Dramaturgy Research Packet
For
the Source Festival Production of:

Volcanic in Origin

by Gregory Hischak
Directed by Sonya Robbins

Dramaturgy Research compiled by
LaRonika Thomas

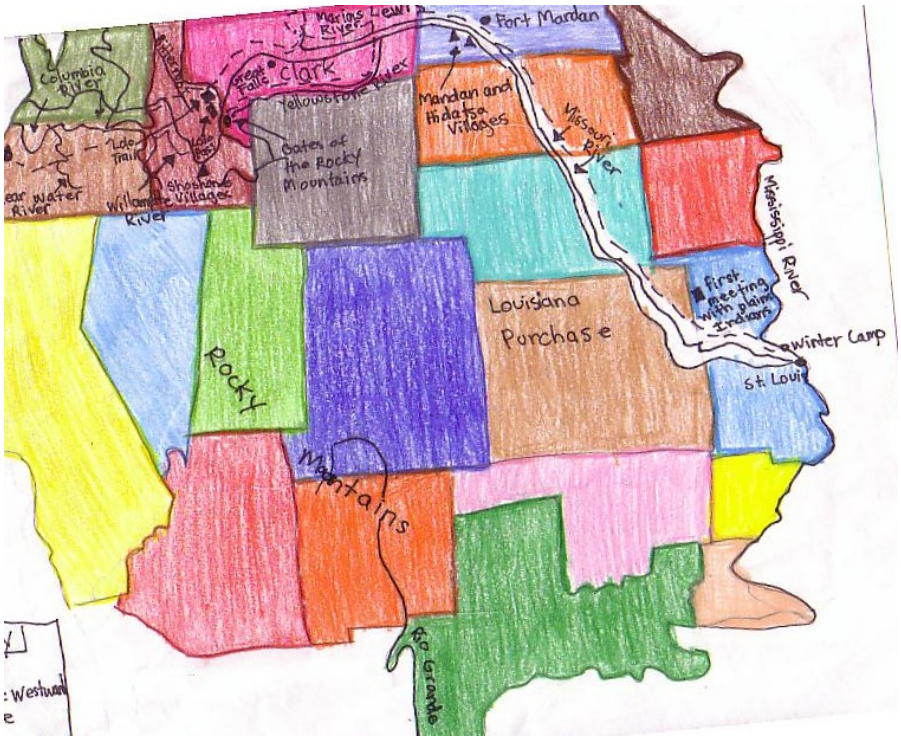


TABLE OF CONTENTS
Volcanic in Origin Dramaturgy Packet

ABOUT THE PLAYWRIGHT

Gregory Hischak

Biography
From: The Cape Cod Poets Theatre
http://www.capecodpoetstheater.com/who.htm

Gregory Hischak is a poet, playwright and book artist.

Gregory Hischak's play The Center of Gravity, winner of the 2009 Clauder Prize, received its world premier at Portland Stage in March, 2011. His play Hygiene which was staged as part of the 2010 Boston Theater Marathon was presented at this year's Humana Festival of New American Works in Louisville (KY). Hygiene is included in the Smith & Kraus anthology Best Ten Minute Plays of 2011. Other recent productions have included Poor Shem by Actors Theatre of Louisville (KY), City Theater (FL) and the Boston Theatre Marathon, Amenities at the Source Festival (Wash DC), and Knowing at the Firehouse Theatre's New Works Festival in Newburyport (MA). Poor Shem and his short play Crows Over Wheatfield are included in the Smith & Kraus anthology Best Ten Minute Plays of 2010. Hischak is a 2011 Finalist with the Massachusetts Cultural Council (in Playwrighting). He lives in South Yarmouth, Massachusetts.

Writings of Gregory Hischak – Essay & Poems

Returning To Sender: or My Precious Thurber Correspondence

An essay by Gregory Hischak
Reprinted from the Summer 2002 Ohioana Quarterly
http://www.ohioana.org/features/legacy/jthurber.asp

An overhead voice described how, in the event of a water landing, a very unlikely scenario between Columbus and Minneapolis, I would be able to use my seat cushion as a flotation device. Anticipating such an event, I'd wrapped my carry-on - an Elder Beerman's shoebox - tightly in a large Ziplock bag. Emblazoned with the now defunct mercantile's faded Prussian blue logo - reflecting time's ravages and held tenuously together by rubberbands - my cardboard shoebox fit nicely into the

overhead compartment. Smiling, a flight attendant assured me that despite any potential shifting that might occur during flight, my shoebox was perfectly safe. “It’s my Thurber letters,” I tried explaining to the back of her head as she shuffled off for cross-checking.

I was leaving Ohio, returning via mandated hubs to my pine-scented little northwest corner of the continent and with me, in their shoebox receptacle, were my Thurber letters. A veritable ark of correspondence to the Twentieth Century’s Most Important American Humorist, the shoebox’s excavation from under the basement stairs of my parent’s house was the primary agenda in returning to “The Heart of It All.” That, and a high school reunion which ended up being cancelled due to a hoof and mouth scare.

James Thurber Copyright © Helen Taylor

We had our ins and outs, James Thurber and I - never personally close but with an immediate Ohio connection that entwined my life around his the way kudzu sprawls across the base of a towering pylon. A young sprout, I began writing to the Twentieth Century’s Most Important American Humorist after he had been dead and buried in Columbus’ Greenlawn Cemetery for almost a decade. Still, like my long postal relationship with Santa, Karen Carpenter, and Jackie O demonstrated, I was not easily dissuaded by a one-way correspondence. Interpreting his silence as fatherly encouragement, I wrote Thurber all through my formative years until stamps went up past the fifteen-cent mark.

