Which Canadian nuclear scientist is most deserving of a new Canadian postage stamp?

**OVERVIEW**

<table>
<thead>
<tr>
<th>Subject Focus: Chemistry, Physics, Science, History, Canadian studies</th>
<th>21st Century Skills Focus: Critical Thinking, Collaboration, Communication</th>
</tr>
</thead>
</table>

**Lesson Context**

Every year, Canada Post releases dozens of new stamps. These stamps showcase distinctive Canadian people, places, things and events.

**Suggested Timing:** 60-65 minutes plus time outside of class

**Learning Goals**

- Identify contributions made by Canadian scientists in the field of nuclear science and technology
- Acquire science knowledge using a variety of resources and methods
- Summarize and communicates information in a variety of ways
- Work collaboratively with team members

**Learning Activities**

In this lesson, students will read about four Canadian scientists in the Famous Canadians section of the TeachNuclear website who have made important contributions to the field of nuclear science and then will nominate one of these Canadians for a new stamp.

**Big Idea**

Canadian scientists have made important contributions to Canadian society in the fields of nuclear science and technology.

**ASSESSMENT & EVALUATION**

<table>
<thead>
<tr>
<th>Prior Knowledge and Skills</th>
<th>Assessment Look-Fors</th>
<th>Assessment Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familiarity with Canadian postage stamps</td>
<td>Students use valid and persuasive evidence when selecting the scientist</td>
<td>Observation of student participation during small group work and class discussions</td>
</tr>
<tr>
<td>Experience working in cooperative small groups</td>
<td>Students participate actively in class and small group discussions</td>
<td>Feedback to student groups about their completed Scientist Nomination Forms</td>
</tr>
<tr>
<td>Experience with persuasive writing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**RESOURCES & MATERIALS**

- Curriculum alignment [.html]
- Envelope with a current Canadian postage stamp
- Stickers – 1/student
- Electronic device with internet access
- Computer and LCD projector or interactive whiteboard

©2014 Canadian Nuclear Association/Let’s Talk Science
http://teachnuclear.ca/
MINDS-ON

- Show the students the envelope and have them guess what the lesson is about. Give prompts as necessary until students identify that the lesson is about stamps.
- Explain that every year Canada Post releases a number of different postage stamps. Find out if any of the students are stamp collectors or know of anyone who is a stamp collector.
- Using the internet and the LCD project or interactive whiteboard, go to the Library and Archives Canada – Postage Stamp Collection search page and click on the drop-down menu at the upper right (Canada, 1993-2009), then choose 2009 to see the stamps issued this year.
- Have the students describe the types of things which are depicted on stamps. They should notice that stamps typically depict famous Canadian people, places and nature as well as current and historical events.
- Periodically, Canadians in the field of science and technology have been pictured. On the same drop-down menu as before (Canada, 1993-2009), click on the link for 2002 and scroll down to the bottom of the page. On the lower right you will see two tall stamps featuring men and maps. Have the students try to identify who the two men are. The man on the left is Sir Sanford Fleming and the man on the right is Guglielmo Marconi (you can read more about them by clicking on the stamps themselves).
- In the field of nuclear science, only one scientist has been honoured by being chosen for a stamp. This is Sir Ernest Rutherford. You can see his stamp by going to the top centre of the web page (Canada, 1967 – 1981) and clicking on the drop-down menu. Chose 1971-1972 from the list.
- Discuss with the students which of Rutherford’s accomplishments merited him getting a postage stamp. This could include his theory of atomic structure, his invention of the Rutherford-Geiger detector, his changing of nitrogen into oxygen as he splits the atom, his prediction of the existence of neutrons, his identification of the phenomena of half-life, his Nobel Prize in Chemistry in 1908, etc.

“In science there is only physics; all the rest is stamp collecting.”
Attributed to Sir Ernest Rutherford

Suggested Timing: 15 minutes

Did You Know?
October is stamp collecting month around the world.

