Many Bloomsbury intellectuals who survived the First World War sought to find a way of re-establishing networks between artists and scientists in order to connect with the past and to build a new future. There was a strong feeling of respect among many writers and scientists, and they saw the common patterns in their work. There was an increasing interest in listening to new groups involved in biology, and this brought together specialists best known for their very different views. J. B. S. Haldane and Ronald Fisher, for example, now found much common ground. There were also many experienced professionals positively encouraging new blood to rejuvenate those disciplines damaged by the war. Even the ageing Ray Lankester inspired more than his fair share of young followers, including H. G. Wells’s son Gip. As though to seal a new sense of unity within the biological sciences, Julian Huxley started to bring together all the disciplinary ingredients for his 1942 classic *Evolution: The Modern Synthesis*.

In Bloomsbury, this surge in scientific interest and activity involved many more professional biologists and writers than before. These people were even more determined to explore the meanings and values of life, with an emphasis on molecular science and psychology. Many had developed new interests in Darwin’s theories of natural selection in their search for the natural laws that underpinned life on earth, but positive evidence for natural selection remained elusive. Articles appeared in the press asking questions like ‘Is Darwinism at Dusk or Dawn?’ The paucity of direct evidence to prove natural selection drove more observers to reconsider Lamarck’s ideas about acquired characters that he had set out in 1809.
Through the 1920s, there was a rise in interest from those looking for smaller and smaller clues. Many of those latest researchers were looking to biochemistry for evidence from psychology and genetics, so when the secretary of London Zoo, Peter Chalmers Mitchell, asked Lankester along to a meeting of the Aristotelian Society, they were pleased to see its members looking outwards at the grander picture. One after another, the speakers applied Darwin’s ideas about evolution to social matters such as economics and politics. If animals and plants adapted to changing environments so could humans, even if it was so as to live in austerity and to die in wars. The proceedings of the meeting are still available as a book called *Life and Finite Individuality*, with the arguments for and against whether physical, biological or psychological categories are reducible to molecular explanations. Chalmers Mitchell saw a clear trend to a synthesis, as did another morphologist, the eccentric Scottish biologist d’Arcy Thompson. However, J. B. S. Haldane’s father, the Oxford physiologist J. S. Haldane, thought differently. Thus, the Oxford tradition of reductionism was founded, and it continues now with Richard Dawkins’ popular books.

George Bernard Shaw continued to be repelled by the apparent randomness and purposelessness of Darwinian natural selection and remained an advocate of Lamarckian evolution. His five plays *Back to Methuselah*, published in 1921, expressed his distinctive mood of despair at science and war. In his long preface to the plays, Shaw argued that humanity was heading towards catastrophe and explained his dismay that scientists thought ‘the world could make itself without design, purpose, skill or intelligence’. In the plays that followed, Shaw argued that evolutionary change occurred because it was needed, or wanted, just as Lamarck had suggested 100 years before. He still dismissed Darwin’s theory, and Weismann’s more recent demonstration that genetic information needed sexual reproduction to pass from one generation to another. It followed that he also ridiculed those who dismissed the concept of a utopia.

Much to Shaw’s dismay, most Bloomsbury intellectuals, including Lankester, Fry and the Huxleys, accepted the argument that inheritance worked by the transfer of information from the genetic material to protein, not the reverse. The latter was the domain of Shaw, who persisted with eccentric support for the untestable, on the basis of what he called old-fashioned common sense. This made him many enemies, and the Bloomsbury insiders kept him at a distance, especially at informal meetings in their homes. That was where he liked to provoke people with conversation that roamed across disciplinary boundaries between the arts, the sciences and, of course, politics.
Aware that London had no social refuge for their well-connected socialist friends, Leonard and Virginia Woolf agreed to start a new club where young men and women could meet and talk about the arts and sciences. The first members included the archaeologist V. Gordon Childe and the writers Rose Macaulay and Aldous Huxley. It was called the 1917 Club and was at 4 Gerrard Street in Soho, close to Bloomsbury and even more bohemian. Through the early 1920s, many well-known Fabians joined the conversations: Wells, Ramsay MacDonald and even Shaw. James and Alix Strachey were also frequent visitors. Unusually for those days, there were about as many women as men, and science was represented almost as strongly as the arts.

The Woolfs also liked Soho, which was only a ten-minute walk from Gordon and Fitzroy Squares, where Keynes, Lytton Strachey and Virginia’s sister still lived. These people were all too aware that the war had taken so much of what was good in life, leaving many in grief and despair. They believed that everyone now had to turn their attention to new growth. In 1919, Lytton Strachey feared that ‘the whole square will become a sort of college’; the young survivors were realising only slowly that chemistry and physiology were needed for growth, that food was required for organisms to digest and come back to rebuilding life. The war had put stress on many equally necessary rhythms of daily life. It took some time for necessary routines to be re-established and settle down. Many in the group were drawn to the consoling elements of G. E. Moore’s philosophy, especially Keynes and E. M. Forster, who continued to be defensive of Moore’s values, particularly his candour, humour and rigour.

The Bloomsbury artists, with their Cambridge origins and their comfortable outlook on life, were distinct from the middle-class Fabians. They inspired other Apostles who settled in Bloomsbury after the war to set up another group, more elite than the membership of the 1917 Club. This second club was established in 1920 and came to be called the Memoir Club. It met only twice a year, and the members dined at one another’s homes. Appointed speakers read from notes telling stories of their relationships, ideologies and attitudes to other people. In keeping with their rule of confidentiality, most records of the presentations and discussions were destroyed, but some notes survive, for instance, Keynes’s frank accounts of his role at the Versailles peace talks in 1919.

Science was regularly on the agenda at the Memoir Club. One evening, the club met at Roger Fry’s flat opposite Russell Square Station. Virginia Woolf’s diary tells how Fry offered them ‘overdone and tough duck’. Then he told them to sit on the floor between the stacks of unhung
pictures. Scattered all over the floor and tables were brushes and unfinished paintings, ink bottles and manuscripts, dirty coffee cups and saucers. They discussed the relationship of mystery to science. Virginia spoke for modern science, accepting ‘the complete relativity of everything to human nature and the difficulty so many people had of talking at all about things in themselves’, to which Fry argued that ‘science can only begin when you accept mystery and then seek to clear it up. Within every new avenue that’s cleaned up you get a fresh vista into the world beyond.’

These were the outlines of ideas that were to be formalised thirty years later by the philosopher Karl Popper. Only two years after the war, Fry was still troubled by the mystery surrounding science, and he worried that it was holding back a developing confidence in science: ‘We still have the method of science but we are losing for the time its faith.’ He was talking about himself and his friends, members of the establishment who were only slowly coming to terms with their different place in the new society.

It was not yet clear what the legacy of the Bloomsbury artists was to be. There were some very good books and paintings, even sculptures and fine pieces of furniture. As well as being the end of the Victorian age, many of the art pieces were expressions of anger at the war and its losses. Fry, Lytton Strachey and Virginia Woolf all dipped their toes into the scientific waters and then withdrew. They were confused about where science would take them, and unsure that they could afford to make a living as scientists. Was it partly as a result of this fear that they behaved in such a self-sufficient manner and did not look very far outside their own society?

The fear was not of science itself but of its attendant baggage, such as a meritocracy, which threatened their social position. Woolf, in particular, strongly disliked the new liberal middle class: she feared they would displace much of what she held dear with a monstrous mediocrity, a mass-produced materialism that challenged human decency. So throughout the 1920s she set up a set of written attacks on popular writers such as H. G. Wells, Arnold Bennett and John Galsworthy, and persuaded her like-minded friends, such as T. S. Eliot and D. H. Lawrence, to do the same. Woolf’s own manifesto on this position was her twenty-four-page essay read to the Heretics Society in Cambridge. More recently, a storm from very different contrasts blows up in Edward Albee’s 1962 ‘Who’s Afraid of Virginia Woolf?’
To everyone in Europe, and to many beyond, the war had emphasised the fragility of human life and showed that science could so easily influence its quality, one way and the other. For many, that meant support for society to control quality by a programme of eugenics. Already in Bloomsbury, the Eugenics Education Society was well established, and there was the political will to legislate, but science was moving on quickly and its social mission was spreading even more strongly in North America and Germany. But where could a eugenic programme of applied projects even begin?

During the 1920s, one of the few important breakthroughs in biology was an understanding of the pace of evolution. It was unusual for biological research to have an impact on a contemporary political issue. Questions of that sort niggled at the minds of politicians and legislators because unstable foundations for any new laws about eugenics did not augur well for easy enforcement. For example, there was disagreement about whether evolution occurred quickly by mutations or through slower, more continuous variation. The matter was briefly resolved by the leaders of a new specialism, population genetics: Ronald Fisher and J. B. S. Haldane. Their mathematics showed that small mutations were more effective than big ones in bringing about useful change within a population. All that was needed to explain that change were small alternative forms of the same gene. It followed from this that the supporters of Mendel were right in assuming that Darwinism needed a particulate mechanism for inheritance, that mutations took place within the cell and that selection happened outside each organism, in populations and their environment. But legislation on what might come from this was going to be difficult to draft, let alone implement.

But Fisher’s work in this area did refine the way people thought about earlier theories. The cleric and economist Thomas Robert Malthus had argued a hundred years earlier that numbers of individuals within a species peaked before falling to extinction, but no one knew why or how. Now Fisher made a strong link between biology and physics in order to suggest that a large population contained more variation and so it had a larger chance of survival. The limit to its growth was usually provided by the amount of food available in a particular environment. But there were other causes of extinction outside Fisher’s expertise. Haldane, for example, followed Darwin’s view that evolutionary change could also happen by means other than natural selection. Haldane urged people to keep an open mind. For example, he had plenty of evidence that degeneration is a more common
phenomenon than progress and is usually hard to spot because it also leads to extinction. There was also hybridisation and some large mutations that could make new species; from the fossil record, when we find one or two lines leading to extinction, dozens of others can lead into fresh directions.

Fisher’s and Haldane’s efforts were making some progress in explaining evolution even though its molecular mechanisms were not to be discovered until the 1960s. Nevertheless, very different attitudes to genetics experiments were developing after the war. These were set out by Ronald Fisher in 1930. His book *The Genetical Theory of Natural Selection* described how some genes are dominant and others recessive. It reported on many experiments of plant breeding in which statistical analysis of the characters from particular genes showed that they controlled characters such as petal colour and leaf shape. It was his first summary of this view of evolution and was to be followed through the next decade with more compositions by other authors with the same emphasis on the importance of mutations.

As a statistician Fisher argued that the pattern of social degradation in the years of economic depression arose from stress in the birth rate, not the death rate. He contended that, as a consequence, eugenic control needed to be made at birth. This was where his politics fixed to his biology; this was also where his reputation was buried. He frightened off supporters with propositions for extreme controls on births. Wanting to be his own master after the First World War, he rejected a suggestion from Pearson that they work together. He quickly found his own job at the Rothamsted Experimental Station near St Albans.

Fisher and Haldane came from similar backgrounds, were a similar age, attended similar schools, both went to Oxbridge, and both ended up in the late 1920s and early 1930s working with biometry at UCL. Despite these similarities, they argued incessantly, pursued different paths and held different ideas about politics and religion. The former was a right-wing Christian and the latter an atheist far to the left. Fisher saw God as a benign casino owner with a ‘design by chance’ policy, challenging humanity to work together by self-discipline to save the planet. Such a view made it easy to explain natural selection using probability theory and enabled him to apply self-discipline to fascist targets. This meant that Fisher was increasingly ignored through the 1930s and was only able to work on a few small projects at Rothamsted.

The last hundred pages of Fisher’s *Genetical Theory of Natural Selection* was less about the detail of that title and more about selective breeding to ‘improve human stock’. The chapter headings summarised
the main topics: Man and Society, Inheritance of Human Fertility, Reproduction in Relation to Social Class, The Social Selection of Fertility. Marie Stopes had also joined the Eugenics Education Society in 1912 and argued against one of the best known opponents of eugenics, Halliday Sutherland. He was a Marylebone physician and held open-air clinics at the Regent’s Park bandstand especially to diagnose tuberculosis. Stopes sued Sutherland in 1923, and he won £100 damages. Six years later, he sued Stopes about an article in Birth Control News. That time, he lost.

Stopes wrote in the final chapter of her 1920 book Radiant Motherhood about her ‘ardent dream’ that science could offer different clinical techniques to reduce the size of families. One of her admirers up in Cambridge was William Bateson whose ideas about the role of single genes were becoming widely accepted. Particular illnesses and structural traits were being associated with particular genes. The work was being done on experimental animals and plants, but some hoped to experiment more adventurously. Bateson was becoming worried that his friend Erwin Baur, the German psychiatrist, was working in a society that was persuading him to try out some of the tests on humans.

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As he grew into old age, Lankester’s moods did not improve, but at least his many bad-tempered exchanges were still punctuated with an occasional brilliant insight. He was infuriated that the Kaiser Wilhelm was allowed to abdicate the Prussian throne and go to the Netherlands in exile. Lankester wrote to The Times that it was ‘a perpetuation of the privilege accorded to one another by royal criminals, however great their responsibility for useless bloodshed’. Things were made more difficult by Lankester’s failing health, and, though he began to moderate his drinking and smoking, he found it hard to walk and became more reliant on his housekeeper in Chelsea, Miss Pearson. Miss Pearson’s job was not easy. Lankester was a difficult man who lost his temper at the slightest disturbance. He lived in the large first-floor rooms and wrote at his big desk with a heavy paper-weight shaped like a gorilla’s foot, while on the mantelpiece behind was a picture of his old friend Anna Pavlova. If a book or scientific manuscript were moved from where he left it, all hell broke loose.

Some of Lankester’s unpleasant behaviour was a way of hiding his anger about the war, a common reaction then in men of his age. One sure way of making him lose his temper was to cite new examples of spiritualism and the occult. When a new book History of Spiritualism was published in 1926, Lankester wrote a vicious criticism in the Sunday Times.
It didn’t matter to him that the author was Arthur Conan Doyle, his old friend from Sussex who had been involved with the Piltdown fossils. To Lankester, the book was full of unscientific rubbish, misleading the public into false ideas. Then there was another friend, Sir Oliver Lodge, a physicist who also practised ‘psychic science’. Lankester would say to Lodge, ‘You old charlatan, how are the spooks?’ Like fellow Ghost Club member, Arthur Conan Doyle, Lodge had lost a son in the war and turned to spiritualism soon after.

In the 1920s, Lankester wrote several important and brilliant summaries of the state of progress in biology. These showed that he was keeping up to date with the main developments: dating historical events by changes in tree-ring growth, photosynthesis, victory for the Creationists at the Scopes trial in Tennessee, Alexander Fleming’s first recognition of penicillin. These outlines were followed by more complaints about the biological activities in universities in post-war society. In a letter to H. G. Wells, he wrote, ‘The present biological activities in universities are reduced to rather feeble laboratory notebooks with curves and mathematical swagger about rates of movement, leading to nothing. No binding theory.’ As usual, he was right. In the 1920s, there was nothing holding the biological disciplines together, no overriding theory to test or goal to work for. Biology had become fragmented and specialised, and Lankester lamented this.