Exhaustive field research had been conducted before my returning to Ohio - calling the parents not once but twice during peak hours for pre-dig consultations. My hypothesis concerning how, in the course of many years of spring cleanings, an Elder Beerman’s shoebox might gravitate from an old bedroom closet to beneath the basement stairs proved correct. From the dusty trove of Betty Crocker Easy-Bake Ovens, archaic vacuum cleaner appendages, and layers of ancient orange carpeting, the Thurber box emerged. The letters safely exhumed, I made some final site measurements and bid the parents a warm adieu, assuring them I’d be back for the holidays.

* * * * *

“Thurber Land,” I mumbled from my window seat at the patchwork quilt of Central Ohio below - not to be confused with the patchwork quilt of Northern Ohio, or the lumpy two hundred threadcount floral coverlet of Southern Ohio. Maybe not so much a patchwork quilt or coverlet as a comforter; an Ohio-colored comforter too

warm for half the year and not warm enough for the other half, but still nice-looking and bought on sale at Odd Lots.

I watched Central Ohio magically transform into West-Central Ohio. Color-coded for easy identification: light beige for new developments, dark weathered beige for older weathered developments, dense green for soybeans, and a xanthic yellow for corn. Ohio's ribbon of interstate, punctuated with intricate white cloverleafs, seemed to weave and loop and spell out "have a good one" as our plane ascended the thin heavens. Low in the west, the sun cast long shadows from unresponsive livestock. I waved, drawing the attention of the woman sitting next to me in 19E. "Some funny stuff happening down there," I said - apparently in a tone that caused her to ring for an attendant.

* * * * *

In 1994, with support from the Columbus Dispatch, the Ohioana Library and Thurber House published the remarks that James Thurber made in accepting Ohioana's Sesquicentennial Award in 1953. Copies of this commemorative booklet are available from the Ohioana Library.

I grew up with a copy of Dr. Seuss' The Cat in the Hat in one jellied hand and Thurber's Men, Women, and Dogs in the other. I don't remember where either of them came from, but the combination suggests a foster home might have been in order. I devoured them both, their components becoming so interchangeable that I later had no trouble attaching Thurber drawings to the text of The Lorax.

Slightly older, I watched a short-lived and barely remembered television series based on Thurber's work called My World and Welcome to It (starring William Windom). Spanning a summer replacement season with jerky editing and surreal animation, it confused, mesmerized, and made clear how it was James Thurber who first stumbled on the Midwest's potential for magical realism. A permanent, but in no way mutual, bond was thus forged, Thurber and I both drawing our greatest inspirations from that hazy blue countryside. Roots penetrating deep into our fertile loams, never far behind and trailing like a wispy strand of tissue paper stuck to the shoe - our Ohio. "In Steubenville alone," I observed in an early letter to Thurber, "you run the gamut of the human comedy from A to B." Dorothy Parker later lifted the line from me with minor variations - she was always doing that.

* * * * *

"In the early years of the nineteenth century," Thurber wrote to someone other than me, "Columbus won out, as state capital, by one vote over Lancaster, and ever since then has had the hallucination that it is being followed, a curious municipal state of mind which affects, in some way or other, all those who live there."
Posed across blue-lined paper, my early mailings to Thurber were full of puerile inquiries that would forever go unanswered: was Piqua funnier than Tipp City; Zanesville giddier than Coshocton; Wapakoneta more knee-slapping than Sidney? It was a one-sided debate raging like an untended barbecue grill as to whether history would eventually deem either Dayton or Columbus as America's Humor Capital.

Despite Thurber's obvious pro-Columbus stance, I strove to make a strong case for Dayton as the Hometown of Humor. Having spent too many developmental years drinking Fresca outside Dayton's laundromats, I felt I knew the place. Watching its tide of humanity pass by, one tire-squealing Chevy Nova at a time, had allowed me to crown Dayton "Birthplace of Whimsical Flight" long before it became a common moniker.

"After all," I boldly stated in another unanswered letter to Thurber, "Jonathan Winters is from Dayton." Of course, Winters didn't write The Seal in the Bedroom but he certainly could have made the sound effects for it - had Jim asked. I don't think he ever did though; it was that Dayton- Columbus rivalry, I suspect.
My plane passed somewhere over the Indiana border where a front of massing cumulus had a run-in with a pocket of low pressure, or high pressure, I couldn't tell which, and turned to ask the woman in 19E, but she'd changed seats. Against such amorphous cloud shapes Thurber squinted and traced his characters. Sketched in assured billowing lines (and dutifully inked in by his ubiquitous chum E. B. White), Thurber's figures seem contained by glasses, collars, and neckties. "All of them have the outer semblance of unbaked cookies," Dorothy Parker wrote in a preface to The Seal in the Bedroom, though I believe I said something like it first. Thurber's renderings always seemed to reflect the fragile eggshell light and limited visibility of a Columbus summer afternoon - characters poised to tumble Humpty Dumpty-like to the hot pavement. Thurber himself, suffering from his own increasingly limited visibility, could never respond directly to my suggestion of switching to thicker pens. A Sharpie Ultra Fine Point, I argued, or a Pentel Hybrid Gel Grip would be just the thing to beef up his artwork. Thurber's drawings suffered from poor reproduction all his life. I wrote him once saying so but fearing that it sounded like I was saying he suffered from poor reproduction all his life, I never sent it. The potential misunderstanding still haunts me.

