

14th June

Memory verse

He telleth the number of the stars; he calleth them all by their names.

(Ps. 147:4)

Younger children can learn the words in bold and understand that ““He” in this verse is the Lord God.

“Tell” in the first part of the verse is another word for “count” or “count out”. In America a bank clerk is called a “teller” because he counts out the money to the customers. When the Psalmist wrote this verse he did not have as full an understanding as we do of its tremendous meaning. When he thought of God having a name for every star he must have thought of the stars he could see at night. In the very best conditions (no light pollution, no moon shining, no haze) there are about 5000 stars visible from the northern hemisphere just using your eyes. However, if you have a 15 inch telescope, which many amateur astronomers use, that number shoots up to 380 million! The more powerful the telescope, the more you can see. Once you have a telescope out in space with no atmosphere to get in the way you can see even more. The Hubble Space telescope can see galaxy after galaxy each of which is thought to contain 200 billion stars! Now if you say your memory verse again you will have some understanding of what it means. When God inspired the Psalmist to write that verse He knew that one day people would be able to see so many stars. Will we ever be able to see them all? I wonder!

Something to sing.

This week's memory verse is about stars. The author of one of the most famous Christmas hymns, “As With Gladness Men of Old”, was born on June 14th 1837. It is a hymn centred round the wise men and the star. Look it up in your hymn book and sing it. The original version is a little different to the one we usually sing today. The first two lines were:

As with gladness men of old
Did the lambent star behold.

Do you know what lambent means? Look it up in a dictionary.

An invention to discover

Charles Babbage (1791-1871), inventor and mathematician, spent a lot of his childhood in Devon by the seaside as his parents were concerned for his health and thought sea air would be good for him. Devon is a place where there are many sailors and seafarers and Babbage was to try to invent something that would help them. His mathematical abilities became obvious while he was still at Totnes Grammar School in Devon and he became a brilliant mathematician.

Table with columns labeled 0, 1, 2, 3, 4, 5 and rows of numbers, likely a logarithmic table.

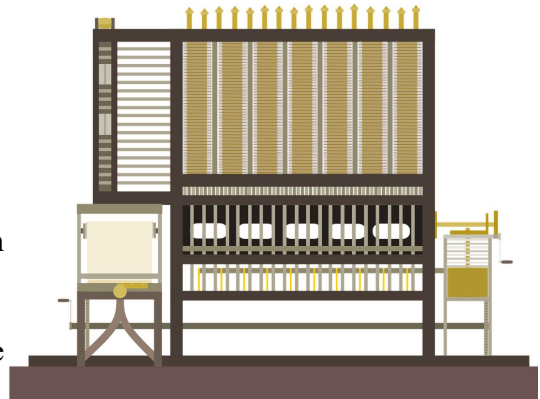
In Babbage's day there were no adding machines, no calculators and certainly no computers. Many tasks in practical applications of mathematics and physics that are done with calculators and computers today had to be performed by using books of mathematical tables, similar to the small part of a logarithm table you can see on the left. If you ask your grandparents they may be able to remember using “log tables” to do maths in school. The problem with such tables was that they had to be calculated by hand. Then the printer's typesetter had to set them in type. There were many opportunities for errors to creep in.

Tables like these were used in such practical fields as navigation at sea, engineering and banking. Mistakes in the tables could have disastrous consequences. Babbage himself used mathematical tables because he was

an amateur astronomer. Picture him running his finger down the list of numbers in a set of astronomical tables calculated by hand. He finds one error, then another. “I wish these calculations had been executed [done] by steam!” he is said to have exclaimed. What did he mean?

At the time Charles Babbage was growing up, steam engines were transforming people's lives. By the time he was an adult, railways were beginning to allow people to travel with ease for distances that would have been very serious undertakings in previous generations. But steam engines had many other uses too. In factories they transformed the manufacture of goods, producing changes in trade and in where people lived. Large manufacturing towns grew up where there had been only little villages before: workers were moving to the factories to find work. It seemed as if steam power was the answer to everything. But could there be a steam driven machine that would calculate and produce mathematical tables, eliminating the mistakes?

Babbage thought there could. He set to work to design such a machine. On 14th June 1822 he announced his invention in a paper to the Royal Astronomical Society, “Note on the application of machinery to the computation of astronomical and mathematical tables”. Babbage called such a machine a “difference engine” and he began to construct a small one with six revolving wheels, powered by turning a handle. He produced a logarithm table using the machine in 1827. The government was interested since the production of tables by hand was a very costly and lengthy process. Babbage went on to design larger difference engines. However, his work was dogged with difficulties. There was never sufficient money and it was hard, impossible even, to get the parts manufactured with enough accuracy. Babbage's own personality did not help either; he seems to have been a rather prickly character. His brilliant designs were never made and his note books remained unpublished after his death. His many other inventions, the speedometer and the ophthalmoscope (which enables the optician to see inside your eye), for instance, had immediate practical use but would the difference engine really work?



The answer is a resounding yes! The Science Museum in London had one built to Babbage's specifications and was very careful to use only materials and techniques which would have been available in Babbage's own times: it produced perfect results.¹ At the turn of a handle it calculated and printed out faultless mathematical tables.

We think of Babbage today as someone who took a first step towards computers by thinking of a way to do calculations using a machine. If you would like to understand more about how computers work there are games and puzzles here: <https://csunplugged.org/en> that *do not need a computer* and involve “card, string crayons and lots of running around” but which will help you begin the study of Computer Science. Although aimed at classroom sized groups of children many of the activities can be adapted for smaller numbers.

Was Charles Babbage the first person to make a machine that could do calculations? No! Babbage's achievement was actually anticipated by some 2000 years! You will remember what it is that was discovered from so long ago and yet did such amazing calculations, if you did the lessons for 17th May.²

Something to think about

Can our understanding of computers help us to understand the world around us better? Can we use what we know about how computers work to understand better how living things work?³ And is

¹ You can see it in operation here: <https://www.youtube.com/watch?v=0anIyVGeWOI>.

² The Antikythera device.

³ Find out some ideas here: <https://creation.com/creations-amazing-computer>.

there a “computer programme” inside you?⁴

I'm afraid there are no instructions for even the simplest difference engine to make out of cardboard!⁵

Map Work

On 14th June 1982 The Falklands War came to an end. Find the **Falkland Islands** on a map in your atlas. Today the islands are a British Overseas Territory. They are self governing and self financing (except for the cost of defence). The islands have their own Legislative Assembly (like our parliament) and the head of state is the King who is represented by the Governor. Because the islands have a small population, the Legislative Assembly has just eight members. They meet in **Port Stanley**, the island's capital.

Just as in Britain itself, every child has to receive an education. As in England, some go to school and some do not. Those in remote areas cannot travel to the school in any case and are taught by travelling teachers and telephone lessons. Falkland Islanders make their living from fishing and sheep rearing. Crime is almost unknown on the islands.



The islands have no native trees. Although some have been planted, they tend to grow sideways as the islands are very windy. The islands' wildlife, remoteness and unspoilt terrain make them a destination for tourists. This is despite a climate which is cold, windy and snowy in winter, cold, rainy and windy in summer and stormy in autumn and spring with a cloudy sky throughout the year!

The Falklands War arose because **Argentina** has always claimed the islands as hers. However the islanders who live there are of British descent and do not want to be ruled by Argentina. On 2 April 1982, Argentinian forces invaded the islands. The military junta that ruled Argentina did not believe that Britain would attempt to defend the islands.

The Falklands are a very long way away from Britain. Look at your atlas and work out exactly how far.⁶ Despite the huge distance involved, the prime minister, Mrs Margaret Thatcher, assembled a task force. It included warships and also merchant ships which had been quickly refitted for the job. Despite the vast distance, the task force reached the Falklands at the beginning of May. On 2 May, the Royal Navy submarine *HMS Conqueror* sank the Argentinian cruiser *General Belgrano*, with the loss of over 300 of her crew. After that Argentinian ships stayed in port.

But there was still the Argentinian air-force to contend with. Using missiles, the Argentinians attacked the Fleet Auxiliary ships at **Fitzroy** and also sunk the supply ship *Atlantic Conveyor*.



Then British forces landed on the islands where they encountered the Argentinian troops. These

4 See <https://creation.com/computers-without-chips>

5 There is a little toy here to make which might be fun for someone just starting to learn to do sums <https://www.youtube.com/watch?v=nSQEOLsGY6M> but you have to tell it the answers; it can't work them out for you!

6 8000 miles approximately.

were conscripts and not well trained although they were well dug in. There was a series of engagements including the heroic action at **Goose Green** in which Lieutenant Colonel Herbert Jones's valorous action (in which he lost his life) ensured the success of his Battalion. Before the British forces could approach Port Stanley, there were seven strategic hills including **Wireless Ridge** within five miles of Port Stanley that had to be taken. The Argentinian forces pulled back to Port Stanley and surrendered on **14 June**. The picture on the previous page shows part of the Falkland Island's War Memorial.