After the war, Wells was one of the people Lankester saw regularly. Lankester was too ill to attend the funeral of the biologist Jane Wells in 1927, so he grieved her early death alone. In contrast to the funerals of Charles Darwin and Karl Marx almost fifty years earlier, those who attended Jane Wells’s funeral showed a broad mix of social class and cultures. So much had happened socially and politically, but the understanding of evolutionary biology was not much different. Shaw wore an orange handkerchief, Wells a blue overcoat. Virginia Woolf wrote in her diary, ‘Poor Jane. It was desperate to see what a dowdy shabby imperfect lot we looked.’

By the 1920s, there were several Bloomsbury artists and scientists working on projects that required them to think not just about abstract science but science in society and the science of society. Arthur Tansley, for instance, was proving in his work on the Norfolk coastal dunes and marshes that large systems in nature relied on interaction and cooperation. He was also thought to be helping the psychoanalysts Ernest Jones and Sigmund Freud to establish scientific principles to their methods. Marie Stopes was applying birth-control methods to help social hardship. Aldous Huxley talked about the political difficulties of looking after
the environment. J. B. S. Haldane was advising the Russian Academy of Sciences on how to grow more crops.

Meanwhile, Lankester’s health deteriorated. One of his last recorded comments was that ‘I forget even the most interesting things for want of hearing them spoken of.’ He said this to a visitor from the British Museum who talked with him about freshwater medusae for over an hour. He died on 15 May 1929 at the age of eighty-two. The funeral was held at Saint Martin’s in the Fields where the congregation sang ‘Abide with Me’ and listened to Chopin’s Marche Funèbre.

An epitaph to Ray Lankester’s life and work came in the form of his friendship with H. G. and Jane Wells. It had been the source of great satisfaction to Lankester to encourage the career of the Wells’s zoologist son, George Philip (known as Gip). Lankester had met Gip when he visited the Wells’s home in Great Dunmow. They shared an interest in the local natural history, the invertebrates in particular. Gip succeeded in his more formal studies of biology where his father had failed. Not only had both of his parents been professional teachers of biology, they both doted on their first son and gave his education high priority. With a first-class degree in zoology from Cambridge in 1924, Gip went on to conduct research on lugworms at the Marine Biology Research Station in Plymouth, the station that Lankester had founded in the 1880s.

Gip proved himself a promising young scientist and gained an assistantship in zoology at UCL in 1928. There again he followed Lankester with a charismatic teaching style and personable role as a laboratory demonstrator. His particular interest was to link the results from physiology experiments in the laboratories of Gower Street with animal life in the environment around Plymouth. These kinds of comparisons had never been made before. They linked structure to function, behaviour to environment: a central essence of the evolutionary process. When his father persuaded him to join Julian Huxley in writing the Science of Life, it put a stop to his experiments. He understood that this was an unusual opportunity to form a working relationship with one of the leading biologists. A strong bond developed between the two men. Science of Life became a world standard text from 1931, when it was first published as a single volume, until the 1950s. It was free of jargon, so much so that it told of how green plants synthesise sugars and other energy from sunlight: without mentioning the word ‘photosynthesis’. In the same vein, it described coal and oil as ‘bottles of sunshine’, one of the first public warnings that using fossil fuels is bad for the planet.

Gip Wells stayed on at UCL until the 1960s, enhancing his reputation as a skilled teacher and science populariser, and was elected to the
Royal Society in 1955. A few weeks before he died in 1985 he attended a Royal Society soirée, carrying a gold-mounted walking stick, inherited from his father. It was the same stick that had been given to H. G. Wells by Ray Lankester.

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In 1927, two years after his appointment as professor of zoology at King’s College, Julian Huxley began to contribute to *Science of Life*. Under pressure from Wells to increase his work for the project, Huxley did what few newly appointed professors ever do: he resigned. He was never to return to academic life. He preferred the independence of a freelance writer’s life. He decided working in a group for less money was preferable to institutionalised academia. Wells strongly approved of his co-author’s commitment to their encyclopaedia project, not least because it freed him to devote valuable time to other business.

Huxley now had the freedom to concentrate on another project, that of bringing together all the important new ideas about how evolution worked. There was a vast amount of work going on in such fields as genetics and biochemistry. New ways of dating geological processes enlivened palaeontology. Population genetics was just beginning. Numerous examples of evolution actually happening were crying out for comparison with one another and with changing environments. Julian Huxley was just the man to join these ideas together into a meaningful whole, and he started to add his own creative twists to how this might be done.

After a year of writing on the first project, and still being pushed by H. G. Wells to finish his contributions, Julian Huxley and his French wife Juliette decided to leave London for the long winter of 1928 and stay at the Swiss skiing resort of Les Diablerets. There they rented a chalet with Aldous Huxley and his wife Maria. Aldous also had a deadline to finish *Point Counter Point*. To add to the literary atmosphere at their remote Alpine encampment, the Huxleys’ friends D. H. and Frieda Lawrence had a chalet nearby, where he was busy composing the final draft of *Lady Chatterley’s Lover*.

The completion of these three works, by six good friends together at the same retreat, could not have been more appropriate and timely. In the mountains they were each trying to perceive the physical influences that comprised life, the basic biochemistry and physiology over which they had no control. They were trying to describe the interaction of these things and to bring them all together. Emotionally and intellectually exhausted by this work during the day, each evening they took turns to
read aloud to one another and finished the whole of *The Pickwick Papers*. Julian saw it as ‘a happy time, the white landscape soothing and protective, and much work was done’.12

According to contemporary accounts, the Huxleys enjoyed talking about their different evolutionary and physiological ideas, how species can thrive in extreme environments and how humankind developed genetically. These discussions infuriated Lawrence who still insisted that the more power that was exercised by ‘the dark loins of man’ the greater would be the freedom for our instincts and our intuitions. Julian Huxley saw evolution as a natural process, an opportunity for the fittest. Lawrence saw it as a challenge for the individual, for whom such a utopia was a singular and physical climax. For him, it was full of passion and desire, like the moon, ‘a globe of dynamic substance, like radium or phosphorus, coagulated upon a vivid pole of energy’.13 Aldous Huxley was infuriated by Lawrence’s Bergson-like thinking, which went against all the latest evidence for natural selection. Aware of Lawrence’s obstinacy, the Huxleys chose not to argue with him, for fear of disturbing the peace.

The group walked and skied in the mountainous forests, overcome by the silence and timelessness of their alpine retreat. ‘She drips herself with water’ wrote Lawrence in his poem *Gloire de Dijon*. Here was life in an extreme environment, and here were six people sharing intimate feelings, expressing themselves at the cutting edge of their varied expertise and interests, the Huxleys with their humanism, Lawrence with his scepticism about science and his trust in nature. Lawrence summed up their arguments with a poem he called ‘Relativity’:

I like relativity and quantum theories  
because I don’t understand them  
and they make me feel as if space shifted about like a swan that  
can’t settle,  
refusing to sit still and be measured;  
and as if the atom were an impulsive thing  
always changing its mind.14

These winter dialogues foreshadowed many of the new ideas that were to trouble intellectuals over the next few years. The Huxley brothers had a broad vision of biology and its hierarchy of scale: organs, tissues, cells, chromosomes and molecules. They understood that somewhere within this array each organism had a particular sense of self, allowing different parts of the hierarchy to have special responses both inwards and outwards to other parts. They disagreed with Lawrence about what is
uniquely human and what is evidence for universal biological instinct. This had been at the centre of their alpine conversations, and showed up in many ways in their work. Despite the differences, a strong friendship developed between Lawrence and Aldous Huxley.

Having seen so much social change and human conflict, many in Bloomsbury strived to understand the post-war physical and psychological debris. Aldous Huxley, Lawrence and Virginia Woolf turned their attention to those survivors of the war who were trying to work through their losses. One of the most angry of the books from the time was Aldous Huxley’s *Brave New World*, published in 1932. It was well received by both literary and scientific critics. Pointing to the authoritarian regimes of Soviet Russia and Nazi Germany, the novel warned of a totalitarian future. Huxley’s imagined future was frightening because it was so credible. He made sure that the science that underpinned this brave new world, with its biological mechanisms and eugenic controls, was possible as well as plausible.

In the same year, Julian Huxley was appointed secretary of the Zoological Society in The Regent’s Park. He went on to speculate about human responsibility for the environment and how one-world humanism might help to protect the environment. Both Huxleys expected that science would provide the key to ending the economic depression of the early 1930s. They thought it was up to them and their friends to advise the politicians on how to solve the problems created by the crisis.

As a first step, Gip Wells and the Huxleys invited some of their friends to form a small dining club. They called this club the Tots and Quots, after *quot hominei, tot sententiae*: so many men, so many opinions. Tots and Quots met for the first time in 1931 at Pagani’s restaurant in Great Portland Street. The group included Solly Zuckerman, a young research assistant from the zoo who was involved in investigating racial differences within monkeys, apes and humans; another zoologist, J. Z. Young; the geneticists Lionel Penrose, Lancelot Hogben, Joseph Needham and J. B. S. Haldane; the crystallographer, J. D. Bernal; and the economist, Hugh Gaitskell.

They met in a room on the second floor of the restaurant with its ruby velvet curtains and mantel drapes. On the wall were brown squares of paper with drawings and writing protected by glass: songs, praises to the chef and other remarks by happy patrons. From their meetings in that Bloomsbury restaurant emerged not the expected political manifesto but an important book about evolutionary mechanisms, Julian Huxley’s *Evolution: The Modern Synthesis*, published in 1942. The preface acknowledged the members of that group for their
part in bringing together so many concepts about evolution from different disciplines, leading to the synthesis itself. The book brought together elements from anatomy, genetics, physiology, ecology and palaeontology and discussed how all of these disciplines have a bearing on adaptation and evolution by natural selection. It is generally regarded as the most important piece of work in biology of the first half of the twentieth century.

More advances in evolutionary thought came in 1944 when the Nobel Laureate in Physics Erwin Schrödinger gave a series of talks asking ‘What Is Life?’ In these talks Schrödinger predicted some of the forthcoming prospects of molecular biology. A few years later, in Drury Lane – one of the streets that Virginia Woolf used to walk from Bloomsbury to Soho – Maurice Wilkins and Rosalind Franklin took the famous x-ray photograph of crystalline DNA. It led to a new battle between Bloomsbury and Cambridge scientists, and once again ended controversially with James Watson and Francis Crick claiming victory with their 1953 *Nature* paper. It described the double helix structure of the DNA molecule. It was a triumph for the meritocracy and for Darwinism.

Most Bloomsbury biologists and artists were not the professional specialists we know today. They worked for a senior professor, observing, interpreting and describing, with words, drawings and experiments, but rarely with measurements and calculations. After the First World War, they did become more experimental and quantitative, and they were recruited by a growing meritocracy to have a profession with a career. But it was a few decades before another major switch in the way scientists work: when they began to falsify theories rather than prove them to be correct.

These Bloomsbury pioneers dominated the intellectual life of London for sixty years, coming between the gentlemen scientists, with laboratories in their own homes, and the competitive system we know today. They were pluralists with more ambition for society than for themselves and with much less attention to detail than is given today. That was because they were opening the fundamentals of so much knowledge, shallow at first and not deepening until they had more confidence and more sophisticated methods. They were professional pioneers through an age when science and society were very different shapes than they are now.