PENN BRAD OIL MUSEUM

RESOURCE GUIDE FOR EDUCATORS
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Resource Guide Created By
Chelsea Carey
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PENN BRAD OIL MUSEUM

HOW TO IMPLEMENT THIS RESOURCE GUIDE

This resource guide is designed to assist educators in connecting their visit to the PENN BRAD OIL MUSEUM to the PA Core Curriculum Standards.

Included in this guide are graphic organizers that students may complete in the classroom or during their visit to the PENN BRAD OIL MUSEUM. There are also lesson plan activity options that can be implemented in the classroom with ties to the PA Core Curriculum Standards. Last but not least, there are sneak peaks of what the PENN BRAD OIL MUSEUM has to offer and tips for what to have students look for during their visit.

As stated before, the provided activities are optional and can be altered as needed to best fit the needs of your students.

Please visit the Penn-Brad Oil Museum and expose your students to all of the rich history that lies within it.
MUSEUM INFORMATION

Physical Address
901 South Avenue
Bradford, Pennsylvania 16701

Mailing Address
Post Office Box 36
Custer City, Pennsylvania 16725

Phone: 814-362-1955
Website: pennbradoilmuseum.org
Email: pennbrad1@verizon.net

Hours
Monday-Friday 9am-4pm
Saturday 9am-2pm
Group tours by arrangement only.
Other appointments available upon reservation.
There is no running permitted in the museum, as there are numerous glass displays and other fragile objects.

Students should be under the constant supervision of their instructor at all times so no one gets lost or left behind.

Students are required to be respectful of the museum staff at all times.

Food and drinks are prohibited in the museum as we do not want any displays to get damaged.

We ask that students only touch the hands-on materials provided to them by the museum staff, as we would like all of our more fragile exhibits to remain in-tact.

AND PLEASE ENJOY YOUR VISIT!!
MISSION STATEMENT

The purpose of the PENN BRAD OIL MUSEUM is to preserve the philosophy, the spirit, and the accomplishments of an oil country community by taking visitors back to the early oil boom times of the first billion dollar oil field.

EXPLORE AND DISCOVER....

:::The museum displays which show the history, struggles, and success of the people who ushered in the billion dollar oil boom to the Bradford area:::

:::A working standard rig standing 80 feet high is at the center of the exhibits and is the showpiece of the PENN BRAD OIL MUSEUM:::

:::The core testing laboratory, which was once used by John DePetro to help determine the suitability of a new site for oil production:::

:::A model home of an oil field worker during the early boom times:::
Use this graphic organizer to map out your museum experience. Record what triggers your senses as you are guided through the museum grounds.

<table>
<thead>
<tr>
<th>I HEAR</th>
<th>I SEE</th>
<th>I SMELL</th>
<th>I TOUCH</th>
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<tr>
<td>MUSEUM</td>
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<td>DERRICK</td>
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<td>HOUSE</td>
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</table>
The Vernacular of the Oil Field

Across:
1. A cast iron, two-spouted pot that is stuffed with cotton wicking dunked into a barrel of crude oil and used to supply light so drillers could work day and night
3. Sample of the oil sands; cylinder-shaped
5. An electrical or mechanical device that joins parts of systems and can affect the interaction of, or energy transfer between, parts of systems
6. A crack or surface of breakage within rock not related to foliation or cleavage in metamorphic rock along which there has been no movement
7. The structure used to support the crown blocks and the drillstring of a drilling rig
9. The tooldresser on a rig who works with the driller to keep the tools sharpened
10. Tool used to remove cuttings from a well
14. The entire drilling unit including the derrick
15. General lease help willing to do most any job on the lease

Down:
2. The oil sands where oil is found in quantities sufficient to produce a profit
4. A 16 in. square oak beam that supports the walking beam as it lifts the heavy drilling tools
7. Small tool storage house near the rig; the driller’s office
8. Laboratory analyses performed on formation core samples as part of a stimulation-treatment design process
11. An attachment fitted to the exhaust pipe of a pumping unit
12. Unskilled or slightly skilled oilfield laborer
13. The part of the drilling tool that bores or digs the hole
16. The part of a well not cased

Listen for examples of myths and truths during your museum tour. Use this graphic organizer to record at least two myths and truths that are discussed.
DID YOU KNOW...