* * * * *

From a creekside hideaway near Xenia I once wrote: “Dear Jim, I believe the Buckeye State’s towering contribution to humor will always be its flatness.” Again, I took Thurber’s unresponsiveness as a tacit nod of assent. Well-graded landforms are inspiring to humorists and farmers alike - both eking out their living from whatever dirt the earth gives up. Place seeds into its soils and they will grow; place fauna upon its grasses and they will ruminate glassy-eyed; place a town across its alluvial plains and lacking any natural boundaries it will sprawl; nurture the town into city and its towers will grow vertical and ludicrous against the recumbent horizon. Ohio has always been comfortable positioning itself as a placid domain, a well-thumbed book not to be judged by its unsplashy cover. The Crossroads of Crossroads, skirted by Phoenicians and Greeks via bypasses and outerloops, to be eventually settled by eastward-migrating Indians. Smiling atop Ohio’s oblate terrain, they settled in and when they needed to get serious the Indians knew what to do: they built mounds.

Nobody writes humor in mountainous places. I once tried sending Thurber a list of funny people from Boulder or Santa Fe and failed - the blank foolscap mocking my efforts. Even Samuel Clemens, for all his western speculating, had to sit down in a room in Connecticut before producing something memorably funny.

Population, of course, has much to do with where humor is generated. Sociologists produce carefully researched graphs showing the population densities necessary for humor to occur. Wyoming, mountainous and sparsely populated, is fallow ground for naturally occurring humor; Iowa, though flat, lacks the critical mass of citizenry; Ohio, bestowed with geopopulous blessings sits comfortably within the parameters: eastern enough to have genuine antique malls and people to buy genuine antiques, western enough to be once considered frontier - albeit a flat one, southern enough to be relaxed without feeling the need to secede, and northern enough to be industrial - able to wear, and look good in, hats. In short, the heart of it all.

Thurber and one of his dogs

Enter Thurber, filling these crossroads with wind-blown characters, bent slightly forward while looking back over their shoulder, a wary eye out for any possible historic impact. The denizens of these townscapes, incubated under a warm yellow Ohio light, move swiftly about their business. Coursing through these middle

American locales - places situated in awkward elegance upon the land like shiny metal patio chairs amidst the Elysian Fields - ten thousand Mittys run their errands.

* * * * *

Like Thurber, and like many others, I left Ohio for elsewhere. Bookending a creative restlessness, James and I parted ways, Thurber lured east, I trudging westward. In my Lewis and Clark-like traversal of the continent, the journal entries of which still sit in my glove compartment next to a Montana Radium Spa brochure, I observed for the first time the effects of natural formations on humor. The high plains might elicit a smirk, and the badlands a twitter, but against the eastern escarpments of Rockies, all whimsy jumped ship. Where chipper sardonicism once flourished, a monotonous fatalism set in and remained all the way into Seattle's puddled eastside Park-&-Rides.

"Dear Jim," I wanted to write from a rest area outside Pine Valley, Utah, "nothing swallows irony like nature's grandeur."

Through his life, Thurber resided in France, New York, Connecticut, Bermuda - elsewhere places that he lit with his particularly revealing Central Ohio light. After receiving an Ohioana Award for lifetime achievement in 1953, Thurber wrote "the clocks that strike in my dreams are often the clocks of Columbus," though about whether he awoke screaming or sweating from these dreams, he remained curiously silent. His upbringing beside the Crossroads of Crossroads certainly forged a deep and profound sense of whatever in Thurber, and he adapted well that Ohio trait of moving forward while looking backward.

* * * * *

"Think of the office supplies, James," I wrote him once, believing he still worked at the New Yorker magazine. Requesting he pinch a box of Post-Its for me, I think he might have done it had he been alive, and had he a little more nerve. Cursed with having become the Twentieth Century's Most Important American Humorist, Thurber has been frequently overlooked for his beautiful prose. Indeed, the crispness and precision of the New Yorker's style, still, has everything to do with Thurber's having pecked away for years in one of their cubicles.

Like his drawings, Thurber's writing moves lightly and swiftly across the page. Misleadingly sparse, Thurber may not have invented - but he certainly perfected - the notion that in humor, as in architecture, Less is More. Through airy spaces and deftly implied outcomes Thurber leads the reader into a hall of mirrors and leaves them there to laugh at themselves. Thurber's prose was nothing if not surgical: it cut clean and deep, with as little scarring as possible. When Henry Brandon wrote of Thurber that he had "a warm heart and an angry mind" he was absolutely right,

though when it came to stealing office supplies I think Brandon might have mentioned the cold feet.

* * * * *

An overhead voice described, in clinical detail, our descent into Seattle - the western-most elsewhere in the lower forty-eight. Time zones having clicked by, I was back home and ready to continue my work - laboriously typing out run-on sentences and dangling the odd participle in attempts to get laughs. In my stumbles through the English language it is clear that, while desiring to write with the surgical finesse of Thurber, I still practice my form with the subtlety of a chainsaw artist.

