Teaching about Scotland

This is one of a series of units for teaching about Scotland in German Secondary schools. All the materials were created by very motivated students in my Area Studies Scotland class, some with experience of teaching in a “Gymnasium”. The materials can be tried out as they are, or altered as desired. They can also be combined. One basic idea behind them all is that both the teacher and the learners can develop the materials themselves, according to their own interests, and then even offer them to another class. For some of these units printed information material is needed, for example ferry timetables, but if you don’t have this, it is no problem to print it out from the Internet. Useful websites are given.

Scottish Inventors, Discoverers and Pioneers

Target group and Aim.

The unit is intended for a 10th grade class (age 15 - 16) of a German secondary school and covers one lesson (45 minutes).

The goal is to give the class an idea of how many inventions, developments and discoveries are based on Scottish roots.

“In total there are about 30 million people of Scottish ancestry in the world. If it were not for the native Scots, or the Scots who had gone to the New World, modern life would be completely different. The rich contribution of the Scots to world development in exploration, medicine, religion, science, engineering, mathematics, economics, politics, literature and the arts far outweigh their small population of about 5 million.”

Source: [www.albawest.com/scots.html](http://www.albawest.com/scots.html)

The materials are provided for the class so that they can teach themselves and perhaps see to what extent the above quote is true.

The unit was created by Silke Wegele
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Winter term 2006/2007
Course: Area Studies Scotland
1) To start the class off, I would ask some questions:
How can people become famous?
What famous people do you know?
Do you know any famous Scots?
[Possible answers could be:
birth / inventions, discoveries, pioneering, improvement / publishing, writing a book / media: actors, musicians, singers, dancers …]

Next the class splits up into four groups. Each group gets a set of cards with 4 different pioneers/inventors.

Group 1: Flemming, Pillans, Mackintosh, Macmillan
Group 2: Bell, Baird, Forsyth, Ramsey
Group 3: Muir, Chalmers, Livingstone, Baird
Group 4: Watson-Watt, Fleming, Faulds, Paterson

For each “pioneer” there are 3 separate cards. One card has the name, date of birth and death, and a picture of the person; the second card has a picture of the “discovery” and the third card has the date of the “discovery” plus a keyword as a clue. (See cards below.)

Their task is to match the person with the picture of the “discovery” and the details of the “invention” correctly:

one inventor --- one date ---- one object

To help the class do this themselves, as far as possible without the teacher’s help, I would use the traffic light system. Here there are three different kinds of help/solution cards:
The first one is red, with just a slight hint at the right answer
The second one is orange with more information
The third one is green with the correct solution.

The groups stay together and try to work out the right combinations. They start to guess their answer with the red answer card.
If they still have no idea, the next step is to look at the orange card to get more clues or more information.
Finally, to check their answer the pupils take the green card.

2) Now each group gets more information (on a separate sheet of paper) about their inventors/pioneers/discoverers. The class have to work with their texts and decide which information is important and summarize the most interesting/important facts.
In the end each group should present their correctly combined cards and the additional information gained from the texts to the rest of the class via the overhead projector. During this presentation the rest of the class can note down the right answers on the sheet with the Name / Date / Invention / Discovery / Important facts table.
3) For the final discussion the class should look and see if they can find any similarities in the people/inventions.
For example, it struck me that all these inventors, discoverers, pioneers were male. They were all between 20 to 40 years old when they made their “discovery”. They all worked on several things. Their inventions and discoveries are still of importance to society today.

As an extra home task someone might like to do some research into female Scottish “pioneers”. (There is one on Scottish stamps this year, 2007). And some might become interested in the role of women in Scottish society, which could later be compared to the role of women in English or American or German society. (How many women MPs are there in the Scottish Parliament? How many female leaders of political parties? How many GPs, etc.)
Alexander Flemming  
(1881 - 1955)  
1928  
antibiotics/medicine

James Pillans  
?  
(1778 – 1864)  
1801  
school

Charles Mackintosh  
(1766 – 1878)  
1823  
protection

Kirkpatrick Macmillan  
?  
(1813 -1878)  
1839  
transport
Alexander Graham Bell  
(1847 – 1922)  
1867  
communication