Edmund C. Breene made what many historians believe to be the first reference to the effects of “flooding” or re-pressuring an oil well with water. This practice emerged in the Pennsylvania Field in 1900, and was a byproduct of field observations about the influence of water wells on oil well pressure and production. Trial and error led to the “five spot” method of water flooding that entailed drilling four water wells an equal distance around an oil well. Pressure applied to the intake water wells forced the oil through the sand to the center well, greatly increasing oil flow and recovery.

Current Hot Topic: Marcellus Shale Fracking Industry

"HYDRAULIC FRACTURING SQUANDERS OUR PRECIOUS WATER RESOURCES."

There is no question that hydraulic fracturing uses a lot of water: It can take up to 7 million gallons to frack a single well, and at least 30 percent of that water is lost forever, after being trapped deep in the shale. And while there is some evidence that fracking has contributed to the depletion of water supplies in drought-stricken Texas, a study by Carnegie Mellon University indicates the Marcellus region has plenty of water and, in most cases, an adequate system to regulate its usage.

"DO NOT DRINK THIS WATER"

It's an iconic image, captured in the 2010 Academy Award—nominated documentary GasLand. A Colorado man holds a flame to his kitchen faucet and turns on the water. The pipes rattle and hiss, and suddenly a ball of fire erupts. It appears a indictment of the gas drilling nearby. But Colorado officials determined the gas wells weren't to blame; instead, the homeowner's own water well had been drilled into a naturally occurring pocket of methane.

Read more: Is Fracking Safe? The Top 10 Myths About Natural Gas Drilling - Popular Mechanics

For a great article explaining the exaggerations and realities of fracking please visit:
http://www.sciencenews.org/view/feature/id/343202/description/The_Facts_Behind_the_Frack
OBJECTIVES
⇒ Students will gain an awareness that there are both myths and truths surrounding the oil and gas industry.
⇒ Students will use evidence found through research and their museum experience to prove or disprove an idea.

MOTIVATION & DISCUSSION
⇒ Ask students to analyze the difference between a myth and a truth and come up with a definition for each term as a class.
⇒ Ask students if they have heard what they believe are myths or truths surrounding the oil and gas industry and make a chart of these ideas as a class.
⇒ Discuss why an environmentalist or oil field expert would stretch the truth.
⇒ Show and discuss political cartoons regarding the oil and gas industry.

ACTIVITY 1
⇒ Debate: Set up a debate by splitting your students up into two groups. Have one group work as oil field experts, and the other work as environmentalist representatives. Have them each debate their side using only factual evidence to support their argument.

ACTIVITY 2
⇒ Have students create a political cartoon or propaganda poster to uncover the truth about a common oil or gas industry myth.

EXTENSIONS
⇒ Language Arts: Have students research and find factual evidence on different myths surrounding the Marcellus Shale Fracking controversy today and see if they can uncover the truths.
⇒ Language Arts: Have students write a persuasive essay regarding their opinion backed with factual evidence on the myths and truths surrounding the oil and gas industry.

CONNECTIONS
8.6 WRITING: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.
⇒ CC.8.6.6-8.A.
⇒ CC.8.6.6-8.E.
⇒ CC.8.6.6-8.G.
⇒ CC.8.6.6-8.H.

8.5 READING INFORMATIONAL TEXT: Students read, understand, and respond to informational text—with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.
⇒ CC.8.5.6-8.B.
⇒ CC.8.5.6-8.D.
⇒ CC.8.5.6-8.E.
⇒ CC.8.5.6-8.F.
Use this graphic organizer to document an invention that you find interesting during your tour of the PENN BRAD OIL MUSEUM.

HELLO, MY NAME IS ________________________ AND I AM THE INVENTION OR TOOL THAT YOU THOUGHT WAS INTERESTING.

I AM USED TO...

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

DRAW ME HERE

I AM SPECIAL BECAUSE…

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________
DID YOU KNOW...

Mary Alford was a trained accountant and former teacher who studied explosives under the supervision of her husband. In 1883, the couple built a dynamite production facility located near Eldred, PA. As the demand for explosives increased in the Bradford Field, they started producing nitroglycerine as well. Following her husband’s death in 1898, Mary went on to supervise the manufacturing of explosives for two decades. By 1899, her business was producing 3,000 lbs. of nitroglycerine and 6,000 lbs. of dynamite per day.
OBJECTIVES
⇒ Students will discover and be knowledgeable of new vocabulary words associated with the oil industry.
⇒ Students will discover different tools and inventions associated not only with the oil rig and drilling, but in the homes of that time period as well.

MOTIVATION & DISCUSSION
⇒ Ask students for their definition of an invention.
⇒ Ask students for examples of inventions that they use on a daily basis.
⇒ Compare and contrast the motivation behind inventions created on oil rigs before and after the 1930s.

ACTIVITY 1
⇒ Have students create a model of an invention that they would find useful on an oil rig previous to the 1930s and then have them present it to the class with factual evidence of why the invention would be successful and popular.

ACTIVITY 2
⇒ Have students make an ad for a magazine marketing any invention that they discovered at the PENN BRAD OIL MUSEUM.

EXTENSIONS
⇒ Language Arts: Create a RAFT assignment.
ROLE: OIL FIELD WORKER
AUDIENCE: OTHER WORKERS
FORMAT: PRESENTATION or SPEECH
TOPIC: A NEW INVENTION THAT THEY HAVE CREATED

CONNECTIONS
8.6 WRITING: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.
⇒ CC.8.6.6-8.C.
⇒ CC.8.6.6-8.H.
⇒ CC.8.6.6-8.B.

8.5 READING INFORMATIONAL TEXT: Students read, understand, and respond to informational text—with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.
⇒ CC.8.5.6-8.D.
⇒ CC.8.5.6-8.G.
Use this graphic organizer to document at least two samples of artwork or photographs located in the PENN BRAD OIL MUSEUM that depict the development of Bradford due to the oil boom.

SAMPLE 1

I SEE…


I FEEL…


SAMPLE 2

I SEE…


I FEEL…


During the “oil wars” of 1872, Rockefeller’s Standard Oil forced Lewis Emery’s refinery out of business. Emery then moved to Bradford where he struck oil in 1875 and became one of the region’s leading producers. Emery continued to challenge Rockefeller in 1878. As Standard Oil was building an extensive gathering pipeline system to service the booming Bradford Field, Emery became a leading voice against the consortium’s monopolistic practices. He was elected as a Pennsylvania state senator in 1892, and in 1901 he completed a pipeline system from Bradford to New Jersey, vindicating his treatment by Standard Oil three decades before. Be sure to look for the fire engine in the PENN BRAD OIL MUSEUM and ask why it is there.
OBJECTIVES
⇒ Students will discover the impact that the oil industry has had in Bradford.

MOTIVATION & DISCUSSION
⇒ Discuss the concept of development.
⇒ Ask students for their ideas on how a big industry has impacted their town, whether it be oil or something else.
⇒ Ask students if they have witnessed or heard of any impacts that the oil industry has had in Bradford. If not, then explore this as a class.

ACTIVITY 1
⇒ Have students research how the oil industry played a role in the development of Bradford. Then have students build a panorama or model of an oil boom town before and after the drilling of oil in that area.

ACTIVITY 2
⇒ Have students create an interview with a partner about the role a major industry, whether it be oil or something else, has played in the development of their town. Then have the students act out the interview in front of the class.

