

**mtp**

Matthew Townshend Productions

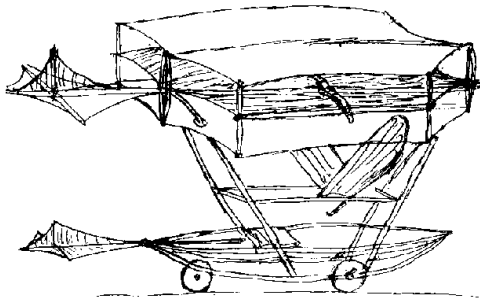
Theatre-in-Education:

# Victorians

The following pages are taken from a resource book for schools written to support preparation for a participative Theatre-in-Education programme called 'Every Man's Door', aimed at Victorian History and Science. They may continue to be useful for schools before working with an actor in role.



# Introduction



*Cayley's own drawing of the 1849 'boy carrier'*

The year is 1853. At a country estate in England, people are gathering to wish Sir George Cayley (see box opposite) many happy returns on the occasion of his eightieth birthday. The crowd is made up of local **gentry** and **tenants**; these are the roles we ask your children to adopt before they arrive (See the pages on the role groups and on preparing for the show). There may be a musician too, who has prepared a birthday song in tribute to Sir George. This is the song on pp14 & 15. We shall meet Sir George himself, his eldest daughter Anne, his assistant Mr. Vick and another visitor like ourselves, a young woman called Isabelle. These are the characters played by the actors.

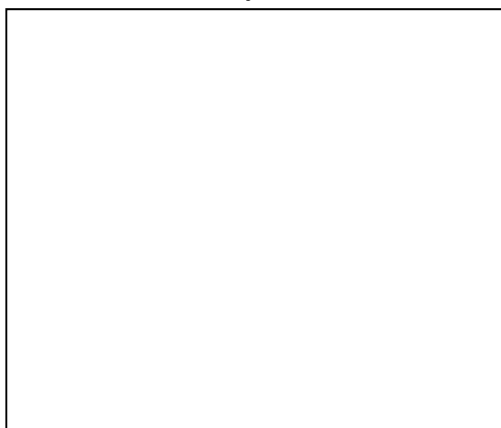
The news is out that Sir George has been at his aeronautical experiments again. Four years ago, a local boy was pulled into the air in a kite or glider that Sir George had built. The rumour is that the 'volunteer' this time has been the family's coachman, a man in his seventies. What has happened to him? Living in 1853, how do we react to such an event? Is Cayley a genius, or a madman? By the end of the play, we will have to make a decision: if we were able to see into the future, would we welcome Sir George's invention or would we want to see his machines destroyed and forgotten?

**George Cayley** (1773 – 1857) was the son of a Baronet. The family estate was in Yorkshire at Brompton, near Scarborough. George first went to school with a Rev. Walker in Nottingham. He fell in love with his tutor's daughter, Sarah Walker, and Sarah later became his wife but George was moved to another school in Hackney in London. His teacher here inspired him with sympathies that were progressive for the time, such as supporting the idea of the French Revolution. When he inherited the title, George at first refused to call himself or to be called *Sir* George. He remained a man of remarkably forward-looking ideas and a **philanthropist**. He was concerned for the welfare of his tenants and introduced an allotment scheme, so that cottage dwellers had some land on which to rear animals and grow food.

Cayley was an amateur scientist and inventor. As a member of the landed aristocracy, he had the time and the money to indulge in experiments. He was involved in all sorts of schemes; draining farmland, designing an artificial hand for a worker who had lost his own, inventing the caterpillar tractor and the 'tension wheel', which led to the first bicycle wheel – these are just a few. Throughout his life, however, he remained fascinated by **flight**. From early helicopter models, he progressed to gliders (see below) and man-carrying craft. The last and most famous was the 1853 machine.



# Role- Play



Unlike a visit to the theatre or a performance in school, your pupils will not sit and watch the actors but will be involved in the Drama from the very beginning. In order to be able to do this, they will need (a) to have a reasonable grasp of the historical context and (b) to adopt a role. This page and the next two may help you prepare for that.

## The groups

Divide the children into two groups of equal numbers. Explain that they are going to travel back one hundred and fifty years. They are going to be people living in the country in the year 1853 – either one of the **Tenants** or one of the **Gentry**.

## Who am I?

Everybody should come with a role name (see page 8). From the moment that your pupils first meet the actors, they will be talked to as if they were their role characters. Some children may decide to create a family unit. Girls should consider coming in role as boys/men, and vice versa if appropriate.

## Why am I here?

Everybody is here today to congratulate Sir George Cayley on the occasion of his eightieth birthday.

## What am I wearing?

See the pages on Costume for more ideas.

## The Hot Seat

Each child is given a short time (no more than a few minutes) in the 'hot seat'. During this time, they can be asked any helpful question which they must try to answer as their chosen character:

Who are you?  
What work do you do?  
What's your home like?  
Can you read?  
What did you have for breakfast this morning?  
What's the longest journey you've been on?

■ During the performance, your children will be expected to remain in role as their 1853 characters. But they will also find themselves wanting to tell Sir George what they can see happening in the future. He is a man who believes in sharing knowledge for the common good – would everybody else use a new invention like a flying machine for peaceful purposes only?

■ KS3 pupils should consider what the future impact of mass travel might be. Visitors spend money and create jobs, but too many visitors can damage the places they come to see.

**Now go on to the pages about preparation for more ideas.**

# Preparation

## The view from the classroom

*Sue Jones, a teacher at Durham High School, offers some suggestions.*



*Girls can come in role as boys ...*

### How much time do I need?

Preparation (and follow-up) time could be very lengthy, but most schools are lucky if they have that luxury. Nor is it likely that these themes will fit neatly into existing schemes of work. Don't worry! 2 substantial sessions is adequate time.

### How can limited time be used best?

One session on the historical background and one session using the historical background in drama exercises.

### How much History do we need?

The amount of existing knowledge will depend on the pupils' ages and stage in the curriculum. Most will have some knowledge of Victorian Britain and/or the Industrial Revolution.

For 'Every man's door', focus on:

■ Forms of transport in existence in the mid-19<sup>th</sup> century, especially the impact of a new form - the railway - but also looking

at the mode of transport used by the rich (private carriage and first class rail) and the poor (foot, cart and third class rail, widely available after 1844)

■ Country V. City: the differences and similarities in jobs, housing, health & hygiene, access to schooling.

■ 1851 Great Exhibition – the types of exhibits, Britain as the 'Workshop of the World', Empire, and the popularity of the Exhibition for all classes, with visits sometimes organised by employers.

■ Class structure, relating to different experience of the above topics. The Workhouses. Who has the right to vote in city/country (since 1832, middle-class in towns)

### How can this History be presented?

■ Older/more able pupils may welcome an 'information pack' of no more than two A4 sheets, with both written and illustrative material, to be discussed in whole class or group situation with focus questions.

■ For younger/less able pupils, less written and more visual information may be produced, with questions integrated into worksheets to ensure basic understanding.

■ Your school may have relevant video clips that can be played as an introduction or as a stimulus to key questions.

■ A timeline may be useful, either by using a wall display or by putting key events on cards that the pupils sort out and form into a more 'active' line.

■ Give limited time (5 minutes) for pupils to build up and jot down the bare details of a character - name, age, occupation (if any), other family members. Use the photocopyable sheet on p9. **Remember to bring a copy with you on the day.**

■ Then ask them to write down any events from the timeline which have

particularly affected them or which they remember.

### Can I answer these questions?

Do I remember hearing about or seeing one of the first steam trains?

Did I go to the Great Exhibition?

Did anyone I know gain the right to vote in 1832? (more difficult)

Did anyone I know die in the cholera outbreak of 1848?

Do I remember Queen Victoria coming to the throne?

Has anyone from the family or village moved to the town? Why?

This last task is something they can build up further for homework if appropriate, before the Drama session.

### Drama games and History

Once the pupils feel reasonably confident about the basics of who they are and the period they live in, this can be developed in the Drama session. Their understanding of both character and period can be strengthened by using exercises where they have to react in character to the gradual introduction of more material. The following are suggestions:

■ To build initial confidence, give each pupil a piece of paper with the beginning of a sentence which they have to finish. For example: 'when I first saw a steam train, I thought....', when I went to the Great Exhibition, I was most impressed by....', the most

important change in my life would be if I could....'. They can then be asked to introduce themselves, adding their reaction to the given statement and *perhaps* the more confident can be asked to explain their reaction.

■ In their 'performance' groups, present them with a variety of scenarios/questions to which they must react in character and discuss. For example:

- In 1848 the government refused to listen to another demand for votes for all men.
- In 1845 the inmates of the Andover workhouse were so hungry that they gnawed animal bones.
- Daytrips by train are being organised from Leeds to Scarborough (or any industrial area to a genteel seaside town)
- Some man has invented a machine to do complicated sums.

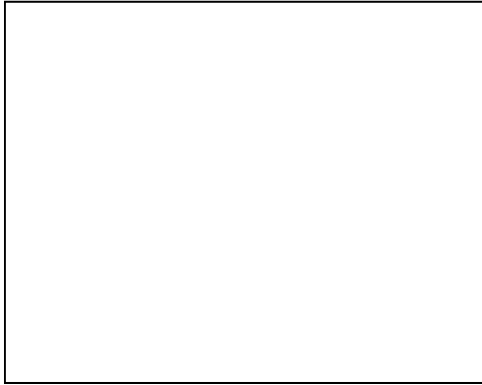
They can then be asked to present a version of this discussion to the other groups.

■ Choose an issue which appears to have caused the most division of opinion or controversy within or between groups. Each pupil must go to someone from another group and, after introducing himself/herself, try to convince that person of his/her point of view. Another adult could also be asked to question them on their ideas to get them used to interacting with adults.

### Bridge builders or bird brains:

Look at the two pictures on the back cover. To people living in 1853, the painting called 'iron and coal' symbolized the technology of the day; steam power, iron and brute force. The picture of William Henson's proposed 'aerial steam carriage' would have provoked a very different reaction. How do your adopted characters feel about the idea of flying machines?

# The spirit of the age



*An Englishman guards his home from Revolution*

When we meet Sir George in 1853, Queen Victoria has been on the throne for sixteen years. This is the age of steam power – in the mines and in the factories, on the expanding railway network and on the sea in ships such as the **SS. Great Britain**. This is also the age of self-confidence. The hunger and the fear of social upheaval in the 1840's has been replaced by railway mania.

The new heroes are the Engineers who built the railways, the ships and the bridges: James Watt, inventor of the steam engine, **the Brunels**, father and son, the **Stephensons**, and more recently, **Joseph Paxton**, designer of the 'Crystal Palace' that housed the Great Exhibition.

Not everybody admires the engineers and manufacturers. In Charles Dickens' *Bleak House*, published in 1853, Lord and Lady Dedlock's housekeeper is unhappy when her son chooses a career in Industry:

*'he took, when he was a schoolboy, to constructing steam engines out of saucepans, and setting birds to draw their own water ... assisting them with artful contrivance of hydraulic pressure ... This propensity gave Mrs. Rouncewell great uneasiness.'*

Public health in towns was increasingly an issue. A Royal Commission on Health in Towns had been established in 1844 and an outbreak of cholera four years later led to a Public Health Act.

In 1851 a census was held that showed that for the first time there are more people living in the towns than in the country. People who left the fields for the factories discovered that town life was also hard, dirty and unhealthy.



*The Scientist Michael Faraday wrote to the Times describing a journey along the stinking Thames*

Dickens' next novel 'Hard Times' was published in 1854 after he made a flying visit by railway to Preston in the industrial north of England. In it, he painted a lurid picture of a manufacturing town:

*It was a town of red brick, or of brick that would have been red if the smoke and ashes had allowed it; but as matters stood it was a town of unnatural red and black like the painted face of a savage. It was a town of machinery and tall chimneys, out of which interminable serpents of smoke trailed themselves for ever and ever, and never got uncoiled. It had a black canal in it, and a river that ran purple with ill-smelling dye and vast piles of building full of windows where there was a rattling and a trembling all day long ...*

# The Great Exhibition



*Whoever thought of meeting you here?*

Before it opened, the Exhibition of 1851 attracted scorn and opposition.

To many members of the British ruling class the idea of inviting the masses to London “ (to) honour the sons and daughters of toil” was as good as inviting a revolution like the one in France. A compromise agreed by the organising committee kept the admission price high for the first weeks to keep the common crowds away from London during the ‘season’ of upper class parties.

But when the doors closed in October, the exhibition had been more of a success than anyone could have imagined. Rich and poor had rubbed shoulders together and the worst that had happened had been pickpocketing and overcharging by cabs and omnibuses.

Once the price dropped to a shilling in June, parties of working people travelled from all over Britain. In the country these were often organised by the local vicar or a wealthy landlord. In the towns, subscription clubs were formed to bring workers from factories to see their products on show.

One change that the Exhibition brought about was in the idea of travel. The

railways were still a new invention but some people made return trips in a day over long distances and then did it again to see another part of the show. One of the many businesses to come out of 1851 was that of Thomas Cook, who organised travel to the Exhibition for an estimated 165,000 people.

*If I sell the pig and donkey, the frying pan and bed,  
I will see the Exhibition while it is a bob a head.  
Never mind the rent or taxes, dear Polly come with  
me,  
To the Great Exhibition, all the wonders for to see.  
(popular song from 1851)*

*The Times reports on the visit made by  
the residents of four Surrey villages:*

‘they seemed to stand in awe of the building: its greatness paralysed them; they hardly liked to penetrate into the huge compartment which opened on each side, but stuck close to the crystal fountain, or, if they moved forward, kept close together in small parties’

*Queen Victoria writes in her diary:*

‘Quite forgot to mention that on the morning of the 12<sup>th</sup> we saw three whole parishes ... walking in procession, two and two, the men in smock frocks, with their wives looking so nice. It seems, that they subscribed to come ... by the advice of the clergyman’

Crowds of people had flocked to all the stations on the way up to witness the unwonted sight of so long a train’s passage ... The seats for the humbler class of travellers in these early experiments ... were open trucks, without any protection whatever from the wind and rain.

*(Thomas Hardy)*

# The Song



Lord Nelson is a hero, a very great name,  
And Wellington, he is one more,  
*(God bless him!)*  
But in the future History books will  
explain  
A fine Yorkshire gentleman tops the  
score.  
*Here's a health to Sir George, who's fourscore  
today:  
Give him eighty years more, we say!*

When William the Conqueror landed  
ashore,  
Cayley was there in the van<sup>1</sup>  
And with him he imported an ancient law:  
The noble act maketh the nobleman.  
*Here's a health to Sir George, who's fourscore  
today:  
Give him eighty years more, we say!*

You've heard about the landlord who  
doubled the rent,  
The farmers who won't pay for ale,  
The croppers underpaid wheresoever they  
went?<sup>2</sup>  
But Cayley will always pay on the nail.  
*.Here's a health to Sir George, who's fourscore  
today:  
Give him eighty years more, we say!*

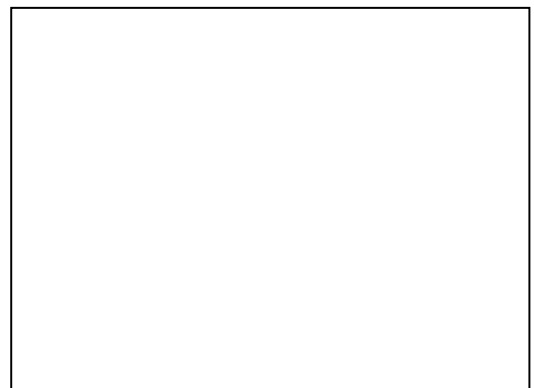
Old Noah looked around at the pouring  
rain;  
"An ark? said Sir George, Dig a drain!"  
Now poor folk are hurt on a railway train;  
Who comes to their aid, why, it's Cayley  
again!  
*Here's a health to Sir George, fourscore today:  
Give him eighty years more, we say!*

This is the song that will be sung during  
the performance. Your children will be  
encouraged to join in. They should  
imagine that local musicians or members  
of the village band have decided to write a  
special birthday tribute to Sir George and  
today they have come to sing it to him.

If any of your children are especially  
musical, they might like to learn the  
melody and accompany the rest of the  
group. They can bring their instruments  
with them, if they are easily portable.

<sup>1</sup>The Cayleys first came to England with  
William the Conqueror.

<sup>2</sup>A cropper sheared the rough wool from  
newly woven cloth. When machines were  
invented to do the job instead, the  
croppers tried to fight back.



"... poor folk are hurt on a railway train"

# Music

voices may be accompanied by piano, guitar,  
percussion or anything else that's to hand!

Lord Nel - son is a he - ro, a  
When Wil - li - am the Con - que - ror  
You've heard a - bout the land - lord who  
Old No - ah looked a - round at the

**Brisk tempo**

Musical notation for the first system, featuring a piano accompaniment with chords C and C/E.

ve - ry great name, And Wel - ling - ton, he is one more,  
land - ed a - shore, Cay - ley was there in the van,  
dou - bled the rent, The far - mer who won't pay for a ale,  
pour - ing rain, "An ark?" said Sir George, "Dig a drain!"

Musical notation for the second system, featuring a piano accompaniment with chords Dm7, G, C/E, D, and G.

But in the fu - ture, his - to - ry books will ex - plain A  
And with him he im - port - ed an an - cient law: The  
The crop - pers un - der - paid where - so - e - ver they went? But  
Now poor folk are hurt on a ra - il - way train, Who

Musical notation for the third system, featuring a piano accompaniment with chords C, C/E, Dm7, and E.

fine York - shire gen - tle - man tops the score.  
no - ble act ma - keth the no - ble - man.  
Cay - ley will al - ways pay on the nail.  
comes to their aid? Why, it's Cayley a - gain!

**CHORUS**

Here's a

Musical notation for the fourth system, featuring a piano accompaniment with chords Am, C/E, G, C, G, and G7.

health to Sir George, who's four-score to - day: Give him eight-ty years more, we say!

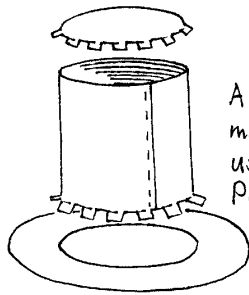
**D. C.**

Musical notation for the fifth system, featuring a piano accompaniment with chords C, C/E, Dm7, G, Am, C/E, and G.

# Costume

## The Gentry

Even a simple item of costume can be a help in adopting a role. Someone with a craft or trade might be identified by what they wear – the Smith an apron for example. Today is a special day and so even the very poor would wear ‘Sunday best’, even if that meant no more than a hat for the men and a shawl or bonnet for the women



A top hat can be made from thin card using glue or staples. Paint it black.



Landowner

Vicar

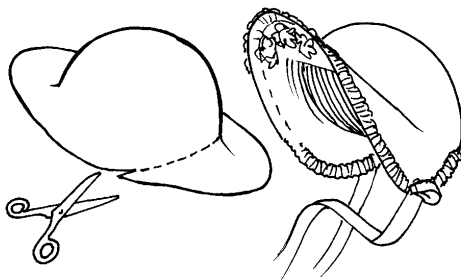
Farmer.

## The Tenants



Tenants

Maid



Find a panama hat at a charity shop. Cut the brim and sew a piece of gathered ribbon to the edge. Cut two lengths of ribbon and attach at sides. Crumple up tissue 'roses' and stick them inside the brim.

The Carpenter from 'Alice through the looking glass'. In the early 19th century the wearing of paper hats



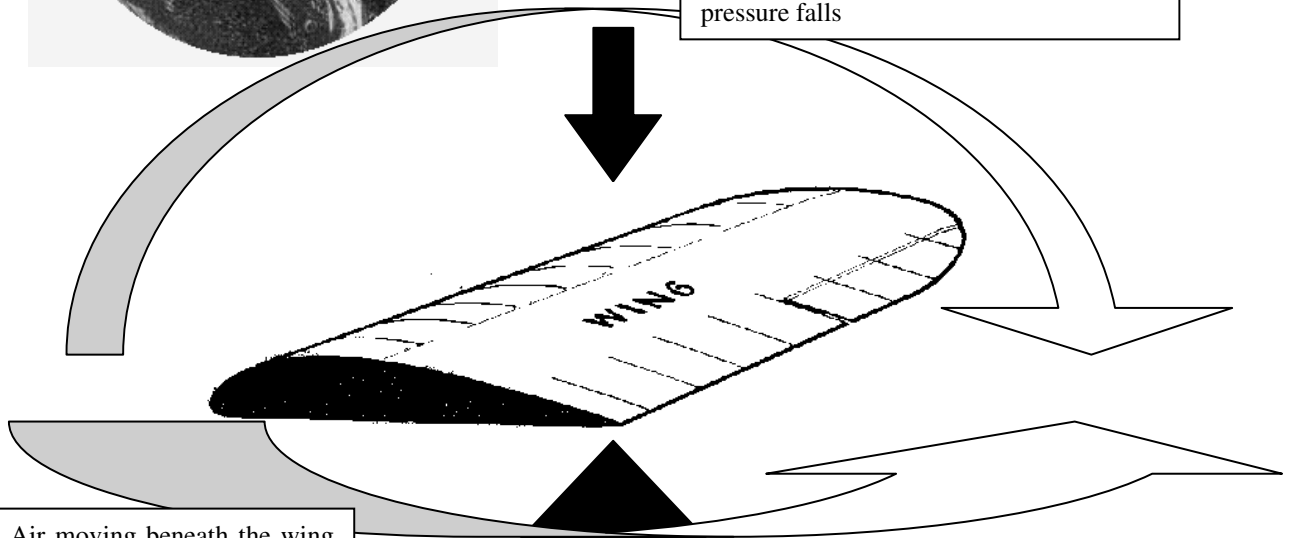
became associated with carpenters. Later when paper became cheaper other trades also adopted the paper hat. These included bookbinders, coopers, glass blowers, masons, painters, wheelwrights, plumbers, soap boilers and many others. Paper hats are still used today, for instance, in the food industry. The **Ryedale Folk museum** has instructions for making paper hats.

# Science



An aeroplane is able to fly because of the curved surface or **camber** of its wings which make use of a natural phenomenon. This was discovered in the 18<sup>th</sup>. Century by the Swiss mathematician Daniel Bernoulli. He found that as the speed of the flow of a liquid or gas **increased**, its pressure **decreased**.

Air moving over the upper surface has to travel further and speeds up, so its pressure falls



Air moving beneath the wing travels less distance. The pressure acting on the lower surface is higher than on the upper.

## The coin trick!

Place a 1p coin near the edge of a flat surface. Place a shallow saucer a little distance behind the coin. With your eyes on a level with the saucer, blow sharply over the top of the coin. With a little experiment, it will jump into the saucer!

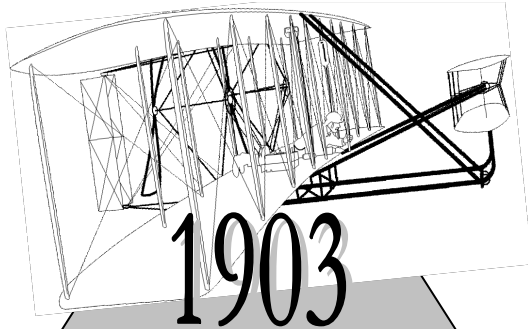
## What's going on?

The air you move over the coin has a lower pressure than that acting on the surface beneath, which is at local atmospheric pressure. The difference in pressure creates lift

## Cayley's whirling arm.

*See picture on p1*

Sir George understood that the shape and curve of a wing was important. He built a spinning arm driven by a falling weight to measure the **force** of the air against a surface. One version was so big he used the staircase at the family home. Adam Hart-Davis' book *Local heroes* has an example of a replica.



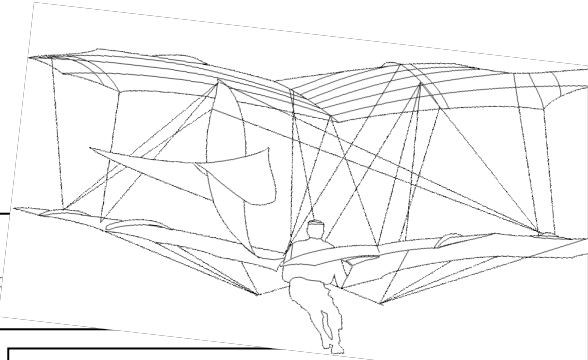
1903

**December:**

Dr. S P Langley, secretary of the Smithsonian Institution, makes two attempts to get his 'Aerodrome' machine to fly. Both attempts fail. Nine days after his second attempt, two bicycle makers, Orville and Wilbur Wright, make the world's first powered flight from the sand dunes of Kitty Hawk.

**Flightlines:**

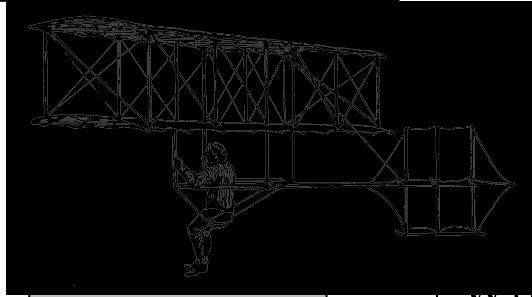
From Cayley to Kittyhawk in fifty years



**1896:**

England: Maxim almost enormous steam driv

The age of the great glider pilots:  
Lilienthal (Germany) Pilcher (England)  
Chanute and Herring (America).  
In Australia, Hargrave invents the box-kite, which will have a large influence on early aeroplane design.



**Why is Cayley important?**

- Cayley was the first to separate lift from thrust. He understood that human flyers could not copy the birds, but would need fixed wings to provide lift and an engine to provide forward motion. He realised that the road to success lay with experimenting with gliders instead of with flapping wings. A modern aeroplane is only a glider with engines that push it through the air.
- He realised that simply getting into the air wasn't enough; that when you were flying you needed to have control, and so he designed the basic shape of an aeroplane that we can recognise today – wings, fuselage and control surfaces, including what we now call the tailplane.
- By studying the movement of fish through water, he saw the importance of 'streamlining' – of building a machine that created the least drag as it moved through the air.
- He accepted that the limits of the steam engine probably meant that success would not be seen until a new source of power had been invented: "*When we can get 100 horsepower into a pint pot, man will be able to transport his family and possessions as readily by air as he now does by railway*"



**1890:**

France: Another hop, this time by Ader in his 'Eole' (bird).

**1884:**

Russia: Mozhaisky makes a brief hop in a steam-powered machine.

**1857:**

France: du Temple flies a steam-powered model aeroplane .

1853

Cayley

# Bibliography



## *About Sir George Cayley*

Sir George Cayley, the inventor of the aeroplane	J Laurence Pritchard	Parrish
The life of a genius	Gerard Fairlie/E Cayley	Hodder
Sir George Cayley's aeronautics	CH Gibbs-Smith	Science Mus.
Sir George Cayley, the father of aeronautics	J A D Ackroyd (in notes of the Royal Society)	
Sir George Cayley, the inventor of the aeroplane	L S Rivett (in report of Yorks. Phil. Society)	

## *History of flight*

History of aeronautics in Great Britain	J E Hodgson	Science Mus.
The Aeroplane	C H Gibbs-Smith	Science Mus.
Early Flying Machines	Henry Dale	British Lib.
A brief history of flight	T A Heppenheimer	Wiley
A dream of wings	Tom D Crouch	Norton
The bishop's boys	Tom D Crouch	Norton
Colonel Cody and the flying cathedral	G Jenkins	Simon&Schuster
Chronicle of Aviation	J Legrand (ed.)	
History of man-powered flight	D A Reay	Pergamon
Aircraft, aircraft	John W R Taylor	Hamlyn
Aircraft records, facts and feats		Guinness

## *Relevant Victorian History*

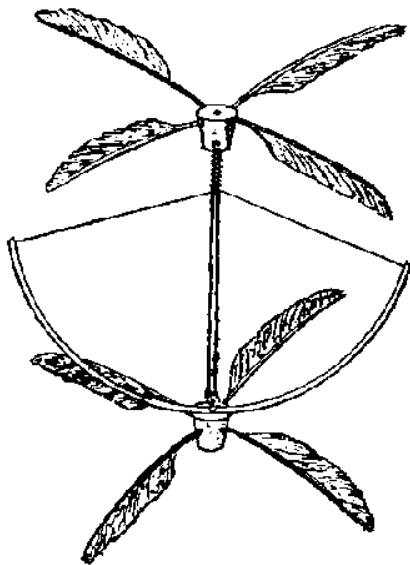
What the Victorians did for us	A Hart-Davis	BBC
Local heroes	A Hart Davis	BBC
The Victorian Vision	Victoria & Albert Museum	
Rural life in Victorian England	G E Mingay	Sutton
The world for a shilling	M Leapman	Headline

## *Younger readers/ Classroom*

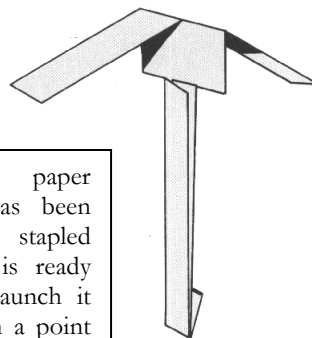
Aircraft	K Munson	Macdonald
Flyers and flying machines	D Jefferis	Timelines
The first flyers	D Jefferis	Wings
Air and Flying (Let's explore Science)	D Evans/C Williams	Dorling K.
Air and Flight (Science Factory)	J Richards	Franklin Watts
Flying Machines (Make it work!)	P Firmin	A&C Black

# Ornithopter!

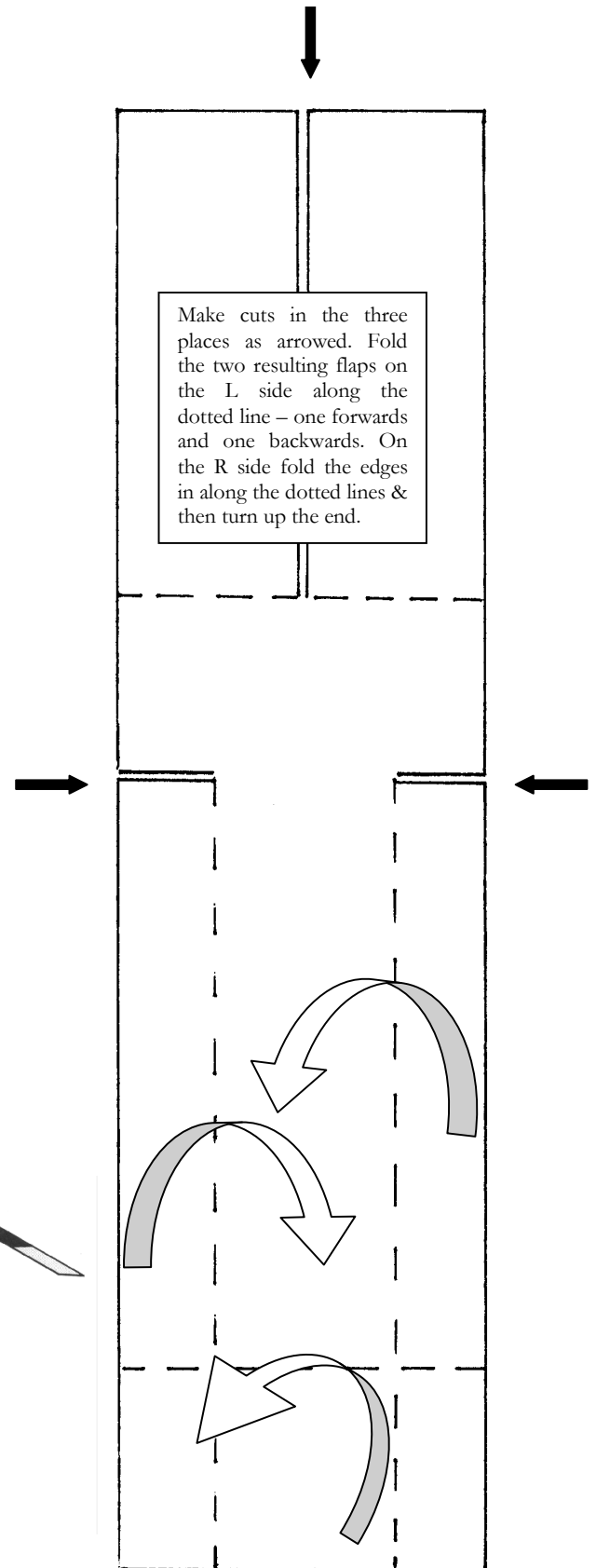
One of Cayley's earliest experiments in flight was a model helicopter or 'ornithopter'. His model used contra-rotating feathers stuck in corks, operated by a bow-string.



On this page is a template for a simple paper flying model. Enlarge it on a photocopier - You will need a sheet of paper 300mm X 70mm



Once the paper helicopter has been glued or stapled together, it is ready for flight. Launch it from as high a point as possible.  
(from Jack Botermans: *Paper Flight*, Owl books.)



## About the pictures on the back cover:

Iron and coal: William Bell Scott. 'In the nineteenth century the Northumbrians showed the world what can be done with iron and coal'. The painting is one of a series that was commissioned for the central hall at Wallington in the 1850's. The setting is the river Tyne in Newcastle, with the high level bridge in the background.

(The National Trust)

William Henson's 'aerial steam carriage', in imaginary flight over a city. In 1843, Henson produced a remarkable design for a steam-powered flying machine. He and his colleague, John Stringfellow, built a scale model that they tested in 1847. It never flew properly, but in the meantime Henson had made public his dreams of an 'Aerial Transit Company', with extravagant pictures of flight around the world. He was subjected to such ridicule that he abandoned his dreams and emigrated to America. In contrast to Henson, Sir George Cayley was much more cautious. He was well aware that most people considered the idea of human flight pure fantasy and was careful with the language he used to describe his own experiments.

(The Science Museum)