In spite of my best efforts, I age. Gnarling like an old tree, with swing sets hanging from my shirt and birds in my thinning hair, I await the plagues of lower back pain and self-absorption. Having gotten my Ohio source materials in order, I instruct the Fates to bring it on. The LP collections gathered back; the Peanuts paperbacks recalled home (I now recognize Charles M. Schulz's economy of line and gesture as distinctly Thurberesque); my postcards and letters brought home. My Thurber letters - every single piece of unopened correspondence written by me and returned to me with "Deceased" stamped across them - when I feel the need to peek inside the addled child's brain that composed them, they'll be there. In the meantime, I have a nice spot in the kitchen cabinet where they'll be comfortably interred.

Ohio roots are a funny thing. Pull at a flower, droopy, frail, and drawn in Thurber's hand, and you pull up runners spreading out beneath the soil in every direction. So what if Thurber died when I was a year old? Seemingly delicate yet unbreakable runners transcend mere chronology like they transcend dirt. In formulating my diabolical plans for global domination I'm lucky to have Thurber to steal from and to call my own. When I plow through my past with every spring introspection looking for something of worth, I always uncover that Thurber nugget - an italicized aside, a sly assemblage of lines capturing utter defeat, or fragile salvation - glittering in the freshly turned earth like a barbed little arrowhead.

Dorothy Parker will tell you she wrote that.

POEMS x 3 by Gregory Hischak

http://thediagram.com/5_5/hischak.html

A CIRCLE OF MINTS
I found a talisman in the copier.
Bubblewrap body and push pin eyes,

wound in bronze wire and hanging
over the sorter mechanism.
Boughs of cedar lined the by-pass tray,
tightly accordioned in colored thread—
and it was then that I realized
there was
a wiccan
in the office.
A paperclip fetish guards the server.
There's an unexpected package from
Hidden Driveway Lake ticking
in the FedEx box.
The cleaning guys tell stories
of toads in the stairwell, of
ceiling vent whispers and full moons
breached by shuttering blinds.
There's a circle of mints in the lobby
—a wintergreen hoop stepped around—
keeping not so much the dead as
perhaps, the under-living away.

—

CIVIL WARS

A parlor tick shaken—a rattled tock
A screendoor's twang and snap
Rustle and gust—the retreat of swallows
across a tassel-stained sky
Schematics of lightning clear the pools carved
like trenchwork across
this place
Northern enough to fire a hard coal furnace yet
Southern enough to cultivate broadleaf shade
Western enough and Eastern enough
to be neither here nor there—this place
Crossroads of blue and grey
nimbus and stratocumulus
Host to incompatible fronts
a skirmish of drive-throughs
along County Line Road—this place
No stranger to the anomalies of air
the thunder's roll
wind's pitch
funnel's yaw

The fervor of basement vespers
lullabies against the ordnance
and the splinter of spires
The pale nightlight of a firefly cradled
in a cupped palm dome
as the leadshot shatters the isinglass

—

ROAD FROM HAMLIN

We are the children whom they test childproof lighters on.
Immortalized in two-hour photo developing,
remembered for our milkcarton smiles.
Spirited away by strangers with candy; appropriated by jinns.
Suckled at the teat of Lilith, cradled with an old medley of
custody battle hymns and schoolbus sing-alongs.
Hand in hand, following the dry riverbeds from Hamlin,
we are the children who negotiate the dark by taste,
navigate the chainlink perimeters by touch.
We hide when our names are yelled across fields,
read by flashlight shined under thickets, mix our crayons
from clays found along the river.
Descending at dusk from the shadow of timberlines,
we're spied under a waning gibbous running the box canyons,
stomping play circles into slumbering corn.
Like tricks of light we slip among the tamarisks.
Glimmering, we are fireflies cupped in a silhouette of palms.
Opened, we disperse into the night like stars.

———

Civil Wars is a Midwest lament. It's so much easier writing about places once you've left them far behind.

Road from Hamlin is a poem to accompany wind and flashlights.

A Circle of Mints celebrates the magical powers of office machinery and the deep life-long sighs that they drown out.

Lewis & Clark

Captain Meriwether Lewis

Biography
http://www.pbs.org/lewisandclark/inside/mlewi.html

Meriwether Lewis was born in Albemarle County, Virginia, on August 18, 1774, the second child and first son of William and Lucy Meriwether Lewis. His father, who had served as a lieutenant in the Continental Army, died in November 1779 after his horse fell into an icy stream while he was homeward bound. His widowed mother married another Army officer, Captain John Marks, six months later. The two raised Meriwether and his two siblings while managing a 1,000-acre plantation about 10 miles from Monticello (Jefferson's home). The young Lewis was said to have an eye for plants, which was encouraged by his mother Lucy, a noted herb doctor.

Lewis joined the U.S. Army in 1794, serving six years in the Frontier Army and rising to the rank of captain in 1800, then serving as paymaster of the First Infantry Regiment of the U.S. Army. In early 1801, Lewis was appointed by President Jefferson to be his personal secretary. Lewis was a childhood protege of Jefferson's, and they renewed their bond years later while Lewis was on army duty in Charlottesville, Virginia. There is no doubt that part of Jefferson's reason for appointing Lewis to this position was political; like Jefferson, Lewis was a firm Republican. Later, Jefferson would write that "[Lewis] was brave, prudent, habituated to the woods & familiar with Indian manners and character." At Jefferson's direction, Lewis planned an exploration of a route west to the Pacific coast of North America, whose stated "aim would be to make friends and allies of the far Western Indians while at the same time diverting valuable pelts from the rugged northern routes used by another nation [Britain]. . . and bringing the harvest down the Missouri to the Mississippi and thence eastward by a variety of routes." During the journey, the expedition would also gain much-valued knowledge of continental geography and wildlife. In early 1803, Congress approved the expedition, which would be the first in series of military explorations launched by the U.S. government.