EXTENSIONS
⇒ Language Arts: Have students research and write about the role that the oil industry has played in the development of Bradford.
⇒ Language Arts: Have students compare and contrast Bradford before the oil boom and after.

CONNECTIONS
8.6 WRITING: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.
⇒ CC.8.6.6-8.B.
⇒ CC.8.6.6-8.C.
⇒ CC.8.6.6-8.H.
⇒ CC.8.6.6-8.G.
⇒ CC.8.6.6-8.B.

8.5 READING INFORMATIONAL TEXT: Students read, understand, and respond to informational text—with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.
⇒ CC.8.5.6-8.B.
⇒ CC.8.5.6-8.G.
Listen for the different jobs and careers that the oil field had to offer during the oil boom in Bradford during your visit at the PENN BRAD OIL MUSEUM. Use this graphic organizer to explore a job or career in the oil industry.

HELLO, MY NAME IS JEB WILSON. I AM A

JOB TITLE

WHILE I’M OUT ON A RIG, MY JOB IS TO...

JOB DESCRIPTION

MY TOOL OF CHOICE IS...
DID YOU KNOW...

Unlike oil in the rest of the world, that is based on asphalt, and is black in color, Pennsylvania Oil is based on paraffin, and is greenish, golden amber in color. It is this paraffin base that makes Bradford, as it says in the masthead of “The Bradford Era,” “THE HIGH GRADE OIL METROPOLIS OF THE WORLD.” Up to one third of paraffin based crude oil can be refined into high grade lubricants such as motor oil and grease.

WEALTHY ENTREPRENEURS THAT PROMOTED OILFIELD DEVELOPMENT

WORKERS OF LARGE OIL COMPANIES OR “MAJORS”

WORKERS OF SMALL OIL COMPANIES OR “INDEPENDENTS”

MASS OF WORKERS HIRED BY CONTRACTORS TO DO THE BULK OF THE WORK SUCH AS THE DRILLING, PIPELINING, TANK BUILDING, FREIGHTING, AND ETC.

CABLE TOOL RIGS: TWO MAN CREW

“DRILLER”
“TOOLIE” OR “TOOL DRESSER”

ROTARY DRILLING RIG: A FOUR OR FIVE MAN CREW COLLECTIVELY CALLED “ROUGHNECKS”

“DRILLER”
“FLOOR HANDS”
“DERRICK MAN”
“MOTOR MAN”
“PUSHER”
“ROUSTABOUTS”

READ MORE: http://digital.library.okstate.edu/encyclopedia/entries/o/oi003.html
OBJECTIVES
⇒ Students will gain a better understanding of the different professions in the oil industry.

MOTIVATION & DISCUSSION
⇒ Ask students if they have any family connections to the oil industry; and if so, have them explain their experiences with those involved in the oil industry.
⇒ Discuss what jobs students think exist on an oil rig.
⇒ Ask students if they believe that the oil industry jobs before the 1930s are similar or different to current oil field professions.
⇒ Take a poll of the classroom to see if any of your students have an interest in working in the oil industry; and if so have them tell the class why they are interested.

ACTIVITY 1
⇒ Have students create and complete a job application to work in the oil industry previous to the 1930s.

ACTIVITY 2
⇒ Have students research a given job in the oil industry and then create a job description with a partner. Then have the students act out a job interview for that job explaining the qualifications of the job and why the applicant should have that job.

EXTENSIONS
⇒ Language Arts: Have students write about whether they would have liked to work in the oil industry previous to the 1930s or in the present oil industry and why.

CONNECTIONS
8.6 WRITING: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.
⇒ CC.8.6.6-8.A.
⇒ CC.8.6.6-8.E.
⇒ CC.8.6.6-8.H.

