1336/02A

Edexcel GCSE

History Syllabus C

Schools History Project

Specimen Paper 2A: Medicine

Sources Booklet

Turn over

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Success through qualifications

Source A A photograph from the Encarta encyclopaedia. In Encarta, it has the following caption:

Discovery of Penicillin

The research of Alexander Fleming in 1928 led to the discovery of penicillin, an important antibiotic. Penicillin acts by killing bacteria directly or by inhibiting their growth.

Source B A letter from Sir Almroth Wright published in *The Times* newspaper, 30 August 1942. Sir Almroth was head of the department at St Mary's Hospital in which Fleming worked.

In your article on penicillin yesterday, you did not give the title of discoverer of penicillin. The credit should be given to Professor Alexander Fleming of this research laboratory. He is the discoverer of penicillin. He made the original suggestion that this substance might prove to have important uses in medicine.

Source C From a Social and Economic History of Britain by John Robottom, 1986.

In the early twentieth century, a German scientist discovered that certain dyes could be used as medical drugs to cure diseases. By the 1930s, scientists in several countries had found several sulpha drugs, the sulphonamides. But each sulphonamide usually worked for only one type of disease. The key to making a drug to cure most illnesses lay hidden in Alexander Fleming's notebooks from 1928 to 1938.

Source D A chart showing the results of an experiment in a research laboratory in Oxford. Howard Florey infected eight mice with the streptococcus* bacterium. Four of the mice were treated with penicillin, four of the mice were not. The chart shows how long each of the mice survived.

MICE NOT TREATED WITH PENICILLIN		
		Length of survival
Mouse 1	very sick 7 hours after infection	12 hours
Mouse 2	very sick 7 hours after infection	14 hours
Mouse 3	very sick 7 hours after infection	14 hours
Mouse 4	very sick 7 hours after infection	16 hours

MICE TREATED WITH PENICILLIN			
	Amount of penicillin given	Time after infection the dose was given	Length of survival
Mouse 5	10mg**	after 2 hrs	4 days
Mouse 6	10mg	after 2 hrs	6 days
Mouse 7	5 mg 5 mg 5 mg 5 mg 5 mg	after 2 hrs after 4 hrs after 6 hrs after 8 hrs after 10 hrs	13 days
Mouse 8	5 mg 5 mg 5 mg 5 mg 5 mg	after 2 hrs after 4 hrs after 6 hrs after 8 hrs after 10 hrs	6 weeks and more

(* streptococcus = a deadly germ which often infected minor wounds)
(** mg = milligrams of penicillin)

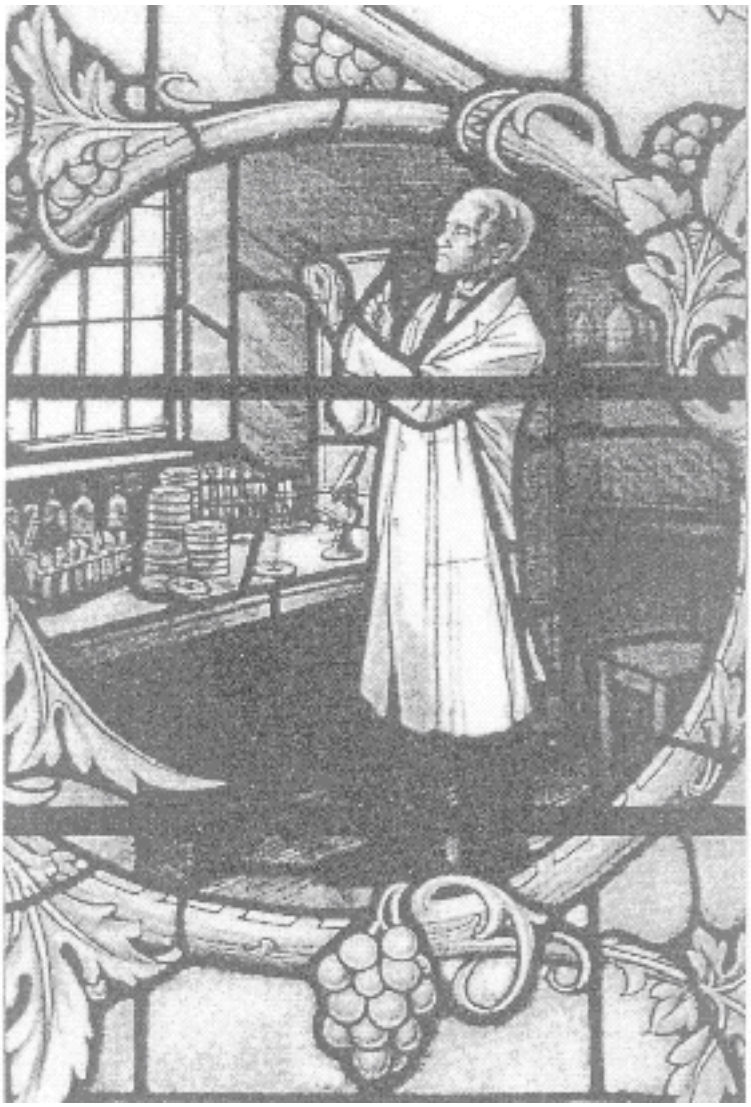
Source E A Photograph showing the methods used in the early days of large-scale penicillin manufacturein the USA in the 1940s. These were the same as the methods used by the laboratory team at Oxford, but on a much larger scale. Thousands of containers were used.

Source F From a letter from Howard Florey to the Medical Research Council, 19 June 1944.

We have been irritated to see the campaign carried on from St Mary's to credit Fleming with all the work done here at Oxford. He is being put over as "the discoverer of penicillin" (which is true). But it is also suggested that he did all the work leading to the discovery of its chemotherapeutic* uses (which is not true). My colleagues here feel that things are going much too far. They are upset at seeing so much of their own work going to glorify or even financially enrich someone else.

(*chemotherapeutic = treatment of disease using chemicals.)

Source G Part of stained glass window made in 1952 for the church near St Mary's Hospital in London. The church guidebook says "Sir Alexander Fleming who discovered penicillin in 1928 at St Mary's Hospital."



Source H From an article about penicillin in *Time* magazine, published in the USA, May 1944.

The man who made possible this relief of human suffering is Alexander Fleming. He is a short, quiet Scot with somewhat dreamy blue eyes. It will be hard to say who the great men of the twentieth century will be, but Dr Alexander Fleming will certainly be one of them.

Penicillin is already big business, yet Dr Fleming (who discovered it) and Dr Florey (who made it tick*) have got praise out of it but no money.

(*made it tick = made it useful in practice.)

Source I From a GCSE History text book, *A History of Medicine*, published in 1988.

A Scottish doctor called Alexander Fleming had seen hundreds of cases of soldiers dying in the First World War after minor wounds became infected. He made up his mind to stop these deaths from occurring in future.

After the First World War, Fleming worked in a hospital laboratory where he studied the sorts of germs that had caused the battlefield deaths. One day Fleming found that some mould was growing in one of the dishes and was killing the germs. He also found that preparations made from this mould killed most sorts of germs in the human body. This was the basis of a new drug know as penicillin. By the end of 1945, it had saved the lives of thousands of soldiers in the Second World War.

Source J From the book *Science*: *Invention and Discovery in the 20th Century*, by Trevor Williams, 1990.

In 1928, Alexander Fleming noticed that around the mould the bacteria had been destroyed. However, such behaviour by micro-organisms had been well-known since the late nineteenth century. The word "antibiosis" was first used in 1899 to describe this action.

There was no reason to suppose that this new example was different from others already known.

No further research on penicillin of any consequence was done until 1939. In that year, Howard Florey and Ernst Chain began a general study of anti-biosis.

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