Lewis possessed many intellectual and physical qualities, which were refined during additional training prior to the start of the expedition. Physically, he was in superb condition, over six feet tall with a lean frame. Given his army conditioning, he was fiercely loyal, disciplined, and flexible, yet was also prone to being moody, speculative, and melancholic. His keen sense of observation and knack for writing detailed naturalistic and ethnographic accounts would prove to be invaluable for a

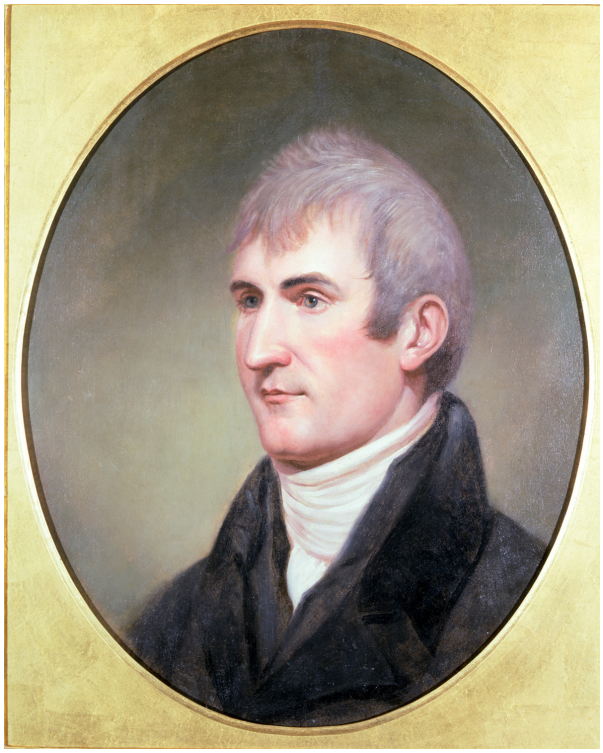
man who would lead this strategically important expedition. Lewis had an especially sharp eye for the details of flora and fauna, which is reflected in his journals.

Immediately after Congress' approval, Lewis began preparing himself and defining requirements in terms of supplies and men who would be recruited to accompany him. Lewis learned the theories and practices of navigation first from Jefferson, then later from trained astronomers and cartographers in Philadelphia. He took in all the data known about the Western frontier at the time, including distances, topography, and potential enemies, much of which his expedition would end up revising.

After the Louisiana Purchase was completed on April 30, 1803, it became more clear that the expedition was not simply charged with scientific inquiry, geographic mapping, and clearing the way for commerce. The mission was to be more diplomatic, in that it would require the explorers to communicate the transfer of sovereignty to every Indian tribe and foreign interest occupying the lands within the Missouri watershed. This increase in importance warranted a need for a second-in-command to be named to assist Lewis on the journey. Both Jefferson and Lewis thought of William Clark, under whom Lewis had served briefly during his army career. On June 19, Lewis penned a letter to Clark expressing his desire that Clark share the command of the expedition with him, and seeking Clark's help in populating the expedition with able-bodied and qualified men. Lewis and the President offered him a permanent commission as captain (jumping him up a full rank), with equal rank to Lewis should he accept the command. This offer was made to eliminate any tension that would result from the fact that Clark had been Lewis' commanding officer in the rifle company at Fort Greenville. Lewis asked that Clark respond to him in Pittsburgh, where he would be readying boats and supplies for the journey. On July 29, Lewis received Clark's response: "My friend I assure you no man lives with whome I would perfur to undertake Such a Trip as your self."

In mid-October, the two met in Clarksville, Indiana Territory, near the Falls of the Ohio, to make final preparations for the journey and assemble what would later be named the Corps of Discovery. During this time, Lewis transferred some of his recently acquired knowledge about surveying to Clark, who immediately began conducting measurements of the Ohio and Mississippi Rivers. The two easily determined how their labors would initially be divided. Given Lewis' more extensive social and political training under the President Jefferson, he would be in charge of finding men who could provide knowledge of the Upper Missouri, its Native Americans, and secure safe and expeditious routes for American commerce. Lewis would also serve as the party's naturalist, collecting plant, animal, and mineral specimens to be taken back to Monticello and the East for examination and study. Their assignments were not fixed, though, and they would both be required to exchange places often during the journey to come.

As part of his diplomatic position, Lewis was often the leader in conducting speeches and granted “certificates” to the various Native American tribes. Even before leaving St. Louis, dozens of Native American representatives were visiting the town, hoping to discover more about the plans the white man had for the future. Stoddard, the military governor of Missouri, assisted Lewis in telling the natives, “You will be protected and sustained by your new father, the head chief of the United States” (meaning Jefferson). The speeches communicated that other European nations were no longer their “Great Father,” but that the leader of the 17 nations (the seventeen states) of America was now in that role. They were advised to live in peace and cooperate with the traders who would be traveling in their midst. If they did so, the natives would have access to goods brought into the interior by the White Man. In order to prove the value of their cooperation, Lewis invited the natives to come to the lodge of their Great Father in Washington to see for themselves the great cities and the sources of the gifts that they bore. By giving these speeches, Lewis was an effective agent of American imperialism, even as the Corps passed out of the recently-acquired Louisiana Territory into the Western lands of the Columbia River Basin.



