Enjoyment of life depends on the liver

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The first formal opening address was delivered on 3 June 1826 by Dr James McDonnell, the then senior physician at the Belfast General Hospital in Frederick Street, the forerunner of the Royal Victoria Hospital. His subject on that occasion was “Systematic Medicine”. The opening oration is now an annual event and I am honoured in being asked to give it this year though I realise that its an honour which comes with age rather than ability. Traditionally at this opening address the new clinical medical students were first welcomed to the hospital, having just completed their pre-clinical studies. Changes in the undergraduate curriculum, examination dates and student habits make this aspect of the lecture less appropriate than in decades past. However I hope that some of what I want to say is applicable to the students present as well as nursing colleagues, members of the various paramedical specialities, doctors in training and even established clinicians. To quote Montaigne, what I have done is to “gather a posy of other men’s flowers and only the thread that binds them is my own”.

When Paul the Apostle warned his friends in the city of Corinth to “have nothing to do with loose livers”, he was not of course referring to some form of hepatic visceroptosis but rather to a particular lifestyle which he considered undesirable. Today I want to look at both meanings of the word “liver”. As defined in the Oxford English Dictionary, firstly, a liver is one who lives in a specific way, and secondly, the liver is the large glandular organ in vertebrates secreting bile and purifying venous blood.

A career in medicine is demanding and in order to obtain fulfilment and satisfaction I suggest that two ingredients are essential. The first is commitment and the second, contentment. The commitment should be without contention and the contentment without complacency. Hippocrates said, “life is short, the craft so long to learn”. Pavlov put it this way, “science requires your whole life, even if you had two lives to give it would still not be enough; science demands of man effort and supreme passion”. In the clinical room of Wards 15/16 there hangs the motto carpe diem. Mr Terence Kennedy, whom we are delighted to see with us today, my senior colleague for nineteen years, asked one of his friends with a classical education to give him the Latin equivalent of “don’t let the grass grow under your feet”. He came up with the Latin motto beloved by clock makers, literally “catch the time” or “make use of every moment”. Enjoyment of life demands commitment and nowhere more so than in the field of medicine. It requires rolling up the sleeves and getting the hands dirtied; there is no substitute for hands-on experience. But it is not a chore — its fun. Dr Schuster, Professor of

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Enjoyment of life

Dermatology, at the Royal Victoria Infirmary, Newcastle upon Tyne remarked, "medicine is wildly exciting and learning about it should bubble with excitement". Recently the Ulster Surgical Club visited Leicester for a clinical meeting at the Leicester Royal Infirmary. At the entrance to that hospital there is a clock bearing the motto — In duty lieth happiness. However, it is not as simple as that. Commitment alone does not guarantee happiness, as Solomon of old found out. The lifetime achievements of Solomon are staggering. His acquirement of wisdom, his irrigation schemes, his agricultural and horticultural programmes, his social welfare organisation, his accumulation of wealth, his involvement with the cultural arts and his constructional accomplishments culminating in the magnificent temple at Jerusalem are all well documented. Yet towards the end of his life he said, "when I surveyed all that my hands had done and all that I had toiled to achieve, everything was meaningless, a chasing after the wind, nothing was gained under the sun". Solomon did not experience the Leicester Royal Infirmary motto, and it wasn't a case of all work and no play for Solomon. He states "I denied myself nothing my eyes desired. I refused my heart no pleasure". He indulged in wine, women and song. We are told that he looked after, if that is the right term, a thousand wives and concubines whom he describes as "the delight of the heart of man". There was no doubt about his commitment both in work and in play, and yet he failed to achieve the second ingredient for a happy life, namely, contentment.

Last year three of our distinguished, retired consultants published their memoirs and I want to refer to them. Professor Frank Pantridge made an outstanding contribution to cardiology in general, and coronary care in particular, in this hospital, in this province and indeed world-wide. His commitment to cardiology was total and his achievements were enormous. Yet in his memoirs, significantly entitled "An Unquiet Life", like Solomon he admits to a lack of contentment. He joined the Royal Army Medical Corps the day after the Second World War broke out. The following year, 1940, he found himself stationed in Singapore with the Second Battalion of the Gordon Highlanders. In that officers' mess in the Far East he claims that he found "a remarkable esprit de corps". Sadly he goes on to say "I had never seen it before and I have never come across it since. It did not exist in any RAMC fraternity or Army Hospital, and certainly not among the staff of any National Health Service Hospital that I was to encounter later".

Commitment should be without contention. However, medicine is not a spectator sport; it requires not only involvement but also an element of competition. Thus, in order to ascend the promotion ladder one has to outpace the opposition. This does not mean that others should be trampled over on the way to the top, as occurs all too often in the business world. On your way through medical school and subsequent post-graduate training, you will make many great friends. Respect them, cherish them and keep them. A good doctor is not a soloist. He is a member of a very large choir and real success comes only when individuals blend together in harmony. It is possible to have commitment without contention and we must strive to achieve that balance.

The motto of the Royal College of Physicians and Surgeons of Glasgow is Non vivere sed vacere vita which roughly translated means "not to live but to enjoy life". That brings me to my next point. Enjoyment of life depends on the commitment of the liver. Paul, writing from the Christian standpoint to his friends at

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Colossi said, “I have learned the secret of being content in any and every situation”. Paul’s words are all the more surprising when we realise that he wrote them while languishing in a Roman prison. The Trappist monks take vows not only of poverty, chastity and obedience but also a vow of silence. They are not permitted to talk to each other. In one Trappist monastery the Abbot interviewed the monks on admission and yearly thereafter when they were allowed to make only one statement. At the end of the first year one monk told the Abbot at interview that he found the monastery intensely cold in winter. A year later the same monk complained that the monastery was still cold and the food was intolerable. At the end of the third year he said “The place is still cold, the food intolerable and the silence unbearable and I’ve decided to go back home”. The Abbot replied “I think that is probably the best thing in your case. You’ve done nothing but complain since the day you arrived”. In Sir Ian Fraser’s memoirs which he published last year under the title “Blood, sweat and cheers” he points out that what people write in their memoirs often reveals as much about themselves as about the people and events they describe. His book vibrates with fulfilment and contentment and he ends by saying, “I have had one of the happiest lives that a man could wish for”. Sir Ian, now in his ninetieth year, apologises that he cannot be with us this morning. We all wish him many more happy and contented years with Lady Eleanor.

The third retired consultant to publish his memoirs last year was Dr Maurice Brown. In his book, “Where There’s Life”, he tells of the horrendous wartime injuries, the fight to cling to life and “the laborious struggle back to normality after the war”. The trauma of this period of his life dominates the book and little more than ten per cent of the volume relates to his pioneering work in cardiothoracic anaesthesia. His experiences might cause him to paraphrase the title of today’s lecture to “Enjoyment of life depends first and foremost on being alive”. Since retirement he has enjoyed world travel, but most of all, contentment as he relaxes by the shores of Strangford Lough.

The contentment that I advocate should not be interpreted as complacency. For example, there is a feeling of arrival when one gets a consultant job and a distinct temptation to put the feet up. Medicine is a rapidly changing profession and it is the duty of each of us to keep abreast of advances in our own fields. It is estimated that ten per cent of the week’s work needs to be devoted to continuing education: managers please take note! A good doctor never graduates; he is a perpetual undergraduate in the school of experience and learning.

As I approach closer to retirement (and the senior registrars in surgery here today should not read too much into those words), I hope that I can continue to find contentment when the scalpel has been laid to rest. It will mean a change of gear and it may mean a change of direction as well. I have been impressed by the diversity of activities enjoyed by my retired consultant colleagues. Some take up painting or become post-graduate advisers. For some it is theology or travelling. Others devote their energies to music or become Ministry men. Some turn to antiques or anthropology. Woodwork and writing are also popular, but perhaps gardening and golf have the biggest following. It was George Bernard Shaw who said “old age brings golf rather than wisdom” but I have to say that if there is no golf now, there will be no golf in old age. If there is no contentment now, there will be no contentment in retirement. At a press conference just prior to retirement,
a famous American general was asked what he hoped to do when he retired. He thought for a moment and then he said, "I have got a house in Virginia with a veranda which looks down over the valley. I think I will spend my first six months just sitting there in a rocking chair enjoying the view". The press wanted to hear more and asked him, "What will you do in the second six months?" The general said, "Perhaps I might just rock a little". Ideally we should find contentment in our life's work and then be able to carry that contentment through into retirement. Enjoyment of life depends on the liver.

Now I want to move on from the philosophical to the physical, from the organism to the organ, from the liver who lives to the liver which maintains life. Throughout history we shall see that one's enjoyment of life could well depend not only on the health of one's own liver but also on the health of the liver of some poor unfortunate animal or even on the viability of another human liver in these days of transplant surgery.

The Garden of Eden is usually considered to have been sited in the region of South West Asia known as Mesopotamia, which literally means "between the rivers". This cradle of civilisation lay in the area between the Tigris and Euphrates rivers. The most prominent region of Mesopotamia was Sumer and 5000 years ago these Sumerian people had a written language known as cuneiform. Of the 30,000 cuneiform tablets discovered, no less than 800 deal with medical subjects. The people in the land of the two rivers considered that illness was a curse, a punishment from one of their numerous deities. The divine punishment was carried out by demons and their catalogue of diseases listed some 6,000 responsible evil spirits. The doctor's job was to find out which type of demon was inflicting the illness and then learn the expiation demanded by the gods. The chief diagnostic aid was divination and one of the most important forms was hepatoscopy, that is, a detailed examination of the liver of a sacrificed animal. Clay models of the liver were kept in the temple and markings found on some of them suggest that they were used to instruct the young priests in the art of divination. Since it was believed that the liver was the seat of the soul, to inspect the liver of a sacrificed animal was to see into the soul of the animal and therefore know the mind of the gods. When the diagnosis was made, ceremonies, prayers and sacrifices were the common means of beseeching the gods for a cure. Fortunately not all patients were left to the fate of the hepatoscopists, who might be considered the physicians of the day. There were also a few surgeons around. In ancient Nineveh well-constructed surgical instruments have been unearthed from under eleven feet of silt. Instruments found include bronze lancets, well-constructed saws and even a skull trephine. Mesopotamian surgeons were capable of draining abscesses, dealing with superficial wounds, and setting broken bones.

More than 17 centuries before Christ, the Babylonian civilisation had a famous king named Hammurabi (1792 - 1750 BC). He was a great writer and inscribed his laws on black diorite stone. One such stone, about 2 metres in height, was discovered in what is now modern Iraq. It deals with medical topics and is currently housed in the Louvre museum in Paris. One of its laws states that "if a doctor has treated a man for a severe wound and causes him to die, or has opened a man's tumour with a metal knife and destroyed the man's eye, his hands shall be cut off". Such rules gave internal medicine a particular attraction and most would-be medical advisers stuck with hepatoscopy rather than risk a career in surgery.

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which could end rather abruptly. After all, in the field of hepatoscopy only the animal and not the clinician was sacrificed.

In ancient Babylon there was another way in which one's enjoyment of life could depend on the liver and the practice of hepatoscopy. We are given an account of this in the books of Ezekiel (chapter 21) and II Kings (chapter 25). Nebuchadnezzar, King of Babylon from 605–562 BC, was on the warpath marching westward and conquering all before him. At a fork in the highway he had to decide whether to march against the Ammonite city of Rabbah or take a more southerly route against Judah and the fortified city of Jerusalem. We are told that one of the methods he used to make the decision was hepatoscopy. He consulted the liver of a sacrificed animal and as a result he decided to march against Jerusalem and soon laid seige against the city, a seige which was to last for a year and a half. On 16 March 597 BC the city fell to his army. The walls were torn down, the city sacked, the temple and palace burned and the temple treasures looted. Most of the inhabitants who were not killed were taken off to slavery in Babylon. Hepatoscopy in the hands of Nebuchadnezzar's priests had proved more kind to the citizens of Rabbah than those of Jerusalem.

Hippocrates, often honoured as the "Father of Medicine", was born on the Greek island of Cos in 460 BC. He was introduced to medicine by his father and travelled widely before settling at Laissa in central Greece. To him medicine was the art of clinical inspection and observation and he established what we now call "bedside medicine". In reaching a diagnosis, examination of an animal's liver was replaced by examination of the patient himself and also of his urine. Now *uroscopy* was to replace hepatoscopy. The quantity of urine, its concentration, colour, smell, transparency, the nature of the sediment and the presence of blood or mucus were all noted and used in establishing a diagnosis. Hippocrates, like Galen, who lived five centuries later, believed that the liver was the seat of the soul. This is a view that is not entirely extinct in Northern Ireland today. A few months ago I prepared a questionnaire on four body organs, namely, the heart, liver, kidneys and brain. A consecutive series of 100 patients attending surgical outpatients were asked to fill in the questionnaire. Of the four organs listed, we found that least was known about the liver, 35 per cent of the patients getting the answer wrong, compared to only eight per cent who obtained wrong answers for the heart, kidneys and brain respectively. Eight of the hundred patients considered that the liver was the seat of the soul; perhaps hepatoscopy is not entirely dead!

Ralph Waldo Emerson, the American essayist, poet and philosopher of last century once wrote, "I know a witty physician who found his creed in the biliary duct and used to affirm that if there was disease in the liver, the man was a Calvinist and if the organ was sound he became a Unitarian". While I may not have found my creed in the biliary tree as Emerson's physician friend did, I admit that the liver and its connections within the body have had a significant effect on my life and medical career. My interest in the liver was first stimulated by Professor Harold Rodgers, who was a pioneer in the field of portal hypertension. He had performed the first portal systemic shunt in the United Kingdom prior to coming to Belfast. He established the method of injection sclerotherapy as the treatment of choice for acute variceal bleeding, a technique now adopted worldwide. He was primarily an astute clinician, an excellent technician and a didactic teacher. He may not have been a laboratory researcher, but he stimulated and

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encouraged others in this direction. By the time I came to work with Professor Rodgers, portacaval shunt was established as the standard treatment for bleeding oesophageal varices.

The technical feasibility of portacaval shunt was first demonstrated in the dog by Eck in St Petersburg in 1877. He anastomosed the portal vein to the vena cava in eight dogs. One dog died within 24 hours and a further six died within one week. The final dog survived for two and a half months before running away and was therefore lost to follow up. On the basis of these results he said, "It was established that the blood of the portal vein, without any danger to the body, could be diverted directly into the general circulation and this by means of a perfectly safe operation". He suggested that this operation might have a therapeutic role in patients with ascites, a somewhat premature observation considering his disastrous results. Subsequently Eck was called for active duty with the Russian army and when he returned his interests turned to other fields; indeed he became a mining engineer where I trust for the sake of the miners he became more conservative in interpretation of results. Some sixteen years later, a fellow Russian, Pavlov, returned to the study of the Eck fistula and described for the first time the drowsiness and ataxia seen in dogs following ingestion of a protein meal after a portacaval shunt operation. He and his colleagues coined the term "meat intoxication" and correlated the symptoms with an increase in blood ammonia. In 1903, Vidal, a French surgeon performed the first successful end-to-side portacaval shunt on a 34-year-old alcoholic, cirrhotic woman with life-threatening haemorrhage. The patient survived the operation but developed encephalopathy two weeks later and died after several weeks from sepsis. Unsatisfactory results by other continental workers led to the virtual abandonment of shunt surgery for about 40 years. In the mid-40's Whipple, Blakemore and others in the States established the role of portal systemic shunting operations for bleeding varices and in the next twenty years around 100,000 shunts were performed worldwide. Although an excellent procedure for the prevention of bleeding, many patients developed episodic stupor similar to the meat intoxication that Pavlov and his colleagues had described in dogs. In fact the association between hepatic disease and severe mental changes had been described in the second century by Galen who observed "bilius ad caput recurrens delirii causa". However, it was not until 1954 that the term portal systemic encephalopathy was first coined by Professor Sheila Sherlock.

Seeing the severe incapacity of a few drowsy, confused, ataxic and sometimes euphoric patients following shunt surgery, I turned my mind toward possible ameliorisation of their symptoms. I started research work on dogs in the Department of Surgery. Portacaval shunt on a largish dog was not technically difficult but, like other workers in this field, I soon found that dogs tolerated shunts poorly and within a few weeks they lost weight and deteriorated. The dogs would look at me with big, pathetic eyes and give an abortive wag of the tail which made me feel like some medieval tormentor. I decided that, job or no job, thesis or no thesis, I could not do the research which had been envisaged. I went to see Professor Rodgers and told him that dogs were unsuitable animals for experimental work in portal hypertension and that I couldn't continue the work. He asked what animal would be suitable? Rather naively, I said that C.G. Child III of Ann Arbor, Michigan, had used monkeys, thinking that would be the end of the
discussion. However, Professor Rodgers lifted the 'phone and contacted Professor George Dick who was using monkeys for polio research work in the Department of Microbiology. Within four minutes I was the astonished possessor of my first four Rhesus monkeys and so the portal systemic encephalopathy research continued. Portal systemic encephalopathy is a very colourful term as are many of the names used for the description of physical findings in liver disease; for example liver palms, spider naevi, paper money forehead, foetor hepaticus and caput Medusae. This last one, caput Medusae, is interesting in its derivation. Although most medical students could identify the clinical sign of tortuous dilated periumbilical veins secondary to portal hypertension, few will ever see a caput Medusae in their clinical careers. Medusa was one of three sisters known as the Gorgons. Snakes grew out of Medusa's head and wings out of her scaly body. Anyone who dared to look into her face turned to stone. The dreaded Medusa was finally killed by the hero Perseus. The goddess Athena lent Perseus a shining shield and holding it so that he could see the monster reflected in the shield he was able to avoid looking directly at his quarry. Thus, using the shield as a mirror he crept up and cut off Medusa's head with one stroke of the sickle and carried the viprous head back to Athens. Although often attributed to Jean Cruveilhier, a French pathologist, he ascribed the recognition of this clinical sign to an Italian surgeon, Mario Severino, of a couple of centuries earlier. It is possible that Severino would have seen the unusual circular Caravaggio painting of the head of Medusa which now hangs in the Ufizzi Gallery in Florence.

Professor Rodgers, on retirement, left me a legacy of patients with liver disease and the supply has not dried up. Indeed, the reverse is true, partly due to the rise in alcoholic consumption which has doubled in the last twenty years. When I first became interested in cirrhosis, less than 30 per cent of the patients in Northern Ireland had an alcoholic aetiology. Now the current figure is greater than 60 per cent. It is sometimes difficult to define what amount of alcohol must be consumed before one can attribute an alcoholic aetiology to the cirrhosis. Someone has defined an alcoholic as one who drinks more than his doctor. I have to say that the figure of 60 per cent alcoholic aetiology at the RVH Liver Clinic was not arrived at on that basis. A weekly intake of 14 units for the female and 21 units for the male is sufficient to produce liver damage. The problem is that not all alcoholics can be trusted to give a true estimate of consumption.

One of our main efforts at the Liver Clinic is to encourage these individuals to remain off alcohol completely. If they do, some hepatic recovery can take place since the hepatocytes have remarkable powers of regeneration. The idea of liver regeneration also dates back to Greek mythology. According to classical legend, a Titian named Prometheus stole fire from the island of Lemnos and carried it in a hollow tube to mankind who had been deprived of this facility. Outraged by the theft, Zeus, as a punishment chained Prometheus to a rock on Mount Caucasus, where he was tormented by a devouring eagle which consumed part of his liver each day, only to find it restored by night. After thirty years of suffering, legend has it that he was rescued by Hercules who slew the eagle, released the prisoner's chains and set him free. The fable highlights the enormous capacity of the liver to regenerate but conveniently ignores the two major problems for the hepatic surgeon, namely, haemorrhage and sepsis. The ability of the liver to regenerate is illustrated by the following patient. In 1983 Breda was a 23-year-old with a
malignant tumour of the right lobe of her liver. The original CT scan showed a 10 cm hepatoma involving the right lobe. Although two thirds of the liver was removed, a post-operative scan demonstrated a liver almost normal in shape and size as a result of hepatic regeneration. (Fig 1). She remains well seven years after surgery without evidence of recurrence and has given birth to two children since the operation. She would have no problem identifying with the title of our talk today.

When the liver is sick, from whatever cause, the patient feels ill and one often uses the term “liverish” to describe the condition. The “liverish” feeling is real whether it is due to sick liver cells the “morning after” or due to the protracted course of some chronic liver disease. I wonder how many wrong decisions have been made on the stage of world politics because of statesmen who felt liverish for either of the two reasons mentioned. I graduated in medicine in July 1956. On 31 October of that year, the last day of a three month spell working as house surgeon to Professor Rodgers, Britain bombed Suez. Sir Anthony Eden was Prime Minister at the time and many considered that he had made a dreadful mistake and that the Suez crisis should never have happened. Sir Anthony Eden had been in poor health for about three years prior to this event. In 1953 during a cholecystectomy operation, his common bile duct had been seriously injured. Subsequently he required two further operations at the Lahey Clinic in Boston because of iatrogenic stricture formation but he continued to be subject to bouts of ascending cholangitis with recurring fever, pain and jaundice. He frequently felt “liverish” and could well have been poorly at the time of decision-making regarding Suez. Certainly three weeks after the bombing of Suez, he went off to Jamaica on sick leave and by January the 9th the following year he had resigned as Prime Minister. A healthy liver is a good thing to take to a conference table.

The two main problems facing the patient with liver cirrhosis are liver failure and bleeding from oesophageal varices. Portacaval shunt is still a most effective way of reducing the risk of bleeding and is the gold standard so far as control of bleeding is concerned. However, the encephalopathy problem stimulated the search for other techniques to control bleeding and prevent recurrence. Injection sclerotherapy has become established as the first-choice procedure for the acute bleeding episode, and the Belfast school deserves much of the credit for this. The trouble is that rebleeding occurs unless a programme of repeated injection sclerotherapy is carried out and this demands a lot of medical time as well as patient compliance. Seven years after the start of civil disorder in Northern Ireland,
I got involved in the gun-running business and imported my first Russian gun in 1976. Unlike the Browning automatic it was a weapon of peace to be used for the operation of oesophageal transection in the control of bleeding from oesophageal varices. (Fig 2). The original rather crude Russian gun has been superseded by a more elegant American version which is now part of the standard armamentarium in the fight against bleeding varices.

Shunts, transections and injection sclerotherapy can control bleeding, but they do nothing to improve liver function or prevent progression to liver failure.

Although one of the features of liver cirrhosis is regeneration of liver cells, in end-stage disease insufficient hepatocytes remain to allow adequate regeneration, and liver failure gradually ensues. Unlike the situation with kidney failure where renal dialysis is available, we do not have at our disposal any effective hepatic dialysis. The only hope of survival depends on replacement of the sick liver with a new one and liver transplantation is now technically possible. With advances in surgical technique, improvements in organ preservation and the development of new drugs to combat rejection problems, survival in these dying patients can be greater than 80 per cent at one year. Currently in the United Kingdom about 300 liver transplants are done annually in about half a dozen centres in England. Northern Ireland, with a population of only one and a half million, is unlikely to be able to sustain a transplant programme within the next five to ten years but by the year 2000 things may be different. Of course science tells us what we can do, it does not instruct us as to what we ought to do. Liver transplantation now allows the opportunity to give life where it could not be given before and conversely to deny life where the only chance of survival, and consequently enjoyment of life, depends on the liver — of someone else. The ethical problems are many. To start with, there is a limited number of donor livers available for a disproportionately large number on the waiting list and therefore someone must decide which patients get priority. In Western society alcohol abuse is the commonest cause of liver disease. Should we exclude from the transplant programme such patients who self-inflict their liver disease and deny them the opportunity for further life? Should we with moral indignation take the view that these people do not deserve transplant? Certainly not: we don't refuse injection sclerotherapy to the alcoholic with bleeding varices, or deny resection of the lung cancer to the lifelong smoker or fail to do all possible to save the attempted suicide. That being said, there is another aspect which must be considered in these patients. The post-transplant programme entails meticulous compliance to a strict medical régime of drugs for the prevention of rejection of the newly transplanted liver. The alcoholic may be unreliable in this respect and thereby destroy the hard work of the combined

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medical, surgical and nursing teams. For this reason some transplant centres have been reluctant to offer the operation to alcoholics unless they have been "dry" for three to six months. Others are willing to proceed to transplant without these preconditions since the trauma of the operation can be a sobering experience.

Prior to operation the philosophy of the alcoholic is often "let my liver rather faint with wine than my heart with mortifying groans". John Bellany's self portrait soon after his own liver transplant suggests that in the agonies of the early post-operative period he may still have felt that same way. If organ availability is limited and resources are stretched, it would seem reasonable that infants, and young people in need of new livers should have priority. Here a further major problem is the availability of livers small enough for these younger recipients. Recently this has led to the use of living donors. A healthy relative, usually a parent, donates part of their liver to save the life of an offspring. This means that someone without the need for surgery is subjected to the major operation of partial hepatic resection without therapeutic benefit to the donor, although undoubtedly there is great psychological reward. Since there is a one per cent mortality risk to the donor, is it fair to put this pressure on a parent? If the parent refuses and the child dies, a guilt feeling is inevitable. In practice however, pressure usually comes from a parent who wishes to be allowed to make the sacrifice for the sake of the child.

Ethics are not intercontinental or even international and some countries and some faiths forbid the use of cadaveric transplants and thus the use of a living related donor may be the only possible option. This could open the door to commercialism as we saw recently in London in the widely publicised case of purchase of kidneys from poor living Turkish donors for transplantation into rich private patients. In the same way a rich man could afford to pay a large sum of money in return for a portion of a poor man's liver to save an ailing child. While not acceptable in Western society, it might be in some countries. After all, the father is delighted, the young patient becomes healthy and the poor man has received enough riches to feed his family for the next five years. Three happy people are not an indication of a satisfactory situation; sometimes the good of the individual must be sacrificed for the sake of society as a whole.

Professor Sir Roy Calne of Cambridge, the pioneer of liver transplantation surgery in the UK, painted the picture of a transplant operation entitled "The moment of truth". (Fig 3). Thanks to the untiring work of surgeons like Roy Calne (UK), Tom Starzl (USA) and Henri Bismuth (France) and their physician hepatologist colleagues, liver transplantation is now established and is here to stay. Indeed hepatology has progressed one stage further in that "bench surgery" of the
liver has been performed — that is, the patient's liver is temporarily removed from the body, the required surgery carried out on the bench away from the patient and the repaired organ re-implanted in its original position — amazing indeed.

Ladies and gentlemen, there is no doubt that we have moved a long way from the era of inspection of an animal's liver as an aid to patient management to the actual replacement of the human liver. We have escaped from the superstition of hepatoscopy to the science of hepatology. In bygone times, today and in the years to come I think you will agree that the old adage is true — "enjoyment of life depends on the liver".