John Logie Baird  
(1888 – 1946)  
1925  
pictures

Rev. Alexander Forsyth  
(1769 – 1848)  
1807  
dangerous

Allan Ramsay  
(1686-1758)  
1726  
information
<table>
<thead>
<tr>
<th><strong>John Muir</strong> (1834-1914)</th>
<th>national park</th>
<th>1890</th>
<th>nature</th>
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<tbody>
<tr>
<td><strong>James Chalmers</strong> (1782 - 1853)</td>
<td>letters</td>
<td>1834</td>
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<tr>
<td><strong>David Livingstone</strong> (1813 - 1873)</td>
<td>discovery of Africa’s greatest</td>
<td>1855</td>
<td>………</td>
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<tr>
<td><strong>James Braid</strong> (1795-1860)</td>
<td>Pioneer of hypnosis</td>
<td>1843</td>
<td></td>
</tr>
</tbody>
</table>
Sir Robert Alexander Watson-Watt
(1892 - 1973)
1935
location of planes

Sir Sandford Fleming
(1827-1915)
1879
Time

Henry Faulds
(1843-1930)
1880
detection of criminals

William Paterson
(1658-1719)
1694
The Bank of England
The red cards:

Group 1: Compare the dates of the invention/discovery to the date of birth/death. (somebody who is already dead or not born yet, cannot discover or invent something 😊)

Group 2: Compare the dates of the invention/discovery to the date of birth/death. (somebody who is already dead or not born yet, cannot discover or invent something 😊)

Group 3: Compare the dates of the invention/discovery to the date of birth/death. (somebody who is already dead or not born yet, cannot discover or invent something 😊)

Group 4: Compare the dates of the invention/discovery to the date of birth/death. (somebody who is already dead or not born yet, cannot discover or invent something 😊)
The orange cards:

Group 1:  
- Flemming: look at the picture, what has Flemming got in his hands?  
  In which field would you need/ use something like that?  
- Pillans: He was 23 when he made his invention. His invention brought big improvements for all children, but also for many adults.  
- Mackintosh: He was 57 when he patented his invention. His invention helps us today when working outside.  
- Macmillan: Today his invention has lost some of its value, as something more comfortable was invented later.  

Group 2:  
- Bell: look at the name of the inventor. It could possibly be connected to one of the inventions in some way or the other.  
- Baird: Without his invention some people might be bored, because they don’t know what else to do …  
- Forsyth: His invention was first bought by the army.  
- Ramsey: This was very important before Baird’s invention. Today most people can afford to buy … instead of borrowing them.  

Group 3:  
- Muir: He was very keen to protect and conserve our natural heritage  
- Chalmers: He was very interested in the field which lost a lot of its relevance when e-mail was invented.  
- Livingstone: He was very interested in travelling.  
- Braid: Pioneered in a field which can help to cure people.
Group 4

- Watson-Watt: His invention was very important in wartime to locate planes.

- Fleming: He was 52 when he made his suggestion official. His idea is very important when you are travelling around the world and need to be in time.

- Faulds: He was 57 when he made his discovery. It happened only by chance, when he saw marks of humans in clay fragments.

- Paterson: He was interested in finances.
The green cards:

Group 1:  
- Flemming was a Scottish biologist and pharmacologist. He discovered the antibiotic substance penicillin in 1928.  
- Pillans invented the blackboard in 1801.  
- Mackintosh was the inventor of waterproof material used for example for raincoats in 1823  
- Macmillan was one of the inventors who contributed to the invention of the bicycle in 1839

Group 2:  
- Bell became the inventor of the telephone in 1867.  
- Baird is considered to be one of the pioneers who contributed to the invention of the television. He was the first person to produce a live, moving television image in 1925.  
- Forsyth was the inventor of the percussion cap in 1807, although he was a minister of the Church.  
- Ramsey was fond of books and opened the first lending library in the world in 1726.

Group 3:  
- Muir’s writings led to the creation of the Sequoia and Yosemite national parks in 1890 and the national park movement in general.  
- Chalmers invented the first adhesive postage stamp in 1834.  
- Livingstone, while exploring Africa, discovered Africa’s greatest falls in 1855 and named them the “Victoria Falls”.  
- Braid was a Scottish neurosurgeon who coined the term and invented the procedure known as hypnotism in 1843.

Group 4:  
- Watson-Watt is considered to be one of the inventors of radar in 1935  
- Fleming introduced Universal Standard Time to the world in 1879  
- Faulds was a Scottish scientist who is noted for the development of fingerprinting in 1880.  
- Paterson founded the Bank of England in 1694.
<table>
<thead>
<tr>
<th>Name of inventor</th>
<th>Date</th>
<th>Invention/discovery</th>
<th>Important facts</th>
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</table>
Sir Alexander Flemming

was a Scottish biologist and pharmacologist. Fleming published many articles on bacteriology, immunology, and chemotherapy. Among his best-known achievements is the isolation of the antibiotic substance penicillin in 1928, for which he shared a Nobel Prize with Florey and Chain.

Alexander Fleming was born on a farm at Lochfield near Darvel in East Ayrshire, went to the local school, and then for two years at the Kilmarnock Academy. After working in a shipping office for five years, 20 year old Fleming inherited some money from an uncle. His older brother, Tom, was already a physician and suggested to his younger sibling that he follow the same career, and so in 1901, the younger Alexander enrolled at St Mary's Hospital, London. He qualified for the school with distinction in 1906 and had the option of becoming a surgeon. Later he joined the research department at St Mary's, where he became assistant bacteriologist. He served throughout World War I as a captain in the Army Medical Corps. In 1918 he returned to St. Mary's Hospital, which was a teaching hospital. He was elected Professor of Bacteriology at the School in 1928.

After the war, Fleming actively searched for anti-bacterial agents having witnessed the death of many soldiers from septicemia resulting from infected wounds. In 1922, Fleming discovered lysozyme, the "body's own antibiotic", and that it has a weak anti-bacterial property.

By 1928, he was investigating the properties of staphylococci. He was already well-known from his earlier work, and had developed a reputation as a brilliant researcher, but quite careless lab technician; cultures that he worked on he often forgot, and his lab in general was usually in chaos. After returning from a long holiday, Fleming noticed that many of his culture dishes were contaminated with a fungus and he threw the dishes in disinfectant. But on one occasion, he had to show a visitor what he had been researching, and so he retrieved some of the unsubmerged dishes that he would have otherwise discarded, when he then noticed a zone around an invading fungus where the bacteria could not seem to grow. Fleming proceeded to isolate an extract from the mould, correctly identified it as being from the penicillium family, and therefore named the agent penicillin. He investigated its positive anti-bacterial effect on many organisms, and noticed that it affected bacteria such as staphylococci, and indeed all Gram-positive pathogens (scarlet fever, pneumonia, gonorrhea, meningitis, diphtheria ). Fleming published his discovery in 1929 in the British Journal of Experimental Pathology, but little attention was paid to his article. Fleming continued his investigations, but found that cultivating penicillium was quite difficult. After a team, which consisted mainly of Ernst Chain, Norman Heatley and Alexander Flemming, had developed a method of purifying penicillin to an effective first stable form in 1940, several clinical trials ensued, and their amazing success inspired the team to develop methods for mass production and mass distribution in 1945. Sources: www.wikipedia.de, http://www.geo.ed.ac.uk/home/scotland/greatscots.htmlhttp://www.scotland.com/culture/history/famous-scots/
James Pillans

He invented the blackboard /chalkboard and coloured chalks and used them to teach Geography. He was headmaster of the Old High School of Edinburgh, he became Professor of Humanity & Laws in the University of Edinburgh. Blackboards were originally made of slate stone. The blackboard revolutionized education: prior to 1801, teachers and schools had no means of visually presenting information to a roomful of students all at once. Pencils or paper were unaffordable, and there were no mass copies or hand outs.

Sources: http://www.geo.ed.ac.uk/scotgaz/people/famousfirst281.html
www.wikipedia.de

Charles MacIntosh

In 1823, Scottish chemist Charles Macintosh patented a method for making waterproof garments by using rubber dissolved in coal-tar naphtha for cementing two pieces of cloth together. People have been trying to make items of clothing waterproof for hundreds of years. As early as the thirteenth century, Amazonian Indians used a milky substance (rubber) extracted from rubber trees for this purpose. When European explorers came to the Americas in the sixteenth century, they observed the indigenous people using a crude procedure and rubber to waterproof items like footwear and capes. By the eighteenth century, Europeans were experimenting with waterproofing fabric for clothing. François Fresneau devised an early idea for waterproofing fabric in 1748. Scotland's John Syme made further waterproofing advances in 1815. In 1821, the first raincoat was manufactured. Made by G. Fox of London, it was called the Fox's Aquatic. The raincoat was made of Gambroon, a twill-type fabric with mohair.

While these early attempts at waterproofing fabrics sometimes involved rubber, they were not particularly successful. When rubber was used in clothing, the articles involved were not easy to wear. If the weather was hot, the clothing became supple and tacky; if cold, the clothing was hard and inflexible. This problem was solved in the early nineteenth century by Macintosh. The patented waterproof fabric was produced in factories beginning in 1824. The first customer was the British military. Macintosh’s findings led to other innovative uses of rubber, including tires.

Sources: www.wikipedia.de
http://www.geo.ed.ac.uk/home/scotland/greatscots.html
Kirkpatrick MacMillan

Blacksmith & Inventor. Invented the bicycle, but never patented it and it was therefore widely copied. Through the centuries, several inventors and innovators contributed to the development of the bicycle. Its earliest known forebears were called velocipedes, and included many types of human-powered vehicles. The first documented ancestor of the modern bicycle, were powered by the action of the rider's feet pushing against the ground. MacMillan refined this in 1839 by adding a mechanical crank drive to the rear wheel, thus creating the first true "bicycle" in the modern sense. In the 1850s and 1860s, the pedals were placed on an enlarged front wheel. The primitive bicycles of this generation were difficult to ride, and the high seat and poor weight distribution made for dangerous falls. To the subsequent models gearing was added, the front wheel diameter reduced and the seat set further back. Then the chain drive was added which had lower seat height and better weight distribution. 1885 the first recognizably modern bicycle was created. Soon, the seat tube was added, creating the double-triangle, diamond frame of the modern bike. New innovations increased comfort, and ushered in the 1890s Golden Age of Bicycles. In 1888, Scotsman John Boyd Dunlop introduced the pneumatic tire, which soon became universal. Derailleur gears and hand-operated, cable-pull brakes were also developed during these years, but were only slowly adopted by casual riders. By the turn of the century, bicycling clubs flourished on both sides of the Atlantic, and touring and racing were soon extremely popular.

Bicycles and horse buggies were the two mainstays of private transportation just prior to the automobile, and the grading of smooth roads in the late 19th century was stimulated by the wide use of these devices.

Sources: www.wikipedia.de
http://www.geo.ed.ac.uk/home/scotland/greatscots.html)
Group 2: Bell, Baird, Forsyth, Ramsey

Alexander Graham Bell

Born in Edinburgh. Having emigrated to Canada and later the USA, Bell became the inventor of the telephone in 1876. While both his mother and his wife were deaf, he hoped to one day eliminate hereditary deafness. His family was associated with the teaching of elocution: his father wrote a book in which he explains his method of instructing deaf mutes, by means of their eyesight, how to articulate words, and also how to read what other persons are saying by the motions of their lips. At the age of 16 he secured a position as a pupil-teacher of elocution and music in Scotland. The next year he went to the University of Edinburgh. While still in Scotland he is said to have turned his attention to the science of acoustics, Before he left Scotland, Bell had turned his attention to telephony, and in Canada he continued an interest in communication machines. To Bell's credit, he successfully fought off several lawsuits about who arrived first at the patent office Italian American Antomiao Meucci or Scottish American Bell. Later he refined the telephone, and developed it into one of the most successful products. The Bell Telephone Company was created in 1877, and by 1886 over 150,000 people in the U.S. owned telephones and Bell became a millionaire. Sources: [www.wikipedia.de](http://www.wikipedia.de) [http://www.geo.ed.ac.uk/home/scotland/greatscots.html](http://www.geo.ed.ac.uk/home/scotland/greatscots.html)

John Logie Baird

Engineer. Inventor of the television and later developed ideas such as colour, 3-D and large screen television. Also took out a patent on fibre-optics, a technology now used to carry many telephone calls and traffic on the internet. His degree course was interrupted by WW1 and he never graduated from University. Although the development of television was the result of work by many inventors, Baird is one of its foremost pioneers. He is generally credited with being the first person to produce a live, moving television image in halftones by reflected light, In 1927 Baird transmitted a long-distance television signal over 438 miles of telephone line between London and Glasgow. He then set up the Baird Television Development Company Ltd, which in 1928 made the first transatlantic television transmission from London to Hartsdale, New York and also made the first television programme for the BBC. His other developments were in video recording, fibre-optics, radio direction finding, infrared night viewing and radar. TV now spans the globe and is the world's most popular form of entertainment, offering multiple channels covering all sorts of subjects. Malcolm Baird said in an interview that had his father known how TV would turn out in sixty years time, he would have dropped it and turned to something else.

Sources: [www.wikipedia.de](http://www.wikipedia.de) [http://www.geo.ed.ac.uk/home/scotland/greatscots.html](http://www.geo.ed.ac.uk/home/scotland/greatscots.html)
**Rev. Alexander John Forsyth**

Inventor of the percussion cap. Born Belhelvie (Aberdeenshire), the son of a Presbyterian minister, he took over his father's parish in 1790. Fond of game shooting, he realised the major problem with the flint-lock gun was its unreliability in damp conditions.

At first enthusiastically received by the army, who gave him a workshop in the Tower of London, support was later withdrawn. He continued to develop his system.

Sources: www.wikipedia.de  
http://www.geo.ed.ac.uk/home/scotland/greatscots.html

**Allan Ramsay Senior**

Born on October 15, 1686 in Leadhills in Lanarkshire, Allan Ramsay began his career as a wig maker. His success in publishing books encouraged him to open a number of bookseller's shops and the first lending library in the world at the Luckenbooth in Edinburgh's High Street in 1726. He also set up a theatre and an auction house. He died on January 7, 1758.

Sources: www.wikipedia.de  
http://www.geo.ed.ac.uk/home/scotland/greatscots.html

**Group 3: Muir, Chalmers, Livingstone, Braid**

**John Muir**

The environmentalist John Muir, America's most famous and influential naturalist and conservationist, was born in Dunbar in 1838. His father was a religious zealot and before Muir emigrated to America he could recite the Bible from memory. Known as the "Father of United States Conservation" his writings led to the creation of the Sequoia and Yosemite national parks and the national park movement in general. As a writer, he taught the people of his time and ours the importance of experiencing and protecting our natural heritage. There are said to be more places named after John Muir in California than for any other person. He also visited Alaska, Russia, Siberia, India, Australasia, and the Philippines to study their forests.

His words and deeds helped inspire President Theodore Roosevelt's innovative conservation programs, including establishing the first National Monuments by Presidential Proclamation, and Yosemite National Park by congres-
sional action. In 1892, John Muir and other supporters formed the Sierra Club "to make the mountains glad." John Muir was the Club's first president, an office he held until his death in 1914. Muir's Sierra Club has gone on to help establish a series of new National Parks and a National Wilderness Preservation System.

Sources: www.wikipedia.de
http://www.geo.ed.ac.uk/home/scotland/greatscots.html
http://www.geo.ed.ac.uk/scotgaz/people/famousfirst261.html

James Chalmers

Inventor. Born in Arbroath, Chalmers was a weaver who moved to Dundee in 1809, becoming a bookseller, newspaper publisher and printer. His most burning enthusiasm was postal reform, and he managed to induce the authorities to speed up the mail between Dundee and London by a day each way, convincing them that this could be done without extra cost. He first suggested the adhesive postage stamp in 1834 and submitted his ideas to Parliament in 1839. James Chalmers’ plan: he had worked out all the details, and had suggested the now universal means of paying for letters and packages of different weights by stamps of different colours. This invention made Rowland Hill's Penny Postal Service a practical proposition.

Sources: www.wikipedia.de
http://www.geo.ed.ac.uk/home/scotland/greatscots.html

David Livingstone

Born in Blantyre in 1813, David Livingstone was the son of a shopkeeper. He started work at the age of 10 in the local cotton mill but nevertheless managed to educate himself with lessons in the evenings and to study medicine and theology at Glasgow University to become a missionary doctor. He arrived in Bechuanaland in 1841 and married the daughter of another missionary there. Livingstone began to explore uncharted areas of Africa and while mapping the upper Zambesi River he discovered a spectacular waterfall which he named 'Victoria Falls' in 1855. He reached the mouth of the Zambezi on the Indian Ocean in May 1856, becoming the first European to cross the width of southern Africa.

Sources: www.wikipedia.de
http://www.geo.ed.ac.uk/home/scotland/greatscots.html
James Braid

was a Scottish neurosurgeon who coined the term and invented the procedure known as hypnotism. Born in Fife and educated at the University of Edinburgh, Braid practised in Scotland for a short time, then moved to Manchester, England, where he lived for the rest of his life. In 1843 he published *Neurypnology: or the Rationale of Nervous Sleep*, his first and only book-length exposition of his views. In this book he coined the words *hypnotism*, *hypnotize*, and *hypnotist*, which remain in use. Braid thought of hypnotism as producing a "nervous sleep" which differed from ordinary sleep. The most efficient way to produce it was through visual fixation on a small bright object held eighteen inches above and in front of the eyes. Braid regarded the physiological condition underlying hypnotism to be the over-exercising of the eye muscles through the straining of attention. *Braidism* is a synonym for hypnotism, though it is used infrequently.

Sources: www.wikipedia.de

http://www.jamesbraidsociety.com/jamesbraid.htm
Group 4: Watson Watt, Fleming, Faulds

**Sir Robert Alexander Watson-Watt**

is considered by many to be the "inventor of radar". Radar development was first started elsewhere, but Watson-Watt created the first workable radar system, turning the theory into one of the most important war-winning weapons. Born in Brechin in Angus, Scotland, he was a descendant of James Watt, the famous engineer and inventor of the practical steam engine. After attending public school in Brechin, he was accepted to University College, Dundee. He graduated in engineering in 1912, and was offered an assistantship by Professor William Peddie. It was Peddie who encouraged him to study radio, or "wireless telegraphy" as it was then known. On February 12, 1935, Watson-Watt sent a memo of the proposed system to the Air Ministry, entitled *Detection and location of aircraft by radio methods*. The concept clearly had amazing potential and Watson-Watt was asked for a demonstration. The demonstration was a success. His contributions to the war effort were so overwhelming that he was knighted in 1942. In 1952 he was awarded £50,000 by the British government for his contributions in the development of radar. He spent much of the post-war era in Canada, and later the USA, where he published *Three Steps to Victory* in 1958. After the war Watson-Watt was reportedly disappointed that he did not gain more recognition for his contribution to the allies' victory. He established a practice as a consulting engineer, but in the 1950s moved to Canada, and later to the USA. He returned to Scotland in the 1960s.

Sources: www.wikipedia.de

http://www.geo.ed.ac.uk/home/scotland/greatscots.html

**Sir Sandford Fleming**

was a prolific Scottish-born Canadian engineer and inventor, known for introducing Universal Standard Time and Canada's postage stamp. Fleming was born in Kirkcaldy, Fife, Scotland, and in 1845, at the age of 17, he emigrated with his older brother David to Ontario. His inventive mind was at work almost immediately, and in 1847 he started testing what appears to be the first in-line roller skate. In 1849 he established the Royal Canadian Institute. In 1851 he designed the *Threepenny Beaver*, the first Canadian postage stamp. Throughout this time he was fully employed as a surveyor, mostly for the Grand Trunk Railway. His work for them eventually gained him the position as Chief Engineer of the Northern Railway of Canada in 1855, where he tire-
lessly advocated the construction of iron bridges instead of wood for safety reasons.

After missing a train in 1876 in Ireland because its printed schedule listed p.m. instead of a.m., he proposed a single 24-hour clock for the entire world, located at the centre of the Earth and not linked to any surface meridian. At a meeting of the Royal Canadian Institute on February 8, 1879 he linked it to the anti-meridian of Greenwich (now 180°W). He suggested that standard time zones could be used locally, but they were subordinate to his single world time. He continued to promote his system at major international conferences, including the International Meridian Conference of 1884. That conference accepted a different version of Universal Time, but refused to accept his zones, stating that they were a local issue outside its purview. Nevertheless, by 1929 all of the major countries of the world had accepted time zones. His accomplishments were well known worldwide, and in 1897 he was knighted by Queen Victoria. Fleming Hall was built in his honour at Queen's in 1901, and rebuilt after a fire in 1932. It was the home of the university's Electrical Engineering faculty.

Sources: www.wikipedia.de


http://canyon.alanmacek.com/index.php/Sandford_Fleming

Dr. Henry Faulds

was a Scottish scientist who is noted for the development of fingerprinting. Faulds was born in the Scottish town of Beith, North Ayrshire into a family of modest means. Aged 13, he was forced to leave school, and went to Glasgow to work as a clerk to help support his family; at 21 he decided to enroll at the Facility of Arts at Glasgow University, where he studied mathematics, logic and the classics. He later studied medicine at Anderson's College, and graduated with a physician's licence. Following graduation, Faulds then became a medical missionary for the Church of Scotland. In 1871, he was sent to British India, where he worked for two years at a hospital for the poor. Faulds established the first Scottish mission in Japan in 1874, with a hospital and a teaching facility for Japanese medical students.

Whilst accompanying a friend to an archaeological dig he noticed how the delicate impressions left by craftsmen could be discerned in ancient clay fragments. Examining his own fingertips and those of friends, he became convinced that the pattern of ridges was unique to each individual. Shortly after these observations his hospital was broken into. The local police arrested a member of staff whom Faulds believed to be innocent. Determined to exon-
erate the man, he compared the fingerprints left behind at the crime scene to those of the suspect and found them to be different. On the strength of this evidence the police agreed to release the suspect. In an attempt to promote the idea of fingerprint identification he sought the help of the noted naturalist Charles Darwin. Darwin declined to work on the idea, but passed it on to his relative Francis Galton, who forwarded it to the Anthropological Society of London. When Galton returned to the topic some eight years later, he paid little attention to Faulds letter. As a result of this interchange some controversy has arisen about the inventor of modern forensic fingerprinting. However, there can be no doubt that Faulds' first paper on the subject was published in the scientific journal *Nature* in 1880; all parties conceded this.

Returning to Britain in 1886, after a quarrel with the missionary society which ran his hospital in Japan, Faulds offered the concept of fingerprint identification to Scotland Yard but he was dismissed, most likely because he did not present the extensive evidence required to show that prints are durable, unique and practically classifiable. Subsequently, Faulds returned to the life of a police surgeon. In 1922 he sold his practice and moved to nearby Wolstanton where he died in March 1930 aged 86, bitter at the lack of recognition he had received for his work. His grave is at Wolstanton's St Margaret's churchyard.

Sources: www.wikipedia.de

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**William Paterson**

Paterson, William, 1658–1719, British financier. By the time of the Glorious Revolution (1688–89, which he supported), he had acquired considerable wealth and influence through foreign trade. In 1691, he was the chief projector of the plan to establish the Bank of England, which finally came into being in 1694. Paterson served as a director from 1694 to 1695. In 1695, he proposed to the Scottish Parliament the famous but ill-fated Darien Scheme. Subsequently he devoted several years to carrying out that plan and accompanied the expedition of 1698 to Darien. Paterson advised William III on economic, financial, and state affairs, and he strongly advocated the union of Scotland and England. Paterson strenuously argued for free trade and was a recognized authority in later years.

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