As the Corps approached the headwaters of the Upper Missouri, Lewis and Clark decided that the keelboat would be difficult to transport and sent it downstream with specimens they had collected, maps, and detailed reports they had been working on since their departure. They organized the geographic materials into two documents. The first, drafted by Lewis, was a discourse entitled “A Summary View of Rivers of Creeks,” which described all the waterways that discharged into the Missouri, including “their length, navigability, sources, and the appearance of the lands through which they flowed.” The second, drafted by Clark, was a supplemental collection of four arithmetic tables entitled “A Summary View of Rivers, Creeks, and Remarkable Places [meaning deserted and occupied Indian villages],” which gave “the distances from one stream mouth to the next one upstream, an estimate of each tributary’s length, and a record of latitudes taken here and there by the captains during the upriver journey.”

During the journey of the Corps of Discovery, Lewis was able to use the discipline and team leadership skills he developed while serving in the army. In February 1804, while Lewis was in St. Louis attending ceremonies that transferred Upper Louisiana to the United States, there had been some insubordination among the members of the Corps stationed for the winter back at Camp Dubois in the Illinois Territory. Colter, along with John Boley and John Robertson (both members of the Corps for a very short time), and Peter Wiser had defied orders given by Sergeant Ordway by visiting a local grog shop. Upon returning to Camp Dubois, Lewis confined Colter and the other offenders to the camp area for ten days, warning that "on such occasions the directives of duly appointed sergeants had the same authority as the captains." Later, as the Corps reached the headwaters of the Missouri, decisions had to be made about which routes would correctly lead them furthest west towards the Continental Divide and the headwaters of the Columbia River. During many of these critical decisions, information obtained from Native Americans and previously-developed maps had to be combined with Lewis' and Clark's knowledge of natural history and geographic properties. Even though the captains were in positions of authority, they often considered the opinions of their enlisted men, many of whom had developed extensive knowledge and intuition about the wilderness. Once, at the end of the Great Portage around the Falls of the Missouri, Lewis became the cook of the Corps' White Bear Islands Camp. After cutting his own wood and hauling water for the fire, he prepared a feast for the men of roasted buffalo meat, and even "made each man a large suet dumpling by way of a treat."

Lewis' strength, stamina, and overall health was put to the test on a number of occasions during the journey of the Corps of Discovery. Just after beginning the trek up the Missouri, Lewis and Clark stopped at a place called Tavern Cave, where sandstone cliffs three hundred feet high rose along the southern side of the river.

While he and Clark were climbing to the top to engrave their names into a register inside the tremendous cavern, Lewis slipped and fell about twenty feet. "He saved himself by the assistance of his knife," wrote Clark, presumably driving it into a crevice to break his fall. Later, just after the close of the Oto Council, Lewis accidentally poisoned himself while conducting some experimental tastes of ore found in a bluff. He was able to relieve his symptoms by purging himself with "salts," which he used throughout the journey for the occasional intestinal flare-ups that resulted from extreme changes in diet and other factors. In August 1806, during an elk hunting trip, Pierre Cruzatte accidentally shot Lewis in the "thye," an incident that caused Lewis to believe that Blackfeet were in their midst. Later, after the Corps found no evidence of the Indians' presence, Cruzatte admitted his fault.

Lewis graciously let the matter go, and got on with a very painful healing process. Upon arriving safely in St. Louis in September 1806, Lewis drafted the first few letters which served as a preliminary report to President Jefferson. These letters

were delivered by the dependable George Drouillard to the Cahokia postmaster, John Hay, who them saw them safely into the U.S. Mail. In one of these letters, Lewis wrote, “In obedience to your orders we have penetrated the continent of North America to the Pacific Ocean, and sufficiently explored the interior of the country to affirm with confidence that we have discovered the most practicable rout which does exist across the continent by means of the navigable branches of the Missouri and Columbia Rivers.”

He went on to describe the route as modified during his return over Lewis and Clark Pass (located in today’s Montana). First, they would travel by boat 2,575 miles up the Missouri past steep, eroding riverbanks and difficult snags to the rapids just below the Great Falls of the Missouri. Then, they would portage over 18 miles across land, then travel 200 more river miles, followed by 140 miles across the Bitterroots, “[T]remendous mountains which for 60 miles are covered with eternal snow.” Finally, travel downstream on the Snake, Clearwater, and Columbia Rivers for 640 boat miles to the Pacific Ocean. Although Lewis’ letter described a more involved and difficult passage between the two rivers, it did assure Jefferson of how plentiful the game was, and therefore, how profitable the fur trade could be in the frontier. This fact, in addition to the knowledge that Lewis and Clark had gathered about foreign interests in the Western lands, spurred the U.S. toward further negotiations and claims of sovereignty over the territories bordering Louisiana.

Months later, Lewis returned home to Ivy Creek in Albemarle County, Virginia, where he spent Christmas with his mother. Shortly thereafter, he went to Washington to receive his rewards for successfully completing the expedition: double pay while on service with the Corps (amounting to $1,228), a warrant for 1,600 acres of land, and a naming as Governor of the Territory of Upper Louisiana, which was put into effect in early March 1807. Shortly thereafter, Lewis traveled to Philadelphia to seek out editors and publishers for his and Clark’s journals. At the same time, other efforts to publish the accounts of Sergeant Gass and Private Frazer discouraged Lewis, and he never followed through with providing the publishers with the manuscript. The following summer, a couple of attempts at marrying were unsuccessful, and his alcohol consumption became more prevalent.

