

The Stager Cipher

Secret Codes in the Civil War

4th Grade Lesson Plan to be used with the

Robert H. Milroy

Online Historical Records Collection
Jasper County Library Rensselaer Indiana

<http://digi.jasperco.lib.in.us>

By Melissa Widner

For Rensselaer Public Library

Brief Description: This lesson seeks to provide 4th grade students with insight into the Civil War from an Indiana perspective and a connection with the subject using a fun activity many students will find appealing.

© 2006 Rensselaer Public Library

It is the researcher's obligation to determine and satisfy copyright or other use restrictions when publishing or otherwise distributing materials found in the Library's collections. Transmission or reproduction of protected items beyond that allowed by fair use requires the written permission of the copyright owners. Researchers must make their own assessments of rights in light of their intended use.

Indiana Curriculum Alignment:

Social Studies

4.1.15 Using primary source and secondary source materials, generate questions, seek answers, and write brief comments about an event in Indiana history.

Teacher's Guide

Teacher's Lesson Goal / Objectives

The learner will discover how and why the U.S. military first started using secret codes in a fun lesson about the Civil War. The learner will also become aware of using first-hand records and online library resources.

Technology Resources Needed: This lesson does not require the use of any technology, but may be used with technology in the following ways:

- Allow students to go online to the Jasper County Public Library website <http://www.jasperco.lib.in.us/> and download their own lesson plan and print it.
- Encourage students to explore, in a lab or individual setting, the Robert H. Milroy historical records collection at <http://digi.jasperco.lib.in.us/>.

Pre-activities

Use the vocabulary to build background awareness before starting the lesson plan.

Activities

Instruct your students to read the lesson plan and to answer the questions following the reading selection.

Sample answers to How Well Did You Read

1. Why were coded messages needed during the Civil War?
Telegraph lines could be wiretapped. To prevent the enemy from learning the message.
2. What method of communication was used to send Stager ciphers?
The telegraph.
3. Describe one of the ways the Stager system coded messages.
A replacement code / It replaced important words with other words.
A route cipher / It placed words in a grid and put them in a different order.
4. What was the weakness of the Stager system?
The codebooks could explain the code if an enemy ever found them.

Additional Activity

Students may want to pursue the optional lesson plan in "The Stager Cipher" and attempt to make their own cipher. This is an advanced level activity.

The Stager Cipher

Student Handout

Vocabulary

cipher - noun: A note written in a secret code.

telegraph - noun: A device used to send a message at a distance over a wire (usually in Morse code).

message - noun: A note to a person, usually brief and written.

key - noun: Something important for explaining.

complicated - adjective: Difficult or hard to understand.

variation - noun: Something changed a little bit.

cryptography - noun: The act of writing in code or cipher.

Additional Activities

Students may choose to try to make their own Stager Cipher using the instructions on pages 4-6.

On Your Own

To learn more about the Civil War through the eyes of someone who lived through it, the personal letters and papers of Gen. Milroy's Civil War years can be found online at <http://digi.jasperco.lib.in.us/>. A search for cryptograms can reveal other codes Milroy received.

The Stager Cipher

Secret Codes in the Civil War

Indiana and the Civil War

Robert H. Milroy Collection
Jasper County Public Library
Rensselaer, Indiana

Secret codes were an important part of the Civil War, especially for the Union forces who fought most of the war on enemy ground. Though telegraph lines were supposed to allow people to send private messages to each other, it was easy to tap the wires and listen in.

To make sure important messages were not learned by the enemy, they were coded using a complicated system known as the Stager ciphers, the code keys known only by a handful of people.

Anson Stager (1825-1885) was the first general manager of Western Union Telegraph Company. The company, formed in 1856, had only been in business five years when the Civil War broke out.

When the Confederacy fired on Fort Sumpter April 12, 1861, Stager, whose office was in Ohio, was asked by the state's governor to devise a code so he could use the telegraph to keep in touch with nearby states.

In 1862, realizing the telegraph could be very useful for the war effort, President Abraham Lincoln took over the nation's new telegraph companies and turned them into a nation-wide system under military control.

Though Stager had no interest in codes, he proved to have an amazing skill at them. His simple code, and later variations of it, could not be broken by the Confederate forces throughout the war.

Stager's code soon brought him to the attention of Secretary of War Edwin Stanton, who placed him in charge of the newly-formed U.S. Army Signal Corps in 1863. His ciphers became the nation's first military cryptography system.

The Stager ciphers use two ways of encoding a message.

First, important words such as place names and proper names and times were replaced with code words. In one code, "A. Lincoln" was replaced with "Adrian;" "the enemy" was replaced with "village."

Second, the messages were coded using what is known today as a "route cipher." After the message had been coded, the words were placed in a grid, and blanks in the grid were filled in with meaningless words.

A code book let the encoder and decoder know which order to place the words based

on their positions in the grid.

During the war, Stager came up with 12 different code systems, each like the other but varied slightly, using different replacement words and different paths to encode.

Confederate code breakers eventually discovered *how* the messages were coded, but without a key they could not break the code. Copies of Stager-coded messages were even placed in Confederate newspapers in the hopes they could be broken, but with no luck.

