

November 29th

Memory verse

These all died in faith,
not having received the promises,
but having seen them afar off,
and were persuaded of them,
and embraced them,
and confessed
that they were strangers and pilgrims on the earth. Hebrews 11:13

In this verse the writer is talking about the saints of the Old Testament times, who died **before** Jesus came into the world to die for sinners. It explains how they saw that event in the future in the same way that Christians now see it in the past – by faith. We, like them, are “strangers and pilgrims on the earth”. Very small children can learn the words in bold and understand that Christians are **strangers** because they do not belong here and **pilgrims** because they are travelling to heaven.

Something to read from science history

Electrical engineer, physicist and inventor Sir Ambrose Fleming (1849–1945) was born on 29th November. Known as the “father of electronics”, Fleming was the inventor of the thermionic valve or diode rectifier. He also created the “Left Hand Rule” mnemonic for relating the directions of motion, current and magnetic field for a motor – of which more below.



Fleming's invention, the diode, became a key component of electronic circuits. Diodes were crucial to the development of radio, television, radar, sound recording and reproduction, long-distance telephone networks, and both analogue and early digital computers. We can hardly

imagine living in a world without such equipment and it is Sir Ambrose Fleming that we have to thank!¹



Fleming was a Christian. He was very concerned about the prevalence of belief in that very unscientific idea: Evolution. In 1932 he helped to found the Evolution Protest Movement which pioneered the critical examination of evolutionary theory. In 1935 he wrote:

To anyone accustomed to or trained in the exact reasoning and strict definitions required in mathematics or physics, it is a matter for surprise to notice the loose, inconclusive arguments and ill-defined terms employed by some Darwinian anthropologists. For example, there is not a shadow of proof that the four fragments of bone comprising the so-called *Pithecanthropus erectus*² belonged to one individual or were deposited in the ground at the same time. But all difficulties are covered up by the adoption of this grand name, which takes for granted the very thing required to be proved. If any similar shaky argument was put forward in a Court of Law, say in a criminal trial, it would be dismissed as inadequate without any hesitation by judge and jury. Nevertheless, the anthropologists venture boldly on this thin ice and find no difficulty in making it the basis of an argument for the evolutionary origin of Man. ... it is evident that the Darwinian anthropologists, urged by their

¹ This short University College London video gives a good summary of his work in electronics: <https://www.youtube.com/watch?v=txCRJ5AUEgI&t=13s> it also contains footage of Fleming himself, as an old man, lecturing.

² So-called “Java Man.”

fundamental **postulate** that evolution must be true, are tempted to give quite undue weight to isolated specimens. I submit that we cannot consider we have any serious proof of the evolution of modern man from an animal stock, from which also are derived the anthropoid apes, in the few scattered fragments of skeletons which have been named the Java, Heidelberg and Piltdown³ “men,” especially as the real nature of these fragments is still questioned by competent naturalists.... The difficulty in discussions with the **advocates** of Evolutionary theory is that they do not give reasoned replies to the objections raised, but for the most part content themselves with **asserting** ignorance on the part of the **objectors** or else the **uniform acceptance** of the theory which is not entirely correct.

The last paragraph of this extract is particularly interesting and is definitely still the case today. Do you understand what it means? Use a dictionary to help you find out what the **highlighted** words mean. Perhaps you could write a translation of Sir Ambrose's words into more modern English.

Having read this quotation from Sir Ambrose Fleming about the evolution of man it may come as a surprise to know that he (at least at some point in his life) considered that remains of Neanderthal people that had been discovered were evidence of a pre-Adamic race of humans! Like many others of his day, he had difficulty accepting the idea that all human beings were descended from a single ancestor and were therefore all of one race. This distorted view wreaks havoc with the book of Genesis and does not fit with the scientific facts – or even the theory of evolution either. It led Fleming to the false belief that marriage between different “races” was wrong. At this period opponents of evolutionary theory had a very mixed set of ideas, some of which were not very biblical. Thankfully today Christians who believe the Bible means what it says – in Genesis and elsewhere – all agree that Adam was the first human being and we are therefore all one race. Perhaps Fleming had abandoned his wrong-headed notions by 1935 when he wrote the quotation above – it certainly sounds like it!

Sir Ambrose Fleming was educated at home by his mother until he was ten. They were not a wealthy family and her two text books were the Bible and a book called *The Child's Guide to Knowledge*. This was a set of questions and answers designed to be memorised. The book begins:

What is the world?
The earth we live on.
Who made it?
The Great and Good God.

And proceeds through *four hundred and twenty eight pages* of information about food, agriculture, birds, fish, animals,

What is the lamprey?
A small eel-shaped fish much esteemed by epicures,
particularly when potted or stewed.

Taking in history and geography on the way,

Which of our kings died from eating too heartily of them?

Henry the First.

What river is celebrated for them?

The Severn;

and it was the custom of the city of Gloucester
to present to the sovereign at Christmas a lamprey pie with a raised crust.

3 See the lessons for 24th May.

until reaching, on page 428:

What was the origin of the figure of Britannia?

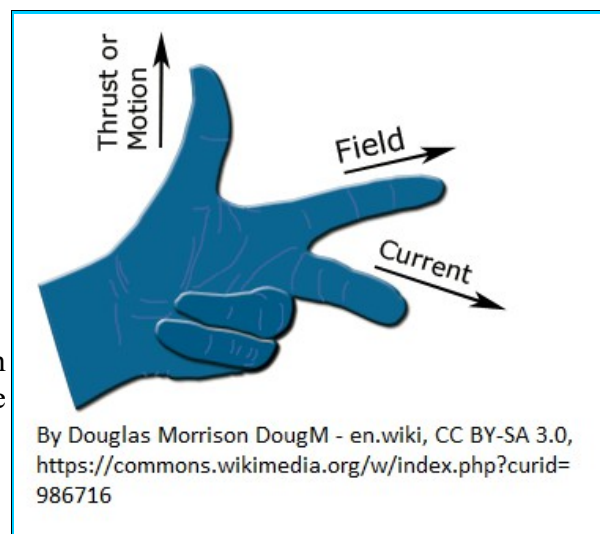
The young Fleming dutifully memorised all this and often quoted from it throughout his adult life. While I hope you are glad that your home education does not take quite this form, I am sure that you will agree that Sir Ambrose was certainly not harmed by it! Certainly, whatever its other failings, the book gets off to a good start with its opening questions and one wonders if they helped him to remain firm in later life in his defence of the truth of them.⁴

Something to think about

The book which provided much of Fleming's early education is full of things we might not think important for a small child today – lampreys for instance! Make a list of five things you think it might be important to know about *that you do not already know much about*. Find out all you can about them and make some notes in an exercise book or notebook. Can you find the answer to the last question on the previous page?

Something to learn for older children

Fleming's left hand rule applies to electric motors. When a coil of wire carrying a current is placed in a magnetic field the coil turns. This is called the “motor effect”. The Left Hand Rule shows what happens when an electrical current enters a magnetic field. Hold your left hand so that you thumb points upwards. Fold your little finger and ring finger inwards and ignore them. Point your middle finger towards you and your index finger to the right. The thumb now shows the direction of the force acting on the wire. Your index finger shows the direction of the magnetic field and your middle finger shows the direction of the current in the wire.⁵



Something for younger children to make

Fleming's invention was a key element in the invention of the telephone. Younger children may enjoy repeating the activity for 2nd April which was making a toy “telephone”.

Something to read

American children's author Louisa May Alcott (1832-1888) was born on 29th November. Her most famous book, *Little Women*, is especially enjoyed by girls. If you have read it and enjoyed it why not read the sequels *Good Wives*, *Little Men* and *Jo's Boys*? More about *Little Women* in tomorrow's lesson.



4

5 <https://www.youtube.com/watch?v=U9RezsWnPYs> has a good explanation.

Something to write

Miss Alcott was able to write such a successful story, partly because she based the characters around members of her own family. It is always easiest to write convincingly about something you know or have experienced. Think of anything you have done with your own family in the last month. Write a paragraph (or just a sentence for younger children) about it. If you can write about the individual ways different members of the family enjoyed the activity, outing or whatever it was you will be following in the footsteps of the famous author!