8.5 READING INFORMATIONAL TEXT: Students read, understand, and respond to informational text—with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.
⇒ CC.8.5.6-8.A.
Hello there, my name is Derek the Driller. I just got done working a long shift on the oil rig. Since I'm done for the day, I think I will…

_______________________________________________
_______________________________________________
_______________________________________________
_______________________________________________
_______________________________________________

I wonder what my wife and kids did today. They probably...
_______________________________________________
_______________________________________________
_______________________________________________
DID YOU KNOW…

Before the oil boom, land sold for $6-$10 per acre in the Bradford area; by the late 1870s, prices jumped to nearly $1,000 per acre. More than a thousand letters were posted at the Bradford City Post Office daily in 1878. Estimates of 500 telegraphs either sent or received each day, and $2000 in money orders a week, testify to the population explosion and the resulting changes that were taking place in the valley.

A Pumper’s Poem

Anonymous

There is a class of people
You will always find a few,
Who think a pumper has a snap
And nothing much to do.
But if they'll start and follow him
On some cold winter day,
If it don’t change their point of view
I’ll eat a bail of hay.

His wells are scattered on the hills
Where the ground is rough and steep,
His path is always drifted full
The snow gets mighty deep.
You will know that he is there
As you hear the bark of his engine
On the cold and frosty air.

He finds a well that’s frozen in.
So he puts on the hose
By the time he gets that well thawed out
He has frozen half his toes.
He finds a lead line full of ice
And nothing going through,
So he carries wood and builds a fire
And that takes an hour or two.

Perhaps he has a string of wells
Connected on a power.
If everything should work all right
He can pump them in an hour.
He starts his engine, hooks them up
Things seem to be OK.
But suddenly a pull line breaks.
And there is hell to pay!

He uses the kind of language then
That he thinks the occasion demands.
By the time he has those rods pulled up
He has frozen both his hands.
And so it goes, day after day
And I don’t care a rap
What some may think to the contrary
Pumping in winter is no snap.

And when at last this pumper dies
And leaves this world of care,
St. Peter, he will meet him
At the head of the Golden Stair.
And he’ll say, “I suppose you want to go
Where you’ll never again see a well,
Step right this way my greasy friend,
I’ve a place for you in hell.”

Life on the Rig

“At lunchtime, both men open aluminum lunch pails at the lazy bench and take a short break from their rig chores. The lazy bench is a simple wooden bench inside the rig that gives the worker’s a place to eat, put their feet up or perhaps write some legendary oilfield poetry.”

“The driller unwraps wax paper from a couple of his cold meat sandwiches and whistles when he spies a thick slab of apple pie in the bottom of his pail. These sectioned pails allow the men to carry a cold or hot beverage in the bottom section, and the driller takes a swig from his after he splits our his wad of tobacco. The toolie just grins and unscrews the cap from a pint-size mason jar of cold baked beans left over from last night’s supper. Instead of a cold beverage, a thick slice of buttered homemade bread and a handful of oatmeal cookies fill the bottom of his lunch pail.”

“The sun eventually moves low in the west behind the mountains and the crew fires up a “Yellow Dog,” an iron lamp resembling a two-spouted teapot, for light. These lamps, stuffed with cotton waste material, are filled with kerosene or crude oil. When the wicks are burning brightly, they are hung around the rig to provide light for the men to labor on until the end of their 12-hour shift.”

“Our day at the rig has ended, and we hike back down the dirt path toward home. Instead of birds singing to us as they did this morning, soft rustling noises come from the bushes as one of the nocturnal creatures that live in these mountains scurries away.”

Read more in The Gamble for Glory by Linda K. Delaney
OBJECTIVES
⇒ Students will gain a better understanding of the lifestyle of people during the oil boom times.

MOTIVATION & DISCUSSION
⇒ Discuss the topic of gender roles. Ask students to differentiate the roles of women during the oil boom times and the role of men.
⇒ Ask students how gender roles have changed throughout time.
⇒ Discuss the household items that you have either witnessed at the PENN BRAD OIL MUSEUM or that you have researched from the time period and how they may have impacted life during that era.
⇒ Discuss how our current household items impact our lives now and ask students to analyze why they think these items have developed as they have.
⇒ Ask students if they have any antique items that could be from the time period of the oil boom [pre 1930s].
⇒ Discuss how regulations in the workplace have impacted the oil industry throughout time.

