

Note: this chapter is a compilation of material from the previous chapters but it is also extended to give a better picture overall.

## **ANAESTHESIA IN TAUNTON 1959-60**



Musgrove Park Hospital in the 1960s

## A different world!



Paris, January 1959  
photo by street photographer



could run on 10v



B & W, and rented

I finished my time as a houseman at Guy's feeling quite unprepared for general practice. It seemed amazing to me that I could now go out into the wide world as inexperienced as I was, put up my professional plate and practice medicine unsupervised. Certainly I was

not ready for that yet, and at this time there were no formal GP training schemes. I had one more year before finally I would be called up for National Service, but what should I do in this year?

So I looked each week at the jobs vacant columns in the *British Medical Journal*, not really

**TAUNTON AND SOMERSET HOSPITAL,  
Taunton, Somerset**

**SENIOR HOUSE OFFICER (Anaesthetics)**  
required immediately. The post is recognised for F.F.A. and D.A. A Registrar in Anaesthetics is also employed in the South Somerset Clinical Area, in which the above is the principal General Hospital. Applications stating age, nationality, experience in Anaesthetics (if any) together with the names of two Referees to the Group Secretary, Taunton Hospital Management Committee, Musgrove Park Hospital, Taunton. (6510)

knowing what I was looking for. However I had always remembered my time doing anaesthetics as one of the very best of my student appointments, so when I saw an advertisement (BMJ 8th August 1959) for a Senior House Officer in Anaesthetics at Taunton, in Somerset, I

thought long and hard. Was this the job for me?

Well, it might be, but I wasn't sure. I was really rather overwhelmed by the many possible ways my career could go.

I phoned the hospital administrator at Taunton.

'I wondered if the SHO post in anaesthetics was still free.'

'Yes, it is. Let me get the consultant who is dealing with it to speak to you.'

I waited a few moments and then a new voice:

'From Guy's you did you say? When would you be able to start?'

'I could start about September 15th, but I would like to know a few details about the post. Could you send me the job description, please?'

'Yes, of course. Are you sure you could not start sooner than that?'

'No, I am sorry that's the earliest I can manage.'

'Never mind, it will do splendidly. Ring me in a couple of days and we will have everything fixed up for you.'

I came off the phone in a state of high elation. I was very surprised that they had not already filled the post, but then I was naive and inexperienced; I had no idea what a chronic problem it was in Taunton as far as getting junior staff was concerned.

Later, after a letter and few more phone calls, I began to realise that I had the whip hand in the situation, and finally I said that I would take the job only if they would let me live out when I was on call. That they agreed to this shows just how desperate they were.



We found a nice flat on the third floor of a house opposite a bowling green, a few minutes' drive from the hospital once the busy daytime traffic had died down. The landlady was a kind gentle soul whose sister owned a cider factory down the road in Norton Fitzwarren. The rent of £4-10-0d a week for the flat included a regular flagon or two of the golden nectar.

It also included the services of Bessie who came and tidied for two

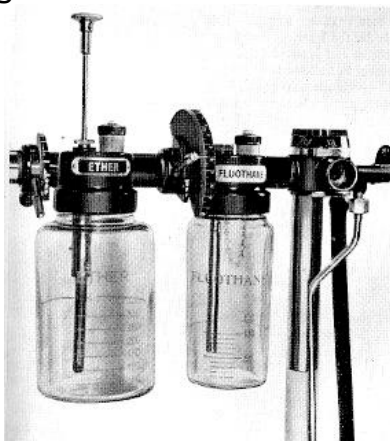
hours on two mornings each week. She usually brought something for us from her vegetable garden and there were times, when money was tight, that Isabel fed us on runner beans alone for half the week, and, of course, there was always cider to drink. We soon felt comfortable in Taunton. It was such a charming county town. I had heard that it was snarled up with traffic throughout the summer, but in early autumn it was not too bad.

The other members of the resident medical staff at the hospital were a particularly fine bunch of young people that from all over the world. The one Englishman amongst them was known affectionately as Dr Livingstone. Some evenings Isabel and I ate in the mess because Drs Rasti and Singh made such wonderful curries.

'We are quite up-to-date here, you know,' said Dr Gavin, the anaesthetist who welcomed me to Musgrove Park Hospital. 'We use all the latest things, including Fluothane (halothane).'

I was suitably impressed. I had heard that Fluothane was now being used quite commonly in many hospitals throughout the country - though as yet only occasionally at Guy's, and then only by senior anaesthetists; it was, after all, a very expensive drug as it had cost ICI over two million pounds to develop it.

He showed me the vaporizer that they used. It had been adapted from the standard Trilene vaporizer on the Boyles machine by fitting a longer scale with more markings on it beside the lever.



'The numbers are quite arbitrary,' he explained. 'But you get to know how far to move the lever after a bit of practice. It is difficult to tell exactly what concentration you are using, though it is easy to decide whether you are giving too little or too much by watching the patient closely. Of course, how much Fluothane you get from any given position of the lever depends a lot on how long the vaporizer has been switched on; after a few minutes the Fluothane gets amazingly cold and the gas

that flows through it does not pick up so much vapour.'

I soon got the hang of it. I found that Fluothane was especially useful for heavy muscular patients, though it was not as good as Trilene for frail old ladies, as it sometimes dropped their blood pressures alarmingly. Still it certainly did have a place in the armamentarium of the modern anaesthetist, along with ether, cyclopropane and Trilene. I would certainly aim to get expert with all of them.

The anaesthetic department at Taunton consisted of 4 consultants, 1 registrar, 1 SHO. There were also two clinical assistants, GPs in Minehead and Bridgwater, who occasionally did sessions on call at Taunton.

The consultants, Drs Griffin, Gavin, Pitts, and Nicholson-Lailey, taught me anaesthesia for elective surgery, rarely being involved with emergency work unless it was for social reasons, such as a colleague's wife, or if a patient unexpectedly seemed about to die on the table. It was the registrar, Arthur Slim, who taught me anaesthesia for emergency cases. Arthur was the nephew of Field Marshal Sir William Slim, of World War II fame. He owned three old cars, including a Red Label Bentley, moving around his single tax disc as required. Also during my first two weeks I overlapped with a locum member of the junior staff, Dr Hopkinson, who was the first person to talk to me about obstetric anaesthesia.

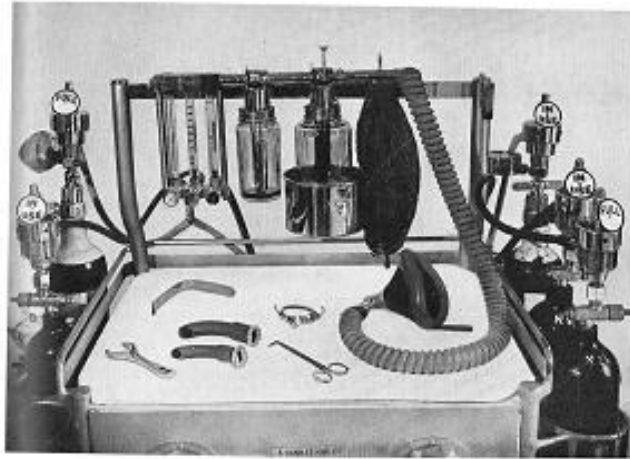
## Day 1

- General surgery
- Two tables in one theatre
- No waiting between cases
- Speed of surgery
- No recovery ward
- No routine pre-op visit
- No disposables or CSSD
- No scavenging
- No ventilators
- No routine post-op O<sub>2</sub>
- No ITU
- No ECM



The main theatre (general surgery, urology and gynaecology) had two tables in it, often with two different surgical teams working side-by-side. There was no delay between cases because the next patient was anaesthetised before the previous operation was completed. The speed of surgery was remarkable - the senior surgeon completing two cholecystectomies and a prostatectomy inside an hour, while a locum consultant, who incidentally had taught me anatomy at Cambridge, was painfully slow. There was also a theatre for ENT surgery, and another in the maternity department. Orthopaedic and eye surgery were done at East Reach Hospital across the town; the casualty department was there too.

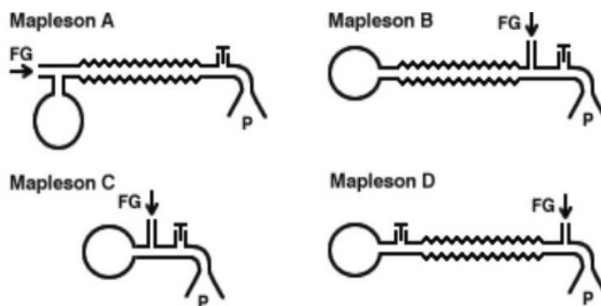
The anaesthetists did not routinely visit their patients preoperatively. In the theatre changing room they took off their jackets and ties, and put on a gown over their shirt and trousers.



A typical 1950s anaesthetic machine had only cylinders of gas, including. As there was no pressure gauge on the nitrous oxide cylinder it was customary to write in chalk on it the number of hours it had been in use.



There was one machine that had a cylinder of cyclopropane on it with a fourth flowmeter and a built in closed circuit. Because of the risk of explosion all anaesthetic tubing was of antistatic rubber and the machine wheels and the theatre floor was conductive too.



A Magill attachment (Mapleson A) was used routinely for cases who were breathing spontaneously and for brief periods of artificial respiration; in cases that needed more prolonged manual ventilation we mostly used a Mapleson D system, and occasionally a Mapleson C with a soda lime canister proximal to the reservoir a

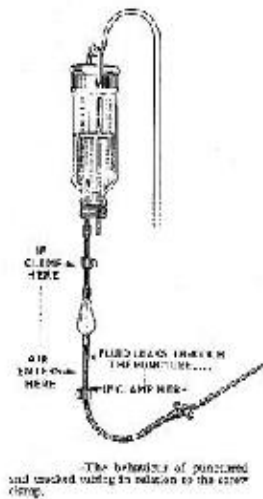
bag, allowing lower fresh gas flows (Water's attachment).

Endotracheal tubes, made of red rubber, were cut to 8 inches for women and and 8 3/4 inches for men, though there were always shorter and longer tubes to hand if needed.



Nasopharyngeal airways were particularly useful during inhalational

inductions being tolerated at lighter levels of anaesthesia than an oral airway. Note the safety pin.



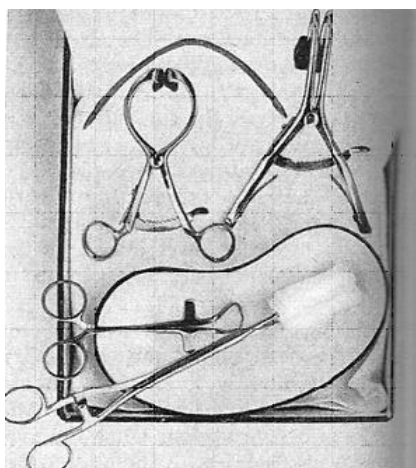
There was no disposable equipment and no CSSD; glass syringes and airway tubes were cleaned and sterilised by boiling after use, as were intravenous needles and trocar/cannulae, and the rubber tubing used for intravenous infusions from glass bottles. If this tubing was perished at all there was danger of unnoticed air embolism depending on where the gate clip was put; too high and the column of fluid below

would tend to suck air in, so we always put it as near the patient as possible.



There was no automatic provision of suction in the anaesthetic room, though it could be arranged if necessary; otherwise swabs did the trick. At the end of the operation new tubing for the anaesthetist was put onto the electric suction machine the surgeon had been using. There was no scavenging of expired gases and vapours, no mechanical

ventilators, and no recovery ward, though patients were usually kept in the corridor outside the theatre for a few minutes, looked after by the nurse from the ward who was given a postop tray that she took with her when it was judged safe for the still unconscious patient to go back to the ward.




The corridor outside the theatre

Postop tray with gags, tongue depressor, tongue clip and swab holding forceps.

While post-operative oxygen was often used if there was a worry about the respiration it was not routine and required a porter to bring a portable oxygen cylinder in a trolley and a smaller one to go back to the ward is thought necessary. There was no crash team, and no intensive care ward. Closed chest cardiac massage had not yet been described.

### Monitoring

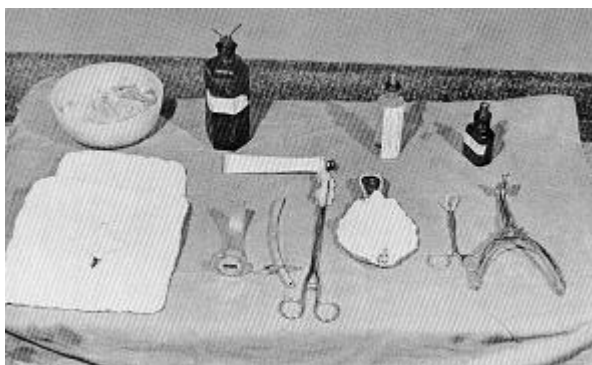
	expiratory valve	BP	Bosun whistle
	standard clinical observation cylinders – dew/frost/ice chalk		skin incision capillary refill veins
	warm/dry/pink	pulse	jaw jerk
	concentration of vapours		

Monitoring: this was largely by clinical observation. We always looked carefully at the colour of the blood from the first incision, often commenting out loud about it. We judged whether breathing was free and unobstructed;

whether there was a jaw jerk or tracheal tug, as there often was in the partially paralysed patient even though the airway was clear, and we listened continuously to the expiratory valve, which had been deliberately tightened to produce an audible whistle, coincidentally producing some unintentional but perhaps beneficial PEEP. Was the patient warm, dry and pink? I used to score each of these 0-2, so that 6 points meant all was well. Was there rapid capillary refill after pressure? Were the peripheral veins full? Blood pressure was measured with a stethoscope diaphragm placed over the brachial artery under the lower edge of the cuff. We sometimes sniffed the bottle to check its contents and the gas/vapour mixture coming from the machine to check the concentration of the anaesthetic we were giving.

ECG leads were only attached to patients likely to die on the table. Though we counted the pulse and respiratory rates these were not recorded, nor was the BP. We wrote a telegraphic description of the anaesthetic in the theatre register, but put a longer account in the patient's notes.

On my second afternoon at work Dr Pitts, one of the other consultants, showed me how to anaesthetise the children who were to have their tonsils out. It was very similar to the way that I had watched being used at Guy's, but it was so much more exciting now I was actually about to have a go myself.



trolley laid up for giving open ether:  
back row – swabs, ether drop bottle,  
lubricant, ethyl chloride, eye oil; front –  
Gamgee, oral airway, nasal airway,  
swab holding forceps, mask, tongue  
forceps, mouth gag.



Over the next few weeks I got quite skilled at persuading small children to breathe the ethyl chloride that I sprayed onto the Schimmelbusch mask, and at judging the right moment to change over to ether, and when to move from the anaesthetic room into the theatre and let the surgeon pop in the blade of the Boyle-Davis gag in the child's mouth so that we could connect the rubber tubing from the anaesthetic machine to the bulbous end of the metal tube which was welded onto the blade of the gag. Then we would let a steady stream of gas-oxygen-ether flow down the metal tube so that finally it came out of the other end deep in the throat just above the larynx. It was tremendous fun, but Isabel used to complain when I got home.

'John, I can smell the ether on you for days after you do a tonsil list. Are you sure you are not getting too much of it to breathe yourself?'

A very perceptive question indeed, but I dismissed it without giving it even a moment's consideration. 'You worry too much dear. But all the same I'm sorry if I stink of the stuff. It's very difficult to keep away from it when you are pouring it all over a Schimmelbusch mask. Is it very unpleasant?'

'Oh, it's not too bad, but I do think you should try not to breathe too much of it.'

'Yes, dear.'

I was not to know at the time that she was seventeen years ahead of the rest of the world.<sup>x</sup>

I enjoyed my new job very much. I picked up the basic skills of airway management and intubation of the trachea quickly enough, but then I had had to, as I had been thrown in at the deep end in a way that I think was totally indefensible when I reflect upon it thirty four years later.

Although I tackled some pretty ill patients on my own at the end of my first week as an anaesthetist, these were cases which were on the normal daytime operating list and which were left for me to deal with



as the consultant had to leave at five o'clock to go the nursing home down the road.

'You know what to do now, don't you?' I was asked. 'Just carry on.'

And carry on I did, successfully anaesthetising a jaundiced 76 year old man for a laparotomy.

Although I spent the daytime working with the consultant anaesthetists it was Arthur Slim, the registrar, and 'Hoppy' Hopkinson, a locum member of the junior staff, who taught me how to deal with the emergency cases, or who at least advised me how to deal with them, for I had, after the first ten days, mostly to get on with it unsupervised. Arthur, the nephew of Field Marshal Sir William Slim, was a thin young man with a wistful smile, whose three cars, including a Red Label Bentley, had only one tax disc between them - after all he could only drive one of them at a time, and how did he know which one he would be able to start in the morning? Arthur became the source of most of my knowledge.

Officially Hoppy was no longer needed now that I had arrived, but he refused to leave, and somehow he persuaded them to continue to pay him for another two weeks. He was a remarkable individual who would stalk the wards of the hospital during the early evenings looking for patients who would benefit from vigorous suction, through a bronchoscope, of the secretions in their airways that they were too weak to clear for themselves. It was certainly eccentric behaviour as far as Taunton was concerned but nonetheless it was clearly in the patients' interests.

I gave my first unsupervised anaesthetic for Caesarean section on my 10th day at Taunton. The obstetricians wanted to perform a semi-elective EUA one afternoon and I was sent across to do it as no one else was available. The patient was not in labour and had been starved all day. I started with a simple 'Pent GOT' technique (Pentothal [thiopentone], nitrous oxide, oxygen and Trilene), only to be told after a few minutes that the placenta was indeed very praevia and they needed to proceed to Caesarean section at once. As the patient was already asleep, I injected some Scoline (suxamethonium), remembering the advice that Dr Hopkinson had given me a few days earlier: "...watch closely and as soon as the lips start to twitch you put the blade of the laryngoscope into the mouth and quickly lift the larynx up towards the ceiling so that if any fluid came up from the stomach you have got the opening of the larynx above the level of the fluid; you have to get the tube down the trachea and the cuff blown up before you run out of space into which the larynx can be lifted; it is no good worrying too much about the teeth - it is more important to get the tube down than anything else." No mention of pre-oxygenation; cricoid pressure had not yet been described.<sup>x</sup>

Luckily it all went well. When the first dose of Scoline wore off I gave a second, but smaller, dose and repeated this as necessary every

five or six minutes. I kept her asleep with 75% nitrous oxide. At the end of the operation I turned her on her side and removed the tube once I was sure that the last dose of Scoline had worn off.

'You have a lovely baby boy,' I told the new mother as she opened her eyes. She responded by vomiting copiously. Gosh, I thought, I'm glad that that did not well up into her mouth while I was trying to intubate her.

I talked about it to Arthur later. He said

'I always put a large bore stomach tube down before I put any woman near-term or in labour off to sleep. If I were you I would do the same. You need to explain firmly to the patient that it is very important and that if they co-operate it won't be too bad, but if they don't then it will be pretty unpleasant.'

Later on that day, towards the end of the afternoon, there was a forceps delivery that needed an anaesthetic, but by this time there was a general practitioner from Bridgewater on second call, and they phoned him up. He came dashing over in his car, covering the eleven miles in as many minutes. He told me that he found that gas, oxygen and Trilene was best for putting on the forceps and that if you avoided both thiopentone and Scoline you did not get regurgitation as you did not relax the sphincter at the top of the stomach, so you did could use an ordinary facemask and you did not need to put a tube down. The patient could still vomit, of course, but that was relatively safe as if she was light enough to vomit she would also be light enough to close her larynx.

It worked really well. Once the baby was delivered, he turned off the nitrous oxide and the Trilene, turned up the oxygen, adjusted the harness which he had used to hold the mask on the patient, asked the nurse to hold the chin up and airily said to the obstetrician who had started to sew up the episiotomy

'I expect you have you have seven or eight minutes, old chap, before she wakes up. Cheerio.'

And he was gone, off back to the patients he had left waiting in his surgery eleven miles away.

I soon got used to the problems of being first on call. The commonest operations were appendicectomy, oversewing a perforated duodenal ulcer and 'D & C' for incomplete abortion. It could surely not be just a coincidence that they would get three women admitted with heavy bleeding in one night from the area around Minehead, and then the next day two from the neighbourhood of Wellington. There were also lots of cases of intestinal obstruction, which were often a real problem as they would not always breathe well if you used too much curare, even though you gave lots of Prostigmine (it was not until 1962 that the reason for this became clear when a paper was published entitled 'Metabolic acidosis, a new approach to neostigmine resistant curarisation'<sup>x</sup> was published in the April edition of *Anaesthesia*<sup>x</sup>).

Prostatectomy, which was performed by first opening the bladder, was often done in the middle of the night because the patients did better if they got their operation within twelve hours of admission.

After about eight weeks in Taunton I found myself, inexperienced and unsupervised, anaesthetising for a list of tonsillectomies. In contrast, the surgeon was very senior and experienced - and what a good thing too as it turned out. The morning had gone rather well considering how relatively new it all was to me. Five small children and ten tonsils removed without any major problems, though there had been a moment or two of private and silent anxiety. The last patient was a boy of sixteen. Because he was so large I put a tube through his nose and throat and into his trachea to make things easier, though I had managed the smaller children without an endotracheal tube. Ten minutes later the operation was almost finished, the tonsils were in the dish on the instrument trolley and there were just a few bleeding points left to be stopped. I turned the ether off but let the nitrous oxide and the oxygen continue as before.

Soon the last ligature had been tied. The gag that was keeping the patient's mouth open was loosened a little and the throat checked for bleeding one last time. I turned off the nitrous oxide and turned the flow of oxygen up to six litres a minute.

The surgeon and I waited till we saw the muscles at the back of the throat begin to contract which told us that the reflexes protecting the larynx had returned. I popped a rubber airway into the mouth, took hold of the tube as it emerged from the nostril, and with a flourish pulled it right out, turning the boy onto his left side as I did so.

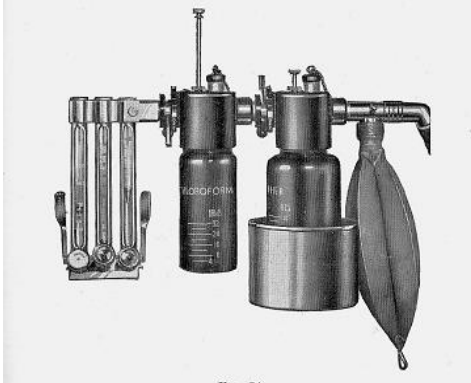
The boy gave a cough, took two breaths, coughed again and then stopped breathing. I was not really worried at first. I thought there must be some blood or saliva irritating the larynx, causing the vocal cords to shut tightly and making the boy hold his breath. I knew the lungs were full of oxygen, so everything would be all right if the breath-holding did not go on for too long. Half a minute passed. I put my fingers behind the angles of the jaw and pulled forward forcibly, ensuring that the airway was clear and hoping that the painful stimulus would make the boy take a breath. But he didn't and before long he started to go a dusky blue.

I thought I had best give him some oxygen from the anaesthetic machine so that when he did take a breath at least it would be oxygen rather than air that he took in. I put the mask tightly over his face and turned on the high flow oxygen switch at the top of the machine. The boy was looking very blue indeed by this time. To my great relief he started to breathe again. He'll go pink in a moment, I thought, any second now he'll go pink; the oxygen will get to the blood as it passes through the lungs, and he'll go pink as the blood is pumped by his heart to every part of his body.

To my horror and amazement the boy, who was breathing deeply and rapidly, did not get pink at all. He got more and more blue as every second passed until he looked almost black, though at the same time he began to go pale in patches. What, in God's name, was happening? What was I to do? He'll die if I don't do something!

With a sense of utter panic and total despair welling over me I looked up to see if there was anyone around who could help me. The surgeon, who was looking as anxious as I was, turned and studied the anaesthetic machine.

'The bobbin is at the top of the nitrous oxide flowmeter,' he said. 'You must be giving him nitrous oxide instead of oxygen.'



I looked at the machine. He was right! Then I saw that there were two 'high flow' levers, one on each side of the flowmeter panel. I had turned on the one by the nitrous oxide tube and not the one by the oxygen tube. Quickly I changed the positions of the two levers and seconds later the boy had become a wonderful pink colour again. My hand was shaking and a cold

sweat was running down my face and dripping from my chin.

'I thought I had killed him,' I said.

'All's well that ends well,' the surgeon replied, 'but fancy there being two levers. That seems very dangerous. Of course,' he added, 'he would have been all right if you had just let him breathe air instead of trying to give him oxygen. That's a curious thought, isn't it?'

We discovered later that the machine I had been using was the only one in the hospital that had a high flow lever for nitrous oxide.

We phoned the service engineer and got him to remove it before another crisis could occur.

The anaesthetists at Musgrove Park Hospital occasionally used cyclopropane, but not too often, except that is for Mrs Lailey. The problem was that the general surgeons always wanted to use the diathermy so explosive agents were out. In contrast the gynaecologists with whom Mrs Lailey worked (including her husband) tied off bleeding points with thick ligatures rather than using them with the diathermy, so she was able to use whatever she wanted to.

'I like to use nitrous oxide with lots of oxygen and a little 'cyclo',' she would say, 'that way the patients stay pink and asleep, and the surgeon and I are both happy.'

It certainly seemed to work well, together with some tubarine, for the abdominal cases, whom we would ventilate by taking turns at squeezing the bag of the 'closed circuit', which we always used, of course, because cyclopropane was so explosive and expensive. For minor things, like 'D & C's, they just used a hefty dose of thiopentone,

say 400-500mg, followed by nitrous oxide and a small dose of gallamine. The relaxant would 'soften the patient up' but was not enough to stop them breathing. However, for emergency gynae cases out of hours, like a D & C for an incomplete abortion when the patient had already lost a lot of blood, I would often revert to Mrs Lailey's mixture of nitrous oxide, oxygen and cyclopropane, but without any muscle relaxant, keeping the patients breathing normally while 'pink and asleep'.

I enjoyed the gynae lists with Mrs Lailey. She was a motherly sort of woman and we shared a deep appreciation of food in general, and of spinach in particular. When there was a quiet moment during the list the conversation would always get around to something edible. Also there was the excitement of never knowing exactly what the surgeon would find inside the abdomen. Strange things were always cropping up, even if they were only odd-shaped fibroids.

The patients for hysterectomy always had high blood pressures, or so it seemed. I used to wonder if treating the blood pressure first might not actually cure the patient of her heavy periods even before she had her hysterectomy. Still it would never have worked out that way because the anaesthetists were very wary of patients on drugs for lowering high blood pressure as these often interacted with the anaesthetic in an alarming fashion. At least that was the theoretical worry, though I often found myself having to anaesthetise patients for emergencies when there was no time to stop these particular drugs and it never proved to be a problem in practice. Still it was the current teaching that anti-hypertensives, and also anti-depressant drugs, should be withdrawn two or three weeks before elective surgery. Occasionally this policy had disastrous results as when, for example, one patient had a stroke during the waiting period, and another committed suicide.

Although Mrs Lailey was the only person to use cyclopropane regularly the other anaesthetists would at times use it to induce anaesthesia in children in the way I had seen it used at Guy's. I grew to enjoy this technique very much, though in the ENT theatre, which was where I met most of my younger patients, I continued to use ethyl chloride in the traditional manner. Nevertheless cyclopropane played a small but useful part in my own practice, and it certainly served both me and my patients well.

The minor non-abdominal cases on the gynae list, and on other lists too, were dealt with by giving the patients gas, oxygen and Trilene but not until they had been softened up by giving them a large dose of thiopentone and a small dose of Flaxedil (gallamine), which was a muscle relaxant drug; the dose, usually 40-60mg, was chosen to be just enough to reduce the tone of the muscles generally but small enough to leave the diaphragm, and therefore the breathing, unaffected. This was a simple way of doing things as long as the patient did not recover too quickly before the Flaxedil had worn off. If

they awoke too soon and too crisply they felt frighteningly weak and would complain bitterly once they had recovered. So they all got a heavy premed of Omnopon {papaveretum} and Scopolamine (hyoscine) and enough Trilene to keep them sleepy for ten minutes or so, though this was still less than they would have had if they had not had the Flaxedil. Trilene had many advantages: it was cheap, it did not depress the circulation and the rapid breathing that occurred if you pushed it too hard was easily controlled by giving a small dose of pethidine. The Flaxedil had the additional advantage of being rather like atropine in that it increased the pulse rate and so prevented the bradycardia that sometimes occurred with Trilene.

One day, when I had been at Taunton for six weeks, they wanted to put an extra case at the end of the operating list. It was an old lady with gangrene of her foot who was so ill that they had at first just given her morphine and left her to die. However she had rallied a bit and now it seemed best to amputate her leg in order to get rid of her terrible pain. I was asked to look at her to see if I would be prepared to give her an anaesthetic, but I thought she was still far too ill. I asked the consultant what I should do.

'Well, I'm sorry but I have a case to do in the nursing home so I can't help you. You had best pack her leg with ice and wait a couple of hours. That's what Baron Larrey, who was Napoleon's surgeon, used to do on the retreat from Moscow. If you then give her some more morphia and some oxygen with just a trace of Trilene, not an anaesthetic dose, but just enough to add to the analgesia, they will be able to take the leg off without any trouble. They can inject the big nerves with Xylocaine before they cut them if they want to but it probably won't be necessary if you get them cold enough.'

So that's what they did. It worked marvellously. I was careful to turn the Trilene lever on only until I could just detect the smell and I let her breathe this and the oxygen for five minutes before they started. I gave her a little extra morphia intravenously before they sawed the bone and she seemed to drift off to sleep at that moment, so I turned the Trilene off. She never complained once during the operation.

I went to see her the next day and she seemed much better, though she had died from pneumonia several days later.

A few weeks later I was working with Dr Pitts again.

'Well, John, I think you've got the hang of this now,' said he said encouragingly.

He was referring to the task of first putting the children for tonsillectomy off to sleep with ethyl chloride, then changing to open ether and finally gas-oxygen-ether. Since I had been at it now for nearly three months, and there were never less than four children on each list and there were usually two lists a week I was inclined to agree.

'We'll use something different for this last case. We'll try some Vinesthene for induction, instead of ethyl chloride. It's quite good stuff, you know, but rather wasteful if you use it in an open drop technique because it is expensive and very volatile.'

I had never heard of it before.

'Vinesthene? What's that?'

'Oh, it's the trade name for divinyl ether. It's been around for thirty years or so but it is not really so convenient as ethyl chloride, nor as cheap, but it works very well, especially if you are using it for just a short anaesthetic on its own. The patient wakes up more clear-headed than with ethyl chloride. It also softens up the jaw muscles better during light anaesthesia. Yes, we'll try some.'

He went off to look for some Vinesthene. He came back holding a small brown bottle and a box which contained several even smaller glass ampoules.

'These have got Vinesthene<sup>x</sup> in them,' he said pointing to the ampoules, 'and this is a bottle of 'VAM', or Vinesthene Anaesthetic Mixture, which is 25% Vinesthene and 75% ordinary ether. It's a good mixture because the two liquids vaporise at roughly the same rate and you get the ease of induction of the one with the good muscle relaxation of the other.'

'Which are we going to use?'

'Both. We'll start with some Vinesthene and then go over to VAM before we go into theatre. Someone has designed a special inhaler for Vinesthene but we haven't got one here, so what we'll do is this: we'll wrap one ampoule in some gauze, like this, and pop it into a rebreathing bag which we'll now fill with oxygen and attach to an anaesthetic mask. See, like this. I'll put my finger over the end. When the time comes I'll crush the ampoule inside the bag and put the mask onto the child's face. That's it. We are ready now. Let's have the next child in.'

It worked really well. The child was very sleepy after his premed and though he struggled a bit when the mask was put onto his face he was unconscious after taking six or seven breaths.

'If he was just going to have a tooth out we could go ahead now and in a few minutes he would be awake again, but we'll go over to VAM now on a Schimmelbusch mask. We could have started off with this just as well but I wanted you to see the Vinesthene on its own.'

He swapped the apparatus for a Schimmelbusch mask and started dripping the VAM onto it. The child continued to breath the mixture smoothly and soon it was time to move into the theatre and get the gas-oxygen-ether flowing down the side tube of the tongue plate on the Doughty gag.

I tried out VAM several times in the next few weeks but it was not really much better than ethyl chloride and anyway our stock in the store cupboard was getting very low.

One day I was talking to Dr Gavin about it.

'Have you tried Neothyl?' he asked.

'No. What is Neothyl?'

'Oh, it's another ether that we have been trying out, but it is very volatile and not very powerful so you get through a bottle very quickly, which is rather inconvenient. Still it works well enough. I'll see if there is any left.'

He went to the cupboard in the corner of the room and rummaged through the shelves.

'Here it is ,' he said, as he produced a glass bottle containing a pale green liquid from the depths of the cupboard rather like a conjuror pulling a rabbit out of a hat. I took it and looked at the label: NEOTHYL (Methyl *n*-propyl ether).

'It looks rather like weak lime juice,' I said.

'Oh, I don't think that's its real colour. They'll have put some sort of dye in it.'

I took the top off and smelled it. It was certainly still 'ethereal' but it was different all the same from the other ethers I had been smelling.

We put some in the ether bottle which already was on the anaesthetic machine; this was really designed for ordinary diethyl ether, but Dr Gavin said it would be perfectly all right for any old ether. We persuaded the surgeon to manage without the diathermy and we used it for the next patient, who was having a hernia repaired. It worked splendidly but the level in the bottle fell very quickly and we thought we might run out before the end of the operation, but we had just enough.

I told Dr Pitts about it next time I saw him.

'I don't think it will catch on,' he said, 'Its advantages are very slight for the extra cost and the inconvenience of having to keep topping up the bottle all the time. Still it was interesting to try. It's a bit like EVE, really.'

'EVE? What's that?'

'Oh, EVE is ethyl vinyl ether. We've got some of that somewhere.'

So we used that, too, on the next tonsil list, but in the end we went back to ethyl chloride and ordinary (diethyl) ether. Not only was this combination the cheapest, we also thought it was the best<sup>x</sup>.

I was perhaps getting rather overconfident. I had by now anaesthetised some twenty women for emergency Caesarean section and I was beginning to wonder if it was really necessary to put a large bore stomach tube down each of them. I hated doing this, but when I talked it over with Arthur he was adamant about it. I knew that most of the anaesthetists in the hospital made it a routine in emergency obstetric cases, but nevertheless there were one or two of them that occasionally found a reason for justifying leaving it out.t

One Sunday Eddie Wallace phoned at four in the morning.

'Hello, John. Sorry to wake you at this unearthly hour but we need your help. We've got a lady here who is booked for elective section at



the end of the week but she has gone into labour early. When she came in late last night I thought she would last till morning but she won't.'

'When did she last eat?'

'Not since six last night. That's ten hours ago now.'

Good, I thought, I won't have to empty her stomach.

'I'm on my way, Eddie. Could you give her some atropine, please?'

When I got there I mixed up some Pentothal and got the Scoline from the fridge while the midwife fetched the patient.

'Hello, Mrs Evans, I'm just going to give you a little injection and you will soon be off to sleep.'

I chose a vein on her forearm and slipped a Gordh needle into it. I injected the Pentothal. I waited for a few moments till she became unconscious and then quickly injected the Scoline. Just as I finished doing this the lady half sat up and began to vomit copiously. There were pints and pints of the stuff. I watched with horror as it trickled down her chin and out of her nostrils. She retched again. Clearly I had not given her enough Pentothal and she was still light enough to vomit actively so she was probably still able to shut her larynx, thank heavens. I thought about the relaxant drug that was even now on its way round the circulation. When it arrived at the muscles and they twitched and lost their power to contract she would be defenceless against the vomit still in her mouth. She would not be able to keep her larynx shut and there would be nothing to stop it going down her trachea. What should I do?

But there wasn't time to think.

'Hold on to her legs,' I shouted at the midwife who was there to help me, and I tipped the top half of the patient's body over the side of the trolley so that her head and shoulders were hanging upside down. The fluid that she had vomited drained out of her mouth and nose. I clapped the anaesthetic mask onto her face and pressed the emergency oxygen button so that the bag filled with oxygen. I squeezed the bag vigorously and, as the vomit drained downwards into the mask and the tubing which led from the anaesthetic machine, the oxygen bubbled upwards through the vomit and filled her lungs. To my relief she remained a wonderful pink colour throughout.

When the Scoline had worked and I had sucked out her mouth and throat with the sucker we lifted her back properly onto the trolley and I thrust an endotracheal tube down her trachea. The moment of crisis had passed. The operation was otherwise uneventful and mother and baby did splendidly. It was many a year before I anaesthetised a woman in labour without first putting down a wide bore stomach tube.

The night-time emergency work was unrelenting. It was particularly bad when Arthur went away for two months, and I found myself the only member of the junior anaesthetic staff. I was first on call for

emergencies every day and night, except that every third weekend I was off call from Saturday lunchtime to Monday morning.

'Not another 'perf'?!' I said one night to Henry Leigh, the surgical registrar. There seemed to be more perforated duodenal ulcers than ever this year. Certainly there had been more 'perfs' than appendicitis in the last month.

'Has he got a Ryle's tube down?' I asked.

'Yes, the GP put one down while he was waiting for the ambulance.'

'Good. Send him up and we'll get on with it.'

It not take Henry long to sort out a perforated duodenal ulcer - a quick midline incision, a suck round the peritoneal cavity, to get rid of any fluid that had leaked, find the ulcer, oversew it and stick a piece of omentum over the top, cobble the incision together, and there you were. All done in twelve minutes.

It was now three in the morning, but I still could not go home for Eddie Wallace was on the phone.

'John, I have a young lass here, a primip, who needs the forceps put on. Could you come across as soon as possible.'

'I'm on my way.'

All but the easiest of forceps deliveries were done under general anaesthesia, which kept me busy even when the general surgeons were quiet. I finally got home at six in the morning. I was so tired that I found myself crying with exhaustion.

'I've been asked to start one of the lists as the consultant is going to be late.'

Isabel put her arms around me.

'You cannot go on like this, John. You've been on call for the last seven nights and they still want you to start and finish their lists for them. It won't do, you know. Sit down quietly and I'll make you a cup of coffee; then you can go off to bed.'

She got up and left the room for a few minutes. When she came back she gave me the coffee.

'Just swallow this, darling. It may taste a bit funny but I want you to swallow it all the same, there's a good lad.'

Hardly aware of what I was doing I swallowed the coffee even though it tasted horribly bitter.

'Now off to bed,' she said firmly. 'Don't you worry about starting anybody's list, John. I'll phone Dr Gavin and tell him that you are not coming in till you are feeling better. They will just have to manage somehow without you.'

I was soon tucked up in bed and fast asleep. I did not know that she had opened two yellow Nembutal capsules and had poured the white powder into my coffee. No wonder it had tasted bitter despite the huge amount of sugar she had put into it.

When she was sure I was properly settled Isabel phoned the consultant in charge.

'Good morning. It's Isabel here. I'm phoning to tell you that John arrived home at about six this morning and he was so exhausted that he was in tears. I have given him three grains of Nembutal and he won't be coming back till I think he is fit to do so. I really don't know what you are doing allowing him to be up night after night. And on top of that you expect him to start your theatre lists for you, and finish them too. I think you should all be ashamed of yourselves!'

For a moment there was silence; then

'I'm sorry, Isabel, if we have been overworking him. Of course he must have a proper rest if he is that tired. I did not realise we were working him so hard.'

'Well, if you and the other consultants didn't realise, who on earth did you think would notice something like that? I'll phone you tomorrow to tell you whether he will be back on Thursday or not.'

She put the phone down.

When she did let me go back to work after two days I was told that in addition to my having every third weekend off from Saturday lunchtime to Monday morning I was also to have eight hours off every Friday afternoon (from 2 pm to 10 pm) - though I would have to come back to cover the night, of course. They said also that they were trying hard to get a replacement for the missing registrar so that I would then only have to do alternate nights instead of every night. Still, they said, with Friday afternoons off now it should be much easier for me till they did find someone.

The next Friday afternoon I went to the bank to cash a cheque.

'Good morning, doctor,' the cashier said. 'The manager said that if you came in I should ask if you could spare him a few moments.'

My heart sank. I thought that I was not very overdrawn at the moment but I had to admit that things were not moving in the right direction. Last month I had been so short of money that I had had to collect the empty beer bottles after the mess party so that I could get the deposit on them back to buy some cigarettes. But I would not take any nonsense; after all I had only moved my account to the National Provincial in the first place because the Westminster was being awkward.

'Yes, of course,' I said, trying to sound as though I was not worried, but then in reality I was not. It simply was not possible to work as hard as I did and still have the energy left to worry about money!

I followed the clerk through the doorway into the office. The manager was sitting solemnly on the other side of his desk. He looked up and smiled welcomingly.

'I am so glad that you had time to come in,' he said. 'You gave my daughter her anaesthetic last Thursday night when she had her baby. I just wanted to thank you. My first grandchild, you know. Would you care for a glass of sherry?'

'Thank you.'

He poured two glasses of Bristol Cream, and we toasted the health of his daughter and her baby.

The birth of our own first child, a fine young boy called Timothy John, was also the first of many 'champagne days' in our married life, though at that particular time I could not afford even a bottle of plonk; a flagon of cider from the landlady had to suffice.

When the 12th of June dawned Isabel was already two weeks overdue, though no-one seemed particularly worried. Of course Isabel was getting fed up with the wait but she kept her spirits high nonetheless.

That evening, as I was on call, she spent some time in the residents' mess at the hospital. Luckily it was an unusually quiet night. As we sat watching the television it became quite obvious that Isabel was getting a lot of strong contractions. 'Is everything all right?' I asked her.

'Fine, thank you; it's just that the Braxton-Hicks are rather strong to-night.'

She was referring to the normal painless contractions which occur over the last few months of a pregnancy almost as though the womb was flexing its muscle in preparation for its real task.

Later she said

'I think we should go home, John.'

'OK, dear. I'll ask Arthur to stand in for me. He said that would be all right if anything happened.'

We were about to leave the hospital when the paediatric houseman contacted me.

'John we are desperate for a pint of 'O negative' blood for a baby that needs an exchange transfusion and there isn't any nearer than Bristol. The lab tells me that you are the only suitable donor that they have on their books for an emergency like this. Could you possibly let us have a pint of your blood?'

'Of course,' I said. 'But I must take Isabel home first as she has things to collect. I'll come back while she's packing to give my pint of blood before I bring her into to hospital to have the baby.'

At least that was the idea. Unfortunately in my haste to get home to Isabel I did not lie quietly for twenty minutes after they had taken the blood off me. It was a mistake! I keeled over before I had taken ten steps and it was an hour before I was fit to drive. I kept on phoning Isabel to say that I would soon be on my way, and then phoning her a few minutes later to say that I was not fit to come.

I did manage eventually to get her into hospital just an hour before



Timothy was born, but I missed the moment of birth as I was lying down once more recovering! Who said that women were the weaker sex?

It was when I got home in the small hours that I opened a flagon of the

landlady's cider to celebrate my new status as a father.

Now it was time to think about exams. I swotted for the Diploma in Anaesthetics of the Royal College of Surgeons examination largely by reading and re-reading my copy of *Synopsis of Anaesthesia* but I made a point of going through the three issues of *Anaesthesia* for the year so far. They were fascinating, though there was much that I could not understand. (For comment on the January issue see chapter 5).

The April journal began with an article on *The control of consciousness* which I found very difficult to follow. The next was on *The prediction of carbon dioxide tension during anaesthesia* by a Dr Nunn, who was research fellow at the Royal College of Surgeons and a consultant anaesthetist at the Hammersmith Hospital. Although this, too, was complicated, it was easier to understand.

*It is probable that, from the earliest days, concern has been felt about the effect of anaesthetic agents upon the gases carried by the blood. In the eighteenth century ...*

I looked again at the word 'eighteenth'; what an amazing and unlikely word it was!

*Beddoes noted the change of the colour of the blood: 'I thought it might be an amusing spectacle to see the different tints of blood flowing from a wound by a leech in consequence of breathing different airs. The purple from the nitrous oxide was very evident'.*

Of course, the purple blood was nothing to do with the nitrous oxide, merely the lack of oxygen, and deliberately applying a leech to create a wound that would bleed was unimaginable. What tough folk those early researchers were.

*In 1847 Mr Hale Thompson of the Westminster Hospital recorded that '...under the full effect of ether, the arterial blood presents its usual appearance. Nor is there any reason from the inhalation to suppose that asphyxia can take place, as the usual quantity of air is admitted to the lungs'.*

It was appropriate that the earliest thoughts should be directed towards the possibility of oxygen lack rather than to carbon dioxide excess - the former condition being far more dangerous than the latter ... the alveolar carbon dioxide concentration is the result of the balance between production and elimination (rather like the blood urea)...and a bit like my bank balance! One day I hoped that I would be producing money faster than I was spending it. Only last week I had had a letter from a new bank manager pointing out that each month I was spending about £10 more than my pay cheque. While he was not particularly worried by this he thought that I should bear in mind that one day I would need to reverse the trend.

Further on there was a paper about a new drug for premedicating children. It was called Trimeprazine tartrate, and had antihistaminic, antiemetic and sedative properties. It sounded marvellous. I would have to try it out.

I picked up the July issue and opened randomly. Here was a paper on *The economics of anaesthesia*. Apparently in the Southampton group of hospitals the cost of an anaesthetic was not very much:

*...by and large, I think these figures show a commendable economic modesty on the part of our specialty. The skill required, the responsibility involved, the benefit to the surgeon and the patient, let alone the pleasure derived by the anaesthetist in the giving of a well-administered anaesthetic, are remarkably cheap at the average price of £3 13s 9d.*

A few pages on there was a nice little article reporting that halothane and chloroform did not in themselves alter the oxygen dissociation curve of blood. As this paper only occupied half a page of text it was a splendid model of brevity, but as it was only reporting a negative result I supposed that was fair enough.

Now I turned to the front pages of the journal; here there was an article from Newcastle that immediately caught my interest - *On the efficiency of intragastric oxygen*. It reminded us that the introduction of oxygen into the stomach of neonates was widely used in Britain in the treatment of anoxia. However I knew that it was not used as often it had been in the past as many people nowadays thought that it was a poor substitute for ventilating the lungs, but where the skill necessary for this was not available, no doubt it was still in vogue.

The paper went on to describe experiments on new-born kittens, which proved that oxygen transfer across the gut could contribute not more than 7% of the minimum needed for bare cardiovascular survival - I presumed they meant to keep the heart beating. So here was real evidence that intragastric oxygen could not work but then I never had really believed it would. I had once wondered whether feeding oxygen up the ureter might be better; after all the kidney had a huge blood flow through it and the surface area of the millions of glomeruli was enormous; of course that was altogether too fanciful.

'What are you reading about, John?' asked Isabel.

'Oh, about intragastric oxygen.'

'Never mind about that, dear. Supper is ready. Come and have some intragastric bacon and eggs; it will do you far more good.'

'That's certainly true,' I replied.

It was the day before Geoff's wedding in Rickmansworth. Isabel, four months old Timothy and I were travelling to Putney where we were going to stay for two nights. Timothy was going to stop with his Granny while we went to the wedding on the Saturday. Isabel was eagerly looking forward to a day off, though she was worried that I would not be properly dressed since I had refused to hire a morning suit.

'I am sure everyone will be in formal clothes,' she said. 'You really should get something from Moss Bros., you know. You will feel very silly if you're the only person in the wrong clothes.'

'Nobody goes to weddings dressed like that these days, darling, unless they're part of the family. Anyway, we can't afford to hire one. But it will be OK, my love, you'll see.'

'Well. I hope so.'

We drove on across Salisbury Plain. The little car, an Austin A30, was a real joy. It was running beautifully on ten volts instead of the normal twelve. I had discovered only the day before that one of the cells in the battery was not working properly, and as I had not got the money for a new battery the mechanic at the garage had put a piece of copper wire across the appropriate terminals to by-pass the fault. I was greatly relieved to find it working so well.

'Shall we stop at the Linga-Longa restaurant for a cup of tea when we get there?' I asked.

'No. I think we had better press on while Timothy is sleeping. We've a long way to go. Anyway I don't fancy the Linga-Longa. The service was very bad the last time we stopped there.'

'OK, but my mouth is very dry. Have you got a peppermint handy?'

I knew that she had, and I was hoping that the mention of peppermints would put something else into her mind.

'Yes, I've got one. Here you are. I think I'll have a cigarette as well. Would you like one? I'll light it for you if you like.'

The ruse had been successful! Ever since she had become a nurse Isabel had always had a peppermint after she smoked a cigarette, so that she would not breathe tobacco all over the patients. I had been smoking heavily throughout the journey from Taunton and I had not wanted to light another one on my own in case Isabel thought I was smoking too much. This way it had become her suggestion not mine. Pavlov would have been proud of me!

It was three o'clock before we reached the Upper Richmond Rd and turned into the drive. The white house looked lovely this sunny summer's afternoon. Nostalgic memories flooded through me as I saw the front door, which was still the bright yellow I remembered as a child.

'Come on, John. Don't day-dream.'

Soon we were upstairs in the sitting room and my mother was admiring Timothy, her first grandchild, while Isabel poured out cups of tea.

There was a knock at the door and the receptionist came in.

'Your father wonders if you could give a gas for him in about half an hour. There is a lady with an abscess who needs a tooth out.'

She paused, waiting for an answer.

I felt the adrenaline surge through me. Here I was, an anaesthetist with ten months experience, who could deal with ill people having major surgery in the middle of the night, and yet I had not given a simple 'gas' for a tooth extraction in the dental chair since I was a student at Guy's, and then I had only done one. I had read all about it, of course, while studying for the Diploma in Anaesthetics examination

that I planned to sit in November, and I remembered all about the McKesson gas-and-oxygen machine in the surgery downstairs. As a teenager I had often gone into the surgery and looked at it, so that I knew exactly where all the knobs and switches were, but I had not used a machine like it since I had become an anaesthetist. My father, of course, had had years of experience with such machines. What was I to say? Of course I had to say 'yes'! Otherwise I would look stupid.

The half-hour turned out to be only twenty minutes, so here I was in the surgery and the patient on the way from the waiting room.

'I've switched the cylinders on,' my father said.

'I'll just check the spare oxygen,' I replied. Anything to get the feel of the machine before I used it. I remembered clearly that there was only one reducing valve for the two oxygen cylinders so first I turned the 'in use' cylinder off and flushed the machine so that the oxygen pressure fell to zero. By this time the patient had come in and was sitting in the chair.

'I won't be a moment,' I said. I turned the full cylinder on, saw the lever on the pressure gauge rise once more. That's OK, then. Now turn that one off and the first one back on again. Good. Right now put the mixture dial to 0% oxygen and the delivery pressure to 5 mm. Is the nitrous oxide flowing? Yes, but too fast, so reduce the pressure a bit. Good. One last look. Be patient, Dad. Yes, the valve on the nose-piece is open and the machine is close enough to the chair.

The patient was sitting nervously in the chair now with a prop between her back teeth and a bib under her chin.

'I'm just going to pop this small mask over your nose, Mrs Jones. There that's it. Just breathe through your nose now. It will smell rather rubbery, I expect. Good, that's right, not through your mouth but through your nose.'

I pushed the lever across to the 100% nitrous oxide position, put the delivery pressure up a bit and at the same time my father held a gauze pack lightly over her open mouth. She seemed to be going off nicely, I thought, and I could hear the whistle of the expiratory valve at the end of each breath. After a few more seconds I moved the mixture lever to 12% oxygen, put my fingers behind the angles of the jaw and pushed forwards to make certain the airway was clear. I nodded towards my father and looked at the patient's colour. Just a tinge of blue, perhaps, but nothing to remark about.

'Thank you, John. That's it.'

Good Heavens, the tooth was out already! I had just been getting into my stride. I moved the lever to where it said 100% oxygen, which would cut the nitrous oxide off completely and waited for the patient to wake up.

'Well done, Mrs Jones. Spit into the bowl, please. It's all over. Your tooth is out.'

Five minutes later I was upstairs again drinking a second cup of tea.



'How did it go, dear?'

'Fine, thank you.'

I did not mention that I had been nervous. I made a resolve to get some practice at dental anaesthesia before I came home again. Later my father handed me two pound notes and a florin.

'Here are two guineas, John. It's your professional fee. Thanks again.'

'That's OK, Dad.' I replied, and I put the two green notes and the silver florin in my pocket.

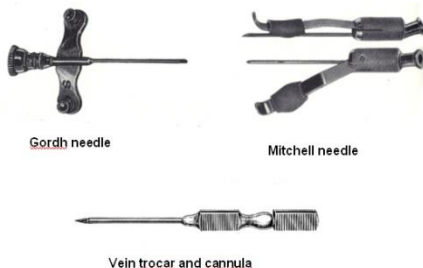
Next day there were two hundred guests at the wedding. Apart from myself, only one of the men was not in morning dress. Isabel was very cross with me.

Geoff and Liz went away in style on an elephant their uncle had hired from Billy Smart's circus.

It was about this time they made me locum registrar for a couple of months before finally in October I was conscripted to serve her Majesty the Queen.

### Notes and references

Brian Sellick did not describe cricoid pressure until October 1961, and it was some years before it was adopted throughout the country. I actually passed the final FFARCS exam in January 1963 without mentioning it during a discussion on obstetric anaesthesia (see .



Intravenous needles and cannulae were made of metal and were re-used after sterilisation; often they needed to be sent away to be re-sharpened.

[1] My friend Jim Sheeran would be disappointed if I did not recall that the word 'trachea' means 'rough' (artery) and comes from the Greek t r a c h e a

(a r t e r i a ).

[2] High flow levers for nitrous oxide were there to help at the induction of anaesthesia using 100% nitrous oxide. In contrast, modern machines are designed so that hypoxic mixtures of nitrous oxide and oxygen cannot be given under any circumstances.

[3] I guess that to-day doxapram would do the same thing, though the dose should be kept small. Once in 1959 I injected 5ml of nikethamide, which has a similar action to doxapram, in order to produce an explosive cough and the patient said 'I've gone blind'; she remained unable to see for two minutes, but then, to both our great relief, all was well once more. I read afterwards<sup>[a]</sup> that this injection should be 'preceded if necessary by 0.1 - 0.2 g. of thiopentone'. I

never tried this technique again. [a] Lee JA. *Synopsis of Anaesthesia*. 4th edition. Bristol: John Wright and Sons. 1959; 511.

[1] Scavenging of waste anaesthetic gases and vapours did not come into routine use until 1976. I joked at the time that anaesthetists would give up the job up once they were stopped from inhaling the vapours that hissed out of the expiratory valves, but I was wrong; it was a blessed relief! Within one week of scavenging being installed at Southmead I swore I would never work in a theatre again that did not have it. It is amazing that we had failed for 130 years to appreciate that there was a problem. (See also chapter 5/1956.)

[1] Sadove et al in 1955<sup>[a]</sup> compared EVE with DVE and DEE. They summarised the clinical properties of these drugs as follows:

	Diethyl ether	Divinyl ether	Ethyl vinyl ether
Induction	Slow	Very rapid	Rapid
Maintenance	Easy	Difficult	Easy
Irritation	Marked	Moderate	Slight
Salivary secretion	Marked	Marked	Marked
Relaxation	Excellent	Poor	Fair
'Running movements'	None	Occur	Occur
Respiratory arrest	Not likely	Easily produced	Not likely
Emergence	Slow	Rapid	Moderately rapid
Nausea & vomiting	Fairly common	Less common	Fairly common

'Ether eye' (post-ether conjunctivitis) was reported to be commoner with EVE than with other ethers, though the reason for this is not clear. Also, in deep anaesthesia, 'running movements' are frequently seen, similar to those observed when divinyl oxide (divinyl ether) is being administered: this suggests that these running movements are in some way related to the unsaturated vinyl molecule. These movements promptly disappear on withdrawal of the agent and consequent lightening of the plane of anaesthesia. Thus they are easily differentiated from incipient convulsions. I did not use either of these agents enough myself to become aware of this abnormal muscular activity, though it sounds intriguing!