E.P. Alexander, the founder of the Confederate Army Signal Corps, once said that the Stager system was an excellent code with one weakness: the possibility that the code books needed to code and decipher the messages might one day fall into enemy hands.

Among the R.H. Milroy Collection at the Jasper County Library are a few messages the General received during his days on the battlefield, coded using the Stager ciphers.

How well did you read?

1. Why were coded messages needed during the Civil War?

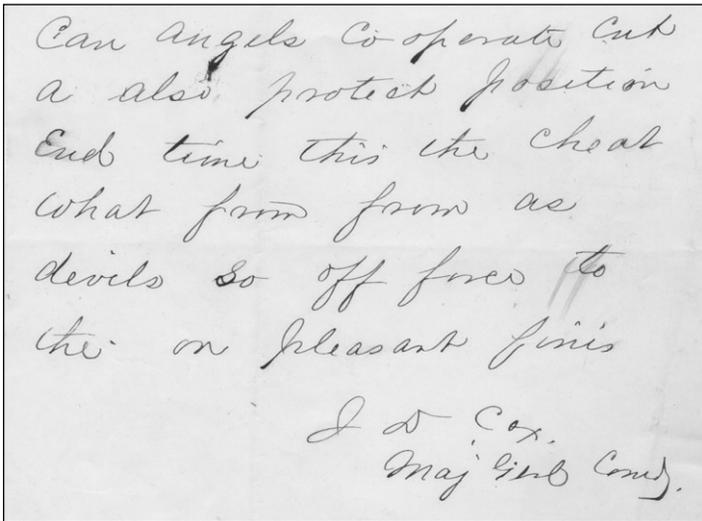
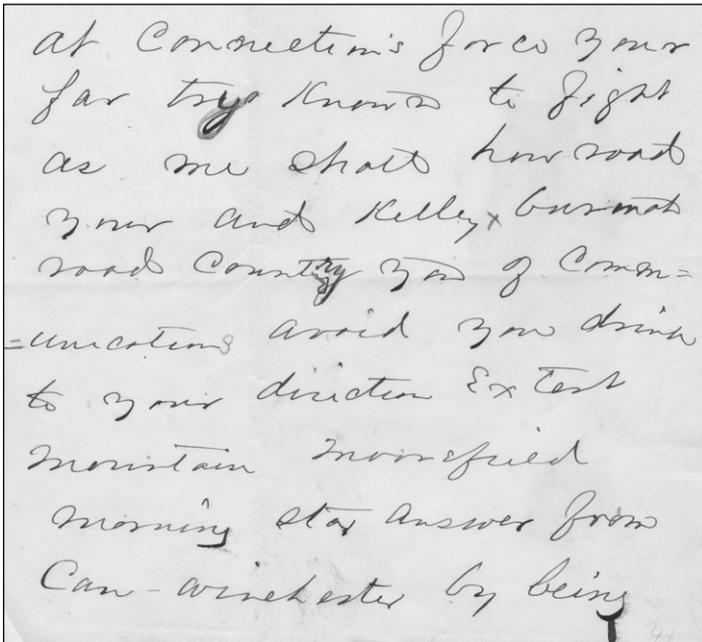
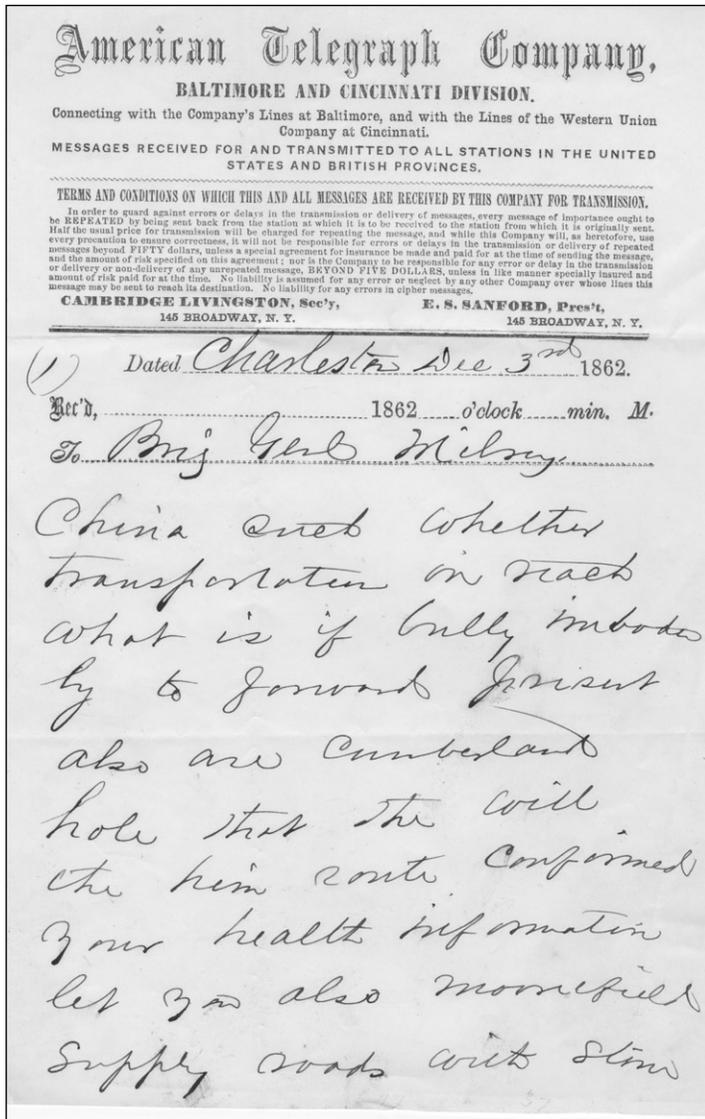
2. What method of communication was used to send Stager ciphers?

