dundee!

The in-service training course continues to produce encouraging results in both primary and final F.F.A. examinations.

Dr. Baruch has left for a year to establish a department in Ede, Holland, while Dr. Shearer has been appointed his locum. Our good wishes to Dr. Mike Turner, who leaves shortly for a post as specialist anaesthetist at Dunedin Public Hospital, the University of Otago. Meanwhile, an extra senior registrar and two more registrars have been appointed to cope with our increasing commitments. Further increases in staff are anticipated.

South-East Region

The year has again seen a number of changes in personnel, with the departure as Consultants of Dr. Sheelagh Wilson, to Inverness, Dr. John Dewar, to Scarborough and Dr. David Shewan, to Lincoln. We wish them success in their new posts. Dr. David Butchers is spending a year in Australia and Dr. Ashley Macdonald in Canada, while Dr. John Vonwiller has come to us from Australia for one year. Professor Robertson is to undertake a lecture tour of East Africa in November.

In August the untimely death occurred of Dr. David McClements, a former stalwart of the Royal Infirmary department and latterly a Consultant at Peel Hospital, until the progress of his illness necessitated his early retirement. More recently we

have to record the sad death of John White, anaesthetic technician at the Royal Infirmary since 1962. Competent, helpful and reliable he will be sadly missed.

A sign of the times has been the loss of five staff members with the Fellowship to General Practice — Dr. Colin Cooper in Canada, and Drs. John Duncan, Malcolm McKitterick, John Pope and Mike Torkington in Britain.

Once again candidates from the area have had notable success in both parts of the Fellowship, and for this we must thank the various tutors, in particular Drs. Chris Evans and Henry Bauld (Primary) and Nick Gordon (Second Part).

Socially, things have been rather quiet. Last year's Christmas Party was yet another success for Miss Taylor, who is already at work organising one for the coming December. The annual golf outing was held in September over Gullane No. 2 course, the Silver Tankard being won by Dr. A. H. B. Masson. Dr. K. B. Slawson had the unusual distinction for an Englishman of acting as Scottish Touch-Judge at Twickenham in March.

Northern Region

Dr. J. A. Bolster retired in July.

Dr. Bolster came to Inverness 27 years ago to set up an Anaesthetic Service for the region.

For some years thereafter he was the only specialist anaesthetist in The Highlands. It is largely thanks to his efforts that he leaves behind him a very active department in Inverness with seven full-time anaesthetists and the prospect of further enlargement to come. We wish him well in his retirement.

Dr. Sheelagh Wilson has since joined us from Edinburgh to take up a post as consultant anaesthetist here.

Our new Postgraduate Teaching Centre has now opened in Inverness and this should provide a very welcome improvement in teaching facilities.

The New Raigmore Hospital has again been put back and the starting date for building still seems to be receding into the future.

GLASGOW AND WEST OF SCOTLAND
SOCIETY OF ANAESTHETISTS

Curriculum 1973-74

1973

Saturday, 27th October

(Lister Lecture Theatre, Glasgow Royal Infirmary, 5 p.m.)

Combined meeting with Edinburgh and East of Scotland Society of Anaesthetists - "Infections of the Nervous System", Dr. I. McKenzie.

Thursday, 4th December

"Halothane hepatitis - fact or fiction?" - Professor B. R. J. Simpson.

1974

Wednesday, 9th January

"The Anaesthetist in Civil Disturbances" - Dr. D. L. Coppel.

Thursday, 14th February

Members Night - Anaesthetic Division of the Institute of Neurological Sciences, Southern General Hospital - "Cerebral Injury".

Wednesday, 13th March

Presidential Address - Dr. A. M. Reid.

Wednesday, 1st May

Annual General Meeting.

Unless otherwise notified, meetings will be held at the Royal College of Physicians and Surgeons of Glasgow, 242 St. Vincent Street, Glasgow, G2 5RJ at 8.15 p.m. Tea will be served at 7.45 p.m. Notice of each meeting will be sent to members.

EDINBURGH AND EAST OF SCOTLAND
SOCIETY OF ANAESTHETISTS

Syllabus 1973-74

1973

Saturday, 27th October

Combined Meeting with Glasgow and West of Scotland Society of Anaesthetists in Glasgow Royal Infirmary at 5 p.m. - "Infections of the Nervous System", Dr. P. McKenzie, Regional Adviser in Infectious Diseases, Glasgow.

Tuesday, 13th November

"The Effects of Anaesthesia on the Cerebral Circulation" - Professor D. G. McDowall, University of Leeds.

Tuesday, 11th December

Presidential Address. "Facts and Fancies in Anaesthesia" - Dr. D. B. Scott.

1974

Tuesday, 8th January

"Space Medicine" - Wing Commander A. N. Nicholson, Royal Air Force Consultant in Aviation Physiology, Farnborough.

Tuesday, 12th February

"Modes of Action, Critical and Incidental, of General Anaesthetics" - Professor R. A. Millar, University of Glasgow.

Friday, 1st March

Annual Dinner.

Tuesday, 12th March

Members' Night.

Tuesday, 23rd April

Annual General Meeting.

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

NORTH-EAST OF SCOTLAND SOCIETY OF ANAESTHETISTS

Syllabus 1973-74

1973

Thursday, 11th October - Stracathro

Registrars' Papers.

Thursday, 29th November - Aberdeen

"A New Look Re-visited". Professor J. Parkhouse.

1974

Thursday, 21st March - Dundee

"Factors affecting drug action with special

reference to the muscle relaxants". Dr. Stanley Feldman.

Thursday, 16th May - Stracathro

Annual General Meeting. Presidential Address. Dr. G. S. Robertson.

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