

Division and realignment in Europe, 1945 - 1992 | Sample Answer

During the period 1945-1992 how significant were developments in 1 or more of the following; advances in biological sciences, nuclear power, the computer. (2014)

The development in biological sciences since 1945 raised hopes that scientific research would provide many “magic bullet” solutions to problems or diseases that had previously been out of reach. Its impact of advances was felt in medicine, agriculture and industry. In the 1950’s governments began to establish a ministry of scientific research, i.e. France in 1958. Advances in biological sciences were escalated forward by the discovery of the structure of DNA molecules in 1953. The new and exciting areas of molecular biology, genetics and DNA technology have substantially expanded our knowledge about living things. As for the nuclear power, Enrico Fermi and Italian physicist discovered its potential in 1934, from the 1940s during WWII it was primarily used by the US for military use.

In 1953 James Watson and Francis Crick discovered the structure of DNA and realised that it stored large amounts of genetic information in a coded form. This was despite the fact that Rosalind Franklin had done most of the work and her working partner Wilkins showed her findings to Watson, who used her studies and cracked the code. In 1984 Alec Jeffreys discovered that each person had a unique pattern of DNA and this allowed police forces, in 1987 to begin using DNA testing on blood, skin, hair or saliva to convict criminals. DNA was further used by the police for genetic fingerprinting. In 1988 Colin Pitchfork received a life

sentence in England For murdering a schoolgirl he was the first murder to be convinced by DNA. Additionally in the legal system DNA tests can settle who a child's biological parents were and the examination of DNA in old skeletons has overturned many accepted truths. The discovery of DNA has certainly assisted the legal and police departments worldwide.

The discovery of DNA gave rise to genetic engineering in animals and in fruit and vegetables. The process of genetic engineering in crops is done by introducing the gene of one organism into another. It can produce crops more resistant to attacks from insects and disease. They could also cope better in the climates of the developing world. It has significantly increased food supply and in 1922 a UN report stated that genetic engineering could ultimately cut down on world hunger and deal with pollution caused by chemical waste. In animal breeding, the use of genetic screening and artificial insemination led to the creation of stronger animal breeds. In 1996 Scotland was the very first country to clone an animal, a sheep named Dolly. In 1990 in the US, a four-year-old named DeSilva became the first patient to undergo gene therapy, where white blood cells were removed from another body, modified and replaced into DeSilva's body. The introduction of genetic engineering has proved to be a major success for humankind

After the year 1945, many advances were made in the management of pregnancy and childbirth thanks to the improvements in biological science. Such advances include the ability to induce labour and the use of epidurals to ease the pain of childbirth. The chance of infant survival also improved as medical knowledge developed, especially in work done to increase the survival rate of premature babies. By 1990 in Britain the infant mortality rate had fallen to 3 per 1,000 live births compared to 40% per 1,000 live births in 1945. IVF was developed by Patrick Steptoe and it allowed for the creation of embryos outside the womb for later implantation. This led to the birth of the first test-tube baby, Louise Brown, in 1978. This scientific breakthrough gave hope to thousands of people who wanted children but had difficulties conceiving. Initially, it only had a 10% success rate but with time and developments, it now has a 75%.

Significant advances in medicine continued, especially in surgery, infections and disease. In the 1940s kidney dialysis machines were developed in Holland. In 1954 the first-ever kidney transplant was carried out in Boston, lung and heart transplants followed the years after. In 1959 heart pacemakers were created in Sweden and in the 1960s hip replacements were developed in Manchester. The success that followed these inventions were dependent on better drugs to help the body cope. These advances extended the lives of many allowing our population to live extensively longer. Vaccines were developed to eliminate diseases such as Polio and Tuberculosis. However, these advances posed ethical and moral problems for scientists. Some people feared how the technology would be used, such as the fear that people could produce “designer babies”, with parents selecting sex, hair colour and other features to create a “perfect” child. But most importantly, because of these new medical treatments and greater access to them, people are living longer, healthier and more productive.

One of the results of the post-war economic boom was that there was a high demand for more electricity, which ultimately led to an increase in the use of nuclear energy. It was seen as an alternative to fossil fuels and cheaper to produce. In 1979 Britain had 33 nuclear power stations. By 1990 nuclear energy provided 17% of the world's electricity. The 1973 oil crisis made nuclear power even more attractive as the West released its over-reliance on energy resources from states outside Europe. However, by the 1970's the problems associated with nuclear energy began to present. In 1986, a reactor exploded in Chernobyl, Soviet Union. The fire at the factory caused the death of 31 people and injured 200 but the long term effects on the radiation in the air were far worse. Over ½ a million people in Ukraine suffered from radiation sickness with more than 6,000 children and adolescents developing thyroid cancer from its exposure. The extents to which the radiation spread was colossal, they were felt in Scotland and Ireland. It is expected that radioactive decay will remain for 20,000 years. Fears over the Chernobyl disaster as well as other issues led to the widespread destruction of nuclear power plants.

Other uses of nuclear power were the development of nuclear weapons. The development of atomic bombs was one of the main causes of the Cold War. It led to an arms race between the USA and USSR, both of which also developed more powerful hydrogen bombs. In November 1952 the US tested its hydrogen bomb on the Marshall Islands in the Pacific Ocean. In August 1953 the Russians tested their bombs in northeast Kazakhstan. By the mid-1950s there were so many nuclear weapons on both sides that any war between the superpowers could lead to the destruction of the human race. ICBMs were developed that could be fired from the home of one superpower and hit any target in the other. The existence of these weapons significantly increased tensions in Europe.

In conclusion, the advancements in medicine brought huge benefits to humans, it allowed people to live longer, it helped doctors to repair broken bodies and organs and prevented diseases before they could even develop. However, on the other hand, the development in nuclear power did offer people cheap, limitless energy but at a huge price to human safety. Technological change posed important ethical questions around privacy, the power of the government and the nature of human life.