Did You Know?
Stamp collecting is not the same as philately, which is the study of stamps.

ACTION

- There are many other Canadian scientists who have accomplishments worthy of stamps. Four potential candidates in nuclear physics can be found in the Famous Canadians section of the TeachNuclear website. These include Dr. B. Brockhouse, Dr. H. Johns, Dr. G. Laurence and Dr. W.B. Lewis (Rutherford already has a stamp, so he is not a candidate).
- Assign one of these scientists to each of the four groups and explain that they are to consider their scientist for a postage stamp. Each group will read about their scientist online (or from a paper print out of the web page) and then cooperatively answer the questions on the Scientist Nomination Form BLM. Each group will only complete one nomination form. If necessary, the forms could be completed outside of class time.

Implementation Option

- Instead of one of these four scientists, students could research and complete a nomination form for another Canadian scientist who works in the field of nuclear science or technology.
**CONSOLIDATION**

<table>
<thead>
<tr>
<th>Suggested Timing: 20 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>- After the groups have completed their nomination forms, post the four forms. Provide each student with a sticker.</td>
</tr>
<tr>
<td>- The students will use the stickers to identify which scientist they think is the most worthy of a stamp (each student may only vote for one scientist – and they must vote for someone). Have the students read each of the posted nomination forms and place their stickers on the scientist who they think are most deserving.</td>
</tr>
<tr>
<td>- After all of the students have had a chance to vote for a scientist, tally the votes. Questions for discussion can include:</td>
</tr>
<tr>
<td>- <em>Why did you choose the scientist that you did?</em></td>
</tr>
<tr>
<td>- <em>What criteria did you use to decide?</em></td>
</tr>
<tr>
<td>- <em>Do you think the most deserving person received the most votes?</em></td>
</tr>
<tr>
<td>- <em>What criteria do you think Canada Post uses to decide what goes on stamps?</em></td>
</tr>
<tr>
<td>- <em>Who should judge what goes on Canadian stamps?</em></td>
</tr>
</tbody>
</table>

**EXTENSIONS**

- Groups could each nominate a spokesperson who would ‘speak on behalf’ of their candidate before voting.
- Students could design the stamp for the winning scientist using the stamps at the Library and Archives Canada – Postage Stamp Collection for inspiration.
- The nomination forms could be posted in a hallway and students from other classes could vote as well.

**ADDITIONAL RESOURCES — Canadian Nuclear Association**

**TeachNuclear Web pages**

- Famous Canadians
- Dr. B. Brockhouse
- Dr. H. Johns
- Dr. G. Laurence
- Dr. W.B. Lewis
- Sir Ernest Rutherford

**Related TeachNuclear Lesson Plans**

- The Atomic Age in Canada
- Nuclear in Our Lives Jeopardy

**ADDITIONAL RESOURCES — CurioCity by Let’s Talk Science**

**Videos**

- History of Canada’s Nuclear Industry
- Ernest Rutherford Biography
- Rutherford and the Discovery of the Atomic Nucleus
BACKGROUND/ADDITIONAL INFORMATION

- **Library and Archives Canada – Postage Stamp Collection** (Retrieved Dec. 10, 2014)
  On this site you can search all Canadian stamps issued as far back as 1851.
- **Library and Archives Canada – 2000** (Retrieved Dec. 10, 2014)
  Stamps for disease-fighters Sir Frederick Banting and Armand Frappier were issued in 2000.
- **The Royal Philatelic Society of Canada** (Retrieved Dec. 10, 2014)
  Click on the [Canada Post](http://canadapost.ca) link in the top menu bar to find out about the Canada Post stamp program. It show which stamps are released each year.
- **Collecting Stamps - Canada Post** (Retrieved Dec. 10, 2014)
  Here you can see images of the stamps released each year.
- **Canadian Stamp News** (Retrieved Dec. 10, 2014)
  This web site can keep you up to date with the world of stamp collecting in Canada.