3. Describe one of the ways the Stager system coded messages.

4. What was the weakness of the Stager system?

A real Civil War cipher

This message, sent Dec. 3, 1862 from Maj. Gen. J.D. Cox to Brig. Gen. Robert H. Milroy is an example of the Stager cipher in use during the Civil War. Milroy would have taken this message, written quickly here in his own handwriting, and rewritten it into a grid so it could be deciphered using a code book. It was likely written using the China route.



A message in code

American Telegraph Company
Charleston Dec 3rd 1862
To: Brig Genl Milroy

China quest whether
transportation in reach
what is if bully imboden
by to forward Jrsisert
also are Cumberland
hole that the will
the him route confirmed
your health information
let you also morsefield
supply roads with stine

at connection's for co your
far try know w to fight
as me shall hour road
your and Kelley x Guusmat
road country you of comm=
unications avoid you drink
to your direction extest
Mountain Moonfield
morning star answer from
can - Winchester by being

can angels co-operate cut the on pleasant finis
a also protect position
end time this the cheat J D Cox
what from from as Maj Genl Comd.
devils so off force to

R.H. Milroy Online Collection, RHM_1862_233

Make your own Stager cipher

Bonus Activity

1. Write a message

Your message might be: "Let's meet tomorrow after school at the park to play baseball."

2. Replace important words with code words

On a sheet of paper, make a list of common words you will use in your message or messages. By 1865, there were more than 1,600 code words in the Stager cipher code books. You don't have to replace every word, just the key places, people, events and times.

Baseball
Park
After School
Tomorrow

Now make up a list of code words you will use instead.

Baseball = soccer
Park = bridge
After school = morning
Tomorrow = Monday

Coded message : "Let's meet Monday morning at the bridge to play soccer."

3. Make a route cipher

Anson Stager's codes were hard to break because they were double encoded. In addition to replacing key words, he also re-ordered the way the words were in the message using a route cipher. To make a route cipher, you need to put your message in a grid.

The sample message above has 10 words. Your grid can have spaces for more words than your message, but not less. You can fill in the blanks with "null" or meaningless words.

You can make a grid for 12 words: four across, three deep.

1	2	3	4
Let's	meet	Monday	Morning
at	the	bridge	to
play	soccer		

Now come up with a list of filler words you would never use in your message:

- cat
- tire
- window
- umbrella
- sneeze

And fill in your blanks

1	2	3	4
Let's	meet	Monday	Morning
at	the	bridge	to
play	soccer	umbrella	cat

4. Decide on a route to use in your cipher.

The simplest route path is to go down each row in order instead of across.

Your message now becomes:

"Let's at play meet the soccer Monday bridge umbrella morning to cat."

A more complicated twist is to pick a different row to start from, or to go up instead of down, or mix it up:

(Down 3, Up 4, Down 1, Up 2)

"Monday bridge umbrella cat to morning let's at play soccer the meet."

For a complicated route, or to use more than one route with the same set of replacement words, you might also include agreed upon code words for each path

Michigan Route: (Down 3, Up 4, Down 1, Up 2)

Indiana Route: (Down 2, Down 4, Up 1, Up 3)

Ohio Route: (Up 4, Up 1, Down 2, Down 3)

Then use your route code at the beginning of the message.

"Michigan Monday bridge umbrella cat to morning let's at play soccer the meet."

5. Make a codebook.

Once you choose your code words, your grid size, your filler words and your route path, you need to put all the information down in your code book so you can code and decode messages. Make an exact copy of the book for each person using your code.

The key to a good secret code is not to stick with it for long. The longer you use a code, the more likely someone might figure it out. Also, make sure you keep your code book out of enemy hands. Happy Coding.

A sample grid

1	2	3	4	5

Copyright 2006 By Melissa Widner, for Jasper County Public Library

Sources:

Janeczko, Paul B. Top secret: a handbook of codes, ciphers, and secret writing. Cambridge: Candlewick Press, 2004.

Sauerberg, Jim. "Route Ciphers in the Civil War." Mathematics Awareness Month. Joint Policy Board for Mathematics. April 2006. 5 June 2006 <http://www.mathaware.org/Sauerberg_route-essay.html>.

Romano, Kevin, CPT. "The Stager ciphers and the U.S. military's first cryptographic system." U.S. Army Signal Center Fort Gordon. May 8, 2006. 5 June 2006 <<http://www.gordon.army.mil/AC/Wntr02/stager.htm>>.