CHAPTER ONE

A vital fluid

A stave struck the floor three times, demanding attention from the assembled crowd. The effect was a brief lull in the hubbub, followed by a resumption of the cacophony. Three more times the stave hit the marble tile, each assault more strident than the one before. '*S'il vous plaît*,' called the official in the clipped accent that marked him as a resident of Paris. '*S'il vous plaît*,' he repeated, spacing each word and ensuring that his call was noticed. The case before them was serious – after all, accusations of murder should never be taken lightly, particularly in such unusual circumstances. The date was Saturday, 17 April 1668. The place, Le Grand Chastelet, the central court in Paris, a fantastic building in the heart of the city on the banks of the River Seine.

In the centre of one small group stood Jean-Baptiste Denis, one of a number of science-minded medics who had the acquaintance of King Louis XIV. Denis had been born into a family that moved on the edge of royal circles, but was never in a position to gain full acceptance. His father was Louis XIV's chief engineer, who had made a name for himself designing and building water pumps. Now aged about twenty-seven, Denis had a superb mind and had obtained a bachelor's degree in theology before going on to study medicine at Montpellier. He had recently been awarded a doctorate in mathematics, and had returned to his native city of Paris, assuming the position of professor of mathematics and natural philosophy, and dividing his time between his major interests of mathematics and astronomy. As a hobby he dabbled in medical research. Like so many hobbyists he had hoped that one day this pastime would strike gold. Instead it had brought him to court – on trial for murder.

The legal professionals surrounding him wore black gowns and square hats with one corner pointing forward, casting a triangular

shadow across their faces like a raptor's beak. They included Denis' lawyer, M. Lamoignon, the son of the First President of the Parliament of Paris. Denis wore his carefully contoured wig that ended in a tightly rolled curl just above the collar of his long dark-brown jacket and gently frilled shirt – a dresscode that marked him as a man of learning. He grimaced in annoyance at the sight of splashes of mud or unmentionable excrement that had spattered the pristine white stockings which rose from highly polished black high-heeled shoes sporting large, square, silver buckles. This was a critical day, and Denis wanted the Sergeant charged with reviewing the case to be in no doubt as to his status.

Alongside him stood a powerful collection of friends, including Henri Louis Habert de Montmor, first Master of Requests to Louis XIV. Their dress-sense was as far from drab as was possible. They wore huge wigs that sent curls cascading down elaborately frilled shirts, and massively sleeved coats covered in the most ornate needlework.

In the gallery sat a man and a woman, both of whom were present as witnesses. Both were patients who had received the treatment Denis had developed, and both were adamant that it had cured them. The woman claimed that prior to the treatment she had been partially paralysed, but was now cured. Evidence – living proof. That was important. Equally important was the presence of other dignitaries such as the ducs d'Enghien, de Luynes, and de Chaulnes, their circle of friends and courtiers. Even if a case started to look thin, such an impressive line-up of supporters packing the gallery provided a greater hope of winning.

The official struck again, this time lashing out at the surface of the table, creating a sharp 'crack'. The chatter of the crowd dropped to whispers, though some laughed at the man's attempts to create order. Denis' mind, however, was jolted by the memory of an urgent knocking at his door one evening a few months earlier, which represented the start of this unfortunate episode.

Meeting Mauroy

It had been late, and Sunday had just rolled into the early hours of Monday, 19 December 1667. Denis, as was often the case, was sitting in

his library considering some of his latest observations and calculations on the movement of various planets, when he heard a carriage pull up at the door. He was a sombre-looking gentleman, for whom generous meals were beginning to make their mark on his waistline and, despite his youth, middle-age was beginning to show itself in the appearance of ample flesh around his lower jaw and deep-set crescent-shaped creases framing his mouth. He continued working, scratching the side of his roman nose, so deep in concentration that he had forgotten about the visitor. A few minutes later his servant appeared, announcing that Monsieur de Montmor had sent for him. Denis narrowed his eyes and, filled with a combination of alarm and excitement, tried to determine why he was being summoned at this time of night. After all, Paris in 1667 wasn't the safest place to wander around the streets after dark. But then again, de Montmor wasn't the sort of person to make idle requests.