His relationship with Jefferson became problematic, due to his drinking and his delay in returning to St. Louis to take up his duties as governor. It was March 1808 before Lewis made it to St. Louis, one full year after his appointment. By that time, the city was awash with opportunists, land speculators, eager traders, and Native Americans, who were becoming increasingly restless in anticipation of the changes that were to come.

In September 1809, after much difficulty in trying to mediate between the Natives and commercial interests, Lewis fled St. Louis for Washington to plead his case before the new administration. He caught a riverboat to Memphis, during which his

feelings of melancholy were enhanced by his continued drinking, and he twice attempted to take his own life. Later, while staying in a roadhouse along the Natchez Trace, Lewis took his own life by shooting himself first in the forehead then in the breast. He was buried next to the tavern, and today the site is marked by a monument that was erected in his honor in 1846.

Captain William Clark

Biography
http://www.pbs.org/lewisandclark/inside/wclar.html

Captain William Clark, the red-haired co-captain of the Corps of Discovery, was born on August 1, 1770, the sixth son and ninth child from a family of 10 children. Originally from the same area of Virginia that was home to both Jefferson and Lewis, Clark's parents relocated their family near the Rappahannock River, where William was born. All of Clark's brothers were Revolutionary War veterans, including the famed George Rogers Clark, who commanded Virginia's troops in the Kentucky region during Jefferson's term as Virginia governor. After the War was over, the Clark family migrated across the Allegheny Mountains and down the Ohio River to Mulberry Hill, near Louisville. Clark learned about wilderness skills and natural history from his older brother, George.

Clark began his military career at age 19 when he joined the Kentucky Militia. He later joined the regular army and was promoted to lieutenant. During this strenuous time, Clark "learned how to build forts, draw maps, lead pack trains through enemy country, and fight the Indians on their ground." On two occasions, Clark was sent to spy on the Spanish, who at the time were exploring and building forts high up the east bank of the Mississippi. By 1795, he had received successive promotions to leadership positions, eventually attaining the rank of Captain. Ensign Meriwether Lewis was among men assigned to Clark. The two struck up a lasting friendship that would lead to their co-commanding the Corps of Discovery.

William Clark possessed many physical and mental qualities that were beneficial as a leader of the Corps. Clark was over six feet tall and had a strong and muscular physical frame. The only major exception to his physical health was an obscure digestive ailment from which he suffered. He was quite proficient at eliciting information from native tribes during the expedition, which he recorded in his journal-writing and sketches. With less formal educational training than Lewis, Clark filled his journals with frequent grammatical and spelling errors, and long and confusing language.

Once the terms of the Louisiana Purchase were agreed upon on April 30, 1803, it became clear that the expedition's mission was not simply driven by scientific inquiry, geographic mapping, and commercial development of the unexplored

territory. The mission was to be concurrently a diplomatic one. The transfer of sovereignty from the French/Spanish administration to United States hands would need to be communicated to every Indian tribe and foreign interest occupying the lands within the Missouri River watershed.

The increased importance of the exploration warranted an additional commander to assist Lewis, President Jefferson's first choice to lead the journey. Lewis wanted William Clark. On June 19, 1803, Lewis penned a letter to Clark, who was then out of the army, expressing his desire that Clark share command of the expedition and help recruit able-bodied, qualified men to enlist in the Corps. Lewis, with the President's concurrence, offered Clark a permanent commission as Captain. Responding to Lewis in Pittsburgh on July 29, where he was readying boats and supplies for the journey, Clark wrote, "My friend I assure you no man lives with whome I would perfur to undertake Such a Trip as your self."

Lewis, with a "party of eleven hands" and his Newfoundland dog, Seaman, departed Pittsburgh in a specially designed keelboat, accompanied by a pirogue (small riverboat), August 30, 1803. Navigating down the Ohio River during a period of low water, Lewis experienced several instances of grounding in the shallow water that required hiring teams of horses to refloat the keelboat. To lighten the cargo, Lewis purchased a second pirogue at Wheeling (West Virginia). The two pirogues would, during the course of the expedition, be navigated up the Missouri, nearly 2,500 miles, to the Great Falls of the Missouri (Montana).

In mid-October, Clark joined Lewis at Clarksville, Indiana Territory, opposite Louisville. Here, after making interim preparations for the journey and enlisting several recruits, Clark, together with his black manservant, York (who had been willed to Clark by his father), boarded the keelboat. Considered an equal among members of the expedition, York was allowed to vote and participate in many of same activities as the others.

Proceeding on, the embryonic Corps of Discovery reached St. Louis in mid-December, 1803. The Spanish commandant at St. Louis denied the explorers entry to Louisiana Territory due to their lack of a Spanish passport. Consequently, they established their camp on the east side of the Mississippi, at River Dubois, Illinois Territory, opposite the confluence of the Missouri River with the Mississippi. Clark, the more rugged frontiersman, would supervise the building of their 1803-1804 winter camp.

Over the winter the men were disciplined in army regimen, and trained for the rugged conditions that they would encounter. Supplies and equipment for the journey that came in from the east were packed and sorted for the three vessels that would take them upriver.