ACTIVITY 1
⇒ Have students research the different gender roles associated with the oil boom time period. Have them dress as if they are from that time period and present the information that they have found.

ACTIVITY 2
⇒ Have students research any household appliance that people had in their homes during the oil boom era. Then have them create a sales pitch for that item and present it to the class as if they are trying to sell it to a consumer of that time period.

EXTENSIONS
⇒ Language Arts: Have students create a journal entry. If they are a girl, have them write as if they are a wife or daughter of an oil field worker. If they are a boy, have them write as if they are a son of an oil field worker or an oil field worker themselves.

CONNECTIONS
8.6 WRITING: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.
⇒ CC.8.6.6-8.A.
⇒ CC.8.6.6-8.C.
⇒ CC.8.6.6-8.E
## USER FEEDBACK SURVEY

Please rate the following:

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<th>2</th>
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<td>How would you rate the overall usefulness of the resource guide?</td>
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<td>How would you rate your museum experience?</td>
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<td>How would you rate the student’s museum experience?</td>
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<td>How would you rate the ability to use this resource guide to meet core curriculum?</td>
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### Suggestions

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<tr>
<td><strong>Suggestions</strong></td>
<td><strong>Comments</strong></td>
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</table>

If you have the time please fill out this brief survey regarding the use of this resource guide and your visit to the museum and mail it to:

**PENN BRAD OIL MUSEUM**  
901 SOUTH AVENUE  
Custer City, PA 16725
SUPPLEMENTAL READINGS & LINKS

A Primer of Oil well Drilling: A Basic Text of Oil and Gas Drilling by Ron Baker
<http://www.amazon.com/Ron-Baker/e/B001JS1VJ6/ref=ntt_atr_dp_pel_1>
Written in a simple language, this book is accessible to readers who are not specifically familiar with oil well drilling. Numerous photographs and drawings make it a very accurate description of the equipment and activities on and around a land rig floor. Easy, enjoyable and very informative to read throughout.

The Oil Century: From the Drake Well to the Conservation Era
<http://www.barnesandnoble.com/w/the-oil-century-j-stanley-clark/1113907183?ean=9780806143859>
by J. Stanley Clark
J. Stanley Clark has provided an extra insight into this great development by tracing also the course of production techniques from rank waste to conservation.

The Oil Industry by Richard Spilsbury
Using case studies from around the world that showcase both the positive and the negative impacts development projects can have, this title explores the consequences of different kinds of resource management within the oil industry. Throughout, pros and cons of each development will be presented, in order to present both sides and provoke a debate/discussion.

Oil Rig Workers: Life Drilling for Oil by Katherine White
<http://www.google.com/search?tbo=p&tbm=bks&q=inauthor:%22Katherine+White%22>
This compelling new series for the middle school reader is designed to appeal to the thrill seeker in all of us. Each book includes information about a different extreme career, with a focus on safety and training. Readers will learn what it takes to get into these professions and what to expect when embarking on one.

Petrogypsies [NOOK Book] by Rory Harper
<http://www.barnesandnoble.com/c/rory-harper>
In an alternate universe, organic, semi-sentient, alien engineered oil field drilling rigs roam the plains of Texas and the Southwest in search of petroleum. Petrogypsies is the first novel in Harper's series about the great drilling beast, Sprocket, his best friend, Henry Lee MacFarland, and the rowdy, musical crew of "petrogypsies."

The Prize: The Epic Quest for Oil, Money & Power by Daniel Yergin
<http://www.amazon.com/Daniel-Yergin/e/B000APBBPI/ref=ntt_atr_dp_pel_1>
From the opening pages it is clear that Yergin is an authority on the subject. We have not travelled more than 10 years along the 150 year history of oil and yet we have already learnt it's origins, it's ancient and alternate uses, the products it was competing with, and we have met some of the early inventors, entrepreneur's and explorers.