With an annual income of 100,000 livres, the 67-year-old French aristocrat Henri de Montmor had personal financial independence, with sufficient surplus for expensive hobbies, the main one of which was new science. Using this wealth he had founded the Académie Montmor in 1657, which had become a meeting place for intellectual talent including the likes of the innovative mathematician and friend René Descartes, Girard Desargues, the Professor of mathematics at the Collège Royale in Paris, Pierre Gassendi, mathematician, physicist and religious philosopher and Blaise Pascal, as well as people like French poet and critic Jean Chapelain. These notables met weekly at the spectacular Hôtel de Montmor, standing at what is now number 79 rue du Temple, half-a-mile north of the river level with Notre Dame, in what is now Paris' third arrondissement.

At the beginning of 1667 the group was in the process of disbanding, some of the members having been invited to join the newly formed Académie des Sciences, but in scientific circles Montmor still held considerable influence. Denis abandoned his work, spent a few minutes carefully rearranging his clothes, and with the assistance of his servant tugged his wig on over his closely cut hair. Checking himself in the mirror, he pulled at his collars, readjusted his wig and, deciding all was well, he left. To his relief he discovered that Montmor's servant had come with a closed carriage. But he was taken by surprise when he climbed inside to find it already occupied by Paul Emmerey, a talented

surgeon and anatomist who had also tagged onto the group. At the peak of his career, Emmerey was recognised as one of the most capable teachers of surgery and anatomy, and having been born in Saint Quentin, Paris, rose to become the Provost of the Parisian Society of Surgeons. Finding that neither knew the nature of the summons, both men said nothing as the carriage rattled noisily along cobbled streets, passing the Hotel de Ville before heading east along rue du Temple.

Veering sharply left through the gates, the carriage stopped in an open courtyard and its two passengers headed straight for the door. On arrival they were shown into the high-ceilinged library where they were met with a few shouts of welcome. The ornate room was already full of fashionable gentlemen, strutting around and standing about in order that their flamboyant costumes could be seen to greatest effect. At the far end of the library, tied to a chair, was a man, his hair matted and wet, his face grazed, and in marked contrast to the other occupants of the room, he was without clothes. A cloak had been draped around his shoulders, but it slipped to the floor every now and then as he fought to free himself.

The captive was 34-year-old Antoine Mauroy, a man-servant who lived in a village about 10 miles from the centre of Paris. For seven or eight years he had suffered from bouts of insanity, each lasting 10 or more months. During these episodes he became violent, and had a tendency to run around the streets naked, whenever possible setting fire to buildings. Unsurprisingly, he soon became notorious in the district.

About a year earlier, during one of his sane periods, he had married Perrine, a young woman who was persuaded to believe that his insanity had been a passing illness and that he was now cured. The marriage appeared to have started well, but sadly after a few months his behaviour deteriorated. Initially his wife had managed to contain him, and despite being attacked on a number of occasions, she and friends had tied him down for his own safety as well as that of those around him.

There were plenty of people willing to give advice about treatments and remedies for Antoine's condition. Quite clearly something was causing this outrageous behaviour, and according to the principles followed by most practitioners at the time, the strongest possibility was that Antoine's blood was to blame. Maybe he simply had too much of it, or he had an appropriate amount, but it had become contaminated. Either way, the best thing to do would be to remove some.

Local physicians and barbers had 'bled' him on eighteen separate occasions, a technique that was assumed to let out bad blood, restore a healthy balance and enable recovery. They had also given him forty or more 'baths', each filled with different combinations of herbs, chemicals and other active ingredients. Nothing had changed. Taking a similar tack they had strapped innumerable potions to his forehead. But all to no avail. In response he repeatedly broke free, and ran off.

On this particular dark midwinter evening, Mme Mauroy had been scouring the streets and alleys, fields and ditches, searching for him, or even hoping to find telltale signs of his destructive passing. She was, however, unaware that this time he had made it as far as central Paris and been detained by nightwatchmen. For some reason this sad man had been brought to the attention of Montmor. Whether out of a sense of pity or curiosity we will never know, but, unable to find a place in a suitable hospital, Montmor had taken him home, and then called in his friends.

His idea was as simple as it was radical. Over the last few months he knew that two of the members of his academy, Denis and Emmerey, had been experimenting with the idea of swapping blood between different animals. In the mid-seventeenth century, any thinking about the body centred around the idea that a person's blood contained vital elements of their spirit. This gave rise to a new possibility. Might draining his own, sinfully damaged blood, and replacing it with pure, innocent blood from a docile animal, cure the behaviour of a wild and dangerous man? Could the blood of a lamb, for example, literally wash away a man's sins?

As Denis and Emmerey walked into the room, all heads turned towards them and conversation dropped to a murmur. The men stepped forward and bowed in respect to Montmor and his assembled friends, acknowledging their nods with warm smiles and waves of their hats. Montmor beckoned them over towards Mauroy, and the three stood together while Montmor filled them in with the case history as he saw it. Their task, he informed them, was to see if they felt this man was a suitable candidate for a transfusion.

The stakes were high. Among the gathered crowd there were certainly many who hoped this would be the case, in order that they would be able to witness the experiment and another amazing stride forward in the rapidly expanding field of scientific medicine. Others were either

Plate 1 Jean-Baptiste Denis. Reproduced by permission of the Musée d'Histoire de la Médecine.

deeply sceptical or totally outraged. If anything terrible happened to the patient, the whole of Paris would know about it, and Denis' livelihood, maybe even his life, would be in danger. If the experiment was successful, Denis was sure that he could sign his name in history.

Playing with fire

But what if it went wrong? Today, the whole concept of moving blood from an animal to a person seems bizarre. Many would also view it as unethical in terms of both the risk to the patient and the use of the donor animal, which would probably bleed to death during the process. But to appreciate the reason for the taste of fear in Denis' mouth at the time, we need to understand his reverence for blood.

Like most of the people gathered in Montmor's apartment, Denis was not one of the ignorant conmen or dangerous quacks who set up business in dingy back streets of towns and cities in seventeenth-century Europe. His knowledge of theology and the magical wisdom of the Graeco-Roman world taught him that blood played a fundamental role as a mediator between humankind and the gods. It was a symbol around which spirituality and superstition, sacred teachings and folklore all mingled. No one toyed with blood.

However, blood was more than just a symbol. Blood was life. Any physician handling blood was manipulating the very life of the person. This conclusion came from one simple observation. Slit an animal's throat, or a human's for that matter, and watch what happens. As the blood gushes out, the person starts to become faint, running low on their vital spirit. Once drained of all his or her blood, the person has no life left in his or her body. Quite obviously, life leaves with the blood. Therefore blood contained life.

This rationale underpins many of the earliest recorded events that involve or make statements about blood. One such incident occurs in writings attributed to the Greek epic poet Homer, whose eighth-century BC story, the *Odyssey*, recounts the aftermath of the Trojan War. At one point in the book, Homer's hero Odysseus finds himself in a spot of trouble and, taking the advice of a witch, summons the dead oracle Tiresias. Odysseus hopes that this soothsayer will be able to solve

his problems. In a daring move, Odysseus enters Hades and pours an offering of milk, honey, wine and the blood of a sacrificial ram. This blood wins the day, and as the spirits of the dead drink this 'black, steaming' blood, so they regain their memories of life on earth, regain their vital breath of life for a brief moment, and give Odysseus the help he needs. Blood had, at least temporarily, restored Tiresias' life.

While the sixteenth and seventeenth centuries were marked by a new phase in human thought that wanted to question mythical understanding, most of its philosophers still took biblical teaching seriously. Throughout the biblical texts were clear warnings not to take blood lightly. The book of Leviticus has an emphatic prohibition against consuming blood, 'because the life of every creature is in its blood', and in Genesis' account of Abel's murder, God confronts his guilty brother Cain, saying: 'Your brother's blood cries out to me from the ground'. Denis' theological scholarship would have reinforced his awareness of the need for caution.

Was Denis seriously contemplating pouring blood from an animal into a person? Yes he was, convinced that this sacrificial gift had a chance of restoring health. Denis looked at Mauroy. He studied the appearance of his skin and looked for signs of any physical disease that would make the procedure particularly dangerous. His colleague, Emmerey, bent down to join in the examination. Neither of them were part of the old school of physicians who made diagnoses from a distance. Both wanted to base their decisions on hard evidence. The crowd also pressed forward, looking for signs that would enable them to make diagnoses of Mauroy's condition and formulate a strategy for treating him. Many announced their conclusions with loud bravado. The cynic might suggest that it is very easy to be certain that your treatment will work when you know that there is no way you are going to have it put to the test!

The initial examination was pleasing. Mauroy looked to be physically fit. There were no obvious signs of disease or illness. It seemed that only his soul was in turmoil. Surely the best treatment would be to tackle the seat of the soul, to tackle his blood. After all, blood was the place where a person's individuality resided. Blood contained the reason you were the person you were. If your personality was disordered, then what better than to remove some of it and replace it with a spirit of calm and order.

The possibilities seemed very real; but so too did the dangers. Again the stakes were high. Would it be ethical to employ a treatment that altered a person's nature? If someone's personality and characteristics have been given by his or her creator, does any physician have the moral authority to wade in and alter them? This is a question that has shown up frequently since science began to vent its learning and theories on living systems, especially when those systems are human beings. Put crudely, was the proposed experiment 'playing God'?

The debate would probably have been very similar to the one played out recently with regard to the genetic manipulation of plants and animals, and the more heated exchanges that have accompanied discussion of the possibility of human cloning. In all these situations there is a fear that humankind might be using science to take control of areas outside our jurisdiction. Among the God-fearing population of the seventeenth century there would have been a more uniform anxiety that some ordained rules were about to be bent or broken. Who has the authority to decide the personality of an individual, except God?

This would not have been a minor consideration, but a serious dilemma. Hadn't everyone been made the way they were by God? If this theory of transfusing blood worked, wouldn't it alter the person's nature? Wouldn't it alter the person that God had made? Wasn't this outside the scope of action that any moral physician was allowed to work within? Denis would have been well aware of critics who were already sharpening their knifes. He was potentially in a no-win situation. If the treatment failed, he could be accused of reckless disregard for life. If it worked, he would be indicted for usurping God's authority. In Eden, Eve had bitten the apple of knowledge of good and evil – now, for many in the room, there was every indication that evil was about to take the upper hand.

Medicine, it would have been argued, can cure sickness, but here a person's unruly behaviour was about to be tackled by altering his temperament. This was an attempt to change his very nature. And what was potentially more shocking was that the experimenter-physicians were considering doing it by introducing a few pints of calf blood into his system. In so doing, they wanted to introduce the docile, calm and altogether loveable spirit of an innocent calf into this disreputable vagabond. But if they succeeded, would he still be a human being, or would he now be a hybrid – a human-calf?

The equivalent twenty-first-century discussion revolves around the transport of genes from one species to another, and asks how many genes it is necessary to move from a pig to a human before the human becomes part-pig? Or, conversely, how many genes must be moved from a human to a pig before the pig should be afforded human rights? Indeed, there is a distinct similarity between the two scenarios – genes and blood. In the seventeenth century, Denis and co-workers would have believed that your blood is an essential component of who you are. Modern science sees reproduction as a mingling of genes. By this reckoning, genes are the new blood.

In good humour

Clearing the ethical ground to ensure a relatively high degree of safety from the risk of censure from members of the religious community and the public, was one issue. But Denis also needed to consider the medical fraternity's current treatment strategies. Letting blood out was their business, not putting it in. This was an era ruled by the art and craft of phlebotomy. Many of the medical community stood to lose their source of income if his ideas worked, however no one seemed certain as to whether the theory of transfusion went with, or against, the current theory of health, disease and blood.

To understand the radical nature of Denis' proposal, we need to pause for a moment and take a look at the prevailing understanding of blood. In the mid-seventeenth century, people were still highly influenced by the philosophical mindset that had originated in ancient Greece. In the thirteenth century BC, the physician Asclepius had taught that all diseases were purely spiritual issues and should be treated by prayer and the offering of sacrifices to the gods. But by the sixth century BC new ideas were emerging.

Thinkers like Pythagoras, and statesman and doctor Empedocles, became fascinated with the number four. They were convinced that this number was so powerful because the entire cosmos had been built using four component parts. This notion of four-part divisions permeated Plato's work. He believed that all creatures came in one of four types. Firstly there were the original gods and children of gods that the

craftsman had created. Secondly, certain men and women who were simpleminded but otherwise inoffensive, were turned into birds. Thirdly, those that were dull-witted and incapable of complex thought became animals. Fourthly, the most ignorant men and women became lizards and snakes, and the really stupid were turned into fish and oysters. Indeed, this mindset has continued; we talk of the four ages of man and divide the year into four seasons, and we even partition hours into quarters.

These Greek philosophers suggested that since humans were part of the cosmos, their bodies (their microcosms) must function like everything else (the macrocosm). Consequently, they felt that any explanation of how a healthy body operated should rest on a four-part physical system, and any discussion of disease needed to make sense of four elementary substances – earth, air, fire and water.

Philosophers like Pythagoras and Empedocles maintained that these elements represented qualities of heat, cold, wet and dry. For example, earth was generated by mixing coldness and dryness, and fire was a combination of heat and dryness. Furthermore, they maintained that a person's temperament, his or her intelligence and perception of reality were highly influenced by the relative proportions of earth, air, water and fire in their bodies. Consequently, an understanding of health and medical practice evolved around notions of treating perceived imbalances in a person's make-up.

In the fifth and fourth centuries BC, Hippocrates and his fellow Hippocratic doctors integrated the idea of the four basic elements with another prevalent notion – that of humours. Whenever food was consumed, there were elements in the diet that could not be digested and used by the body. If these 'humours' were not eliminated, they would build up and cause disease. Initially, they believed that there were two humours – bile and phlegm. Bile was then divided into two types – yellow bile and black bile. This gave three humours. However, if humours existed, there must be four of them. After much head-scratching, the doctors of the day decided to add blood to the list. Blood was different from the original three humours in that, unlike black and yellow bile and phlegm, it had a positive influence on the body. As to their sources within the body, phlegm came from the brain, while blood originated in the heart. The liver produced black bile, and the yellow bile came from the spleen.

So it was that blood began to assume a fundamental role, for not only was it one of the humours, but it was also charged with the task of maintaining the body's vital balance – of keeping the right proportions of air, water, earth and fire. Blood acted by communicating with the pores that were thought to be on the outer surface of the body. These pores allowed the four elements to diffuse into and out of the blood, which could then travel into the tissues and organs in the centre of the body and restore any region that was currently unbalanced. Most importantly, blood would make sure that the balance was maintained in the vicinity of the heart – the seat of people's thinking.

Blood was the perfect tissue in the body. It was warm, indicating that it was full of life, and played a role in all aspects of life, from respiration to nutrition, digestion to thought. The idea became known as the haemocentric (blood-centred) view of life. This fitted well with Aristotle's notion that emotions were wrapped up in blood, for example timidity was a consequence of a person having thin blood, and the blood becoming too cold was also to be feared.

The concept was refined even further by Hippocrates' son-in-law Polybus, who, in his book *De Natura Hominis*, formed a four-part system that underpinned medical practice right through to the seventeenth century and beyond. Polybus summarised his ideas in a simple table:

Humour	**Season**	**Qualities**
Blood	Spring	Heat and humidity
Yellow bile	Summer	Heat and dryness
Black bile	Autumn	Cold and dryness
Phlegm	Winter	Cold and humidity

As Denis' colleagues would have been taught during their medical education, this gave a structured approach to treating illness. If a person was too cold or lacked humidity, then he or she should drink wine as this was known to help a person get warm, a benefit that must have come from an increase in the amount of blood. Blood 'letting' also became codified within this scheme of medicine. While on occasions it could be used for reducing heat in a person with fever, letting was normally seen as beneficial because it had a chance of removing the nasty humours that mingled with the blood. Hippocrates and his followers were convinced that menstrual bleeding and nose bleeds were the body's natural way of restoring balance and maintaining

health. Therefore blood letting, not blood infusion, became a key way of restoring balance for an extremely wide range of conditions.

Linked to life

Most seventeenth-century physicians would also have believed that blood was the source of new life. Aristotle had coined the idea that new life started when refined blood from the man and the woman, semen and menstrual blood, came together. Denis and his colleagues would have had no evidence causing them to question this. They were around just a few decades before the Dutch fabric merchant Anton van Leeuwenhoek peered through his collection of pioneering microscopes and discovered sperm in samples of semen. For Denis' friends, playing with blood was playing with the very stuff of life.

The link between blood and life was further strengthened by the last serious alteration to the scheme of beliefs that developed prior to the seventeenth century. This was introduced by the Greek philosopher and anatomist Claudius Galen in the second century AD, who had studied medicine in the city of Pergamum, in what is now western Turkey. Galen had become chief physician to the gladiators stationed in Pergamum, and was a prolific writer. During his career he produced some 500 books and treatises on all aspects of medical science and philosophy. His views fitted well with those of the early Christian believers and became incorporated into the thought patterns of Christian-dominated cultures for the next 1,500 years. So much so that if anyone questioned them, he or she would be in for a rough time – this would be effectively questioning the church.

Galen moved to Rome as physician and friend to the Emperor Marcus Aurelius. Working with gladiators gave him ample access to wounded bodies, and tending to half-butchered men at the Colosseum allowed him to observe blood at first-hand. This was an unusual situation, in that he was looking at healthy people who had only just been harmed, rather than those in different stages of disease, or battle victims who may have reached a physician hours or days after receiving an injury. From his observations he drew a critical conclusion. There were, he said, two types of blood: one was bluish in colour and tended to flow

gently from the cut end of the vessels that contained it, the other was bright red and prone to spurt from its vessels.

This theory of two different types of blood caused Galen to develop a more complex idea than had held sway up to this point. He concluded that blood was formed in the liver. After all, a chunk of liver looks very much like congealed blood, and if it is mashed up it creates a liquid mush that has similarities to blood. This blood was formed directly from the digested elements of food, and as such blood was the means by which nutrients became distributed throughout the body and carried in veins.

Arteries, on the other hand, carried a form of blood that had been refined in the furnace-like facility of the heart. This purified blood now contained a new substance, one that was weightless but absolutely essential. This was 'vital spirits'. However, there was one further complication to this theory – that some blood containing vital spirits was sent up to the head. Here it was further refined and became 'animal spirits', which enabled thought and was distributed through the body in nerves. For Denis' contemporaries, this high value of blood would have only increased their anxiety about any medical procedures that used blood in a new way. By playing with blood, he was playing with life itself.

Towards a decision

From Denis' point of view, transfusion was just a different approach to the task of restoring a correctly balanced set of humours. As far as he could see, it also held the advantage of doing this at the same time as maintaining a normal volume of blood. His plan was to remove some of the unbalanced blood from the diseased person and replace it with balanced blood from a healthy animal. This meant that the patient would not be stripped of the nutritious properties of the blood, and there would be a good volume of blood on which the heart could imprint the person's vital and animal spirits.

It was obvious that Mauroy was not in 'good humour'. The small knots of physicians around the library pushed forward to examine the patient, but were generally disappointed by the lack of data. There was

no indication that the man was physiologically cold, which could have indicated an excess of phlegm, but they didn't expect to see that, not in a mad man. What would have been useful would have been a good stool sample. Runny diarrhoea would have been taken as a firm indicator of excess yellow bile, and too much yellow bile, as everyone knew, could boil the brain, causing all sorts of mental imbalance. On the other hand, dark masses in a solid stool could indicate excess black bile. Those associated with the College of Physicians were certain of what they would do – they would bleed him. Granted, he had been bled before, but probably not severely enough, or the blood had been taken from the wrong place. After all, was there any indication that the man had been bled until he was unconscious? It's a fair bet that, at this point, several of the physicians were playing their fingers over the catches on the beautifully crafted boxes that contained exquisite sets of razor-sharp, bloodletting tools!

This then would have been the predominant view of the medical community in Paris, and would have coloured most of the discussion as the early hours of the morning ticked by. Denis was fully aware that his concept of giving a patient blood, of taking blood from one animal and giving it to another, was sending shockwaves through the established order. He argued, though, that while it was a novel method, it could still be seen as a way of restoring a person's balance – it just did so in a more active manner than phlebotomy alone. Furthermore, if it worked, the technique could be a universal panacea; learn to perform it and you could potentially cure almost any disease. With such a reward in prospect, who could possibly want to stand in the way of anyone trying to push the method forward?

As Denis and Emmerey looked at their potential patient, they would have been weighing up whether his bloodline needed altering. They would have been questioning in their minds whether Mauroy's madness and violence could be tempered by an injection of an altogether gentler spirit. They would have been wondering whether this was their opportunity to startle the sceptics and make a name for themselves, to boot.

There is no way of knowing whether his decision would have been different had he foreseen the chain of events that were about to result in the death of his patient. But it does seem likely that he would have had an inkling that the action would cause jealous consternation over

the seas in England. No true pioneer flinches in the face of a challenge, and Denis could already see the headlines. Prestige before the age of 30 – it was just the sort of meteoric rise to fame that should be expected of a genius.