On May 7, 1804, Clark, to the agonizing disappointment of both leaders, received his commission. It was for the rank of Second Lieutenant in the Corps of Artillerists. Clark had been addressed as “Captain” by both Lewis and the men, continuously, since Clark had boarded the keelboat, October 26, 1803, and he would remain “Captain” throughout the journey. To legitimize the pseudo rank, an organizational unit designation to which Clark would be attached was necessary when he signed official documents, such as detachment orders, court martial proceedings, “Indian Certificates,” and similar formal records.

The captains, accordingly, conceived the title: “Corps of Volunteers on an Expedition of North Western Discovery.” Clark’s signature, and rank of captain, appears in the journals with that organizational designation, usually abbreviated to: "Wm Clark Capt on E. N. W. D." (See p. 170, Vol. 3, Moulton Edition) This arrangement, which confirms Lewis’ promise to Clark in offering him a co-captaincy, “...your situation if joined with me in this mission will in all respects be precisely such as my own.” Clark’s pseudo-captaincy was never revealed to the men throughout the mission.

The short version of the organizational designation, “Corps of Discovery,” is not found in any of the explorers’ original longhand manuscript journals. Sergeant Patrick Gass is credited with popularizing that term, which appears on the title page of his 1807 published journal.

The expedition broke camp at River Dubois on May l4, 1804. Clark wrote in his journal: “...set out at 4oClock P.M, and proceeded on under a jentle brease up the Missouri.” At the end of October, the explorers reached the villages of the Mandan and Hidatsa Indians, near modern Bismarck, North Dakota. Here, they built their 1804-1805 winter quarters, which they named Fort Mandan, in honor of the local inhabitants. The explorers spent five months at Fort Mandan, hunting and obtaining information from the Indians and French-Canadian traders who lived nearby. The blacksmiths set up a forge and made tools and implements, which were traded for the Indians’ garden crops of corn, melons and beans.

A French-Canadian named Toussaint Charbonneau visited the captains with his young, pregnant Shoshone Indian "wife," Sacagawea. The captains knew that there would be high mountains to cross on the westward journey. The two Charbonneaus were enlisted as an interpreter team for the purpose of negotiating for horses, in the event the explorers encountered her Shoshoni tribe, who lived near the Continental Divide of the Rockies. On April 7, 1805, as the Corps prepared to proceed westward with the two pirogues and six dugout canoes, the keelboat was sent downstream with collected specimens, maps, and detailed reports they had compiled since their departure.

Of the two captains, Clark was the expedition's cartographer. The first significant map he drafted was completed during the Corps' stay at Fort Mandan during the winter of 1804-05. Though highly conjectural, this map contained all the new information and corrections from their explorations and conversations with traders and Indians. The map focused on the areas between the upper Mississippi and the Missouri, and the major tributaries of the lower and middle Missouri, with less detail provided for the upper Missouri and the Continental Divide, which had yet to be explored by the Corps. There were several inaccuracies in the map, mostly due to miscommunication and cultural differences in describing geography between the American and Indians. Even so, this updated map was a valuable reference.

As the Corps proceeded on to the Pacific, Clark continued to keep careful compass records, measure distances and produce detailed strip maps for areas between major landmarks. One of the more detailed mappings was done on the Great Falls of the Missouri, where Clark led a surveying team to measure the chasm's length, the elevation of the Falls, and the total drop of the cascade. The maps included notes on native botanical and zoological specimens and on potential mineral deposits. These strip maps were incorporated into the larger map drafted at Fort Mandan. This map would be of critical importance to U.S. expansionist forces in years to come.

In late October 1806, after completing the expedition and returning to St. Louis, Lewis and Clark led a cavalcade eastward that included Mandan and Osage Indian representatives. The packtrain was loaded with whatever "plants, seeds, bird skins, animal skeletons, and furs [that] had not been ruined in water-soaked caches," in addition to their journals and Clark's large map of the American West. Clark and York stopped in Louisville to meet Clark's family and visit with Julia "Judy" Hancock, Clark's future wife.

In mid-January 1807, Clark visited Washington to receive his rewards for having successfully completed the expedition: double pay while on service with the Corps (amounting to $1,228); a warrant for 1,600 acres of land; and a double appointment as Brigadier General of Militia and Superintendent of Indian Affairs for the Territory of Upper Louisiana, which was put into effect in early March 1807.

On January 5, 1808, Clark married Julia Hancock in Fincastle, Virginia. Julia would later bear Clark a son, whom they would name Meriwether Lewis Clark in honor of his father's closest partner. That summer, Clark became a business partner in the newly-formed Missouri Fur Company, which planned to send militia units, hunters, and boatsmen up the Missouri to develop the American fur trading industry.
In Louisville, on October 11, 1809, the Clark family was told of Lewis' death. Upon hearing the news, Clark traveled to Washington to visit the grieving Jefferson and Lewis family members. He would later go to Philadelphia to arrange for the rewriting of their journals, which were finally published in 1814 with Clark's map as a supplement.

Clark's final years were the opposite of Lewis'. In 1813, Clark was named Governor of the Missouri Territory until the state of Missouri was created in 1820. Although he was defeated in the first election for state governor, Clark continued enjoy his Brigadier General rank, and to serve as the Superintendent of Indian Affairs. Throughout the remainder of his life, he garnered the respect of Native Americans, traders and trappers alike. They brought new information to him regularly, which he was able to use to update his master map of the American West, a map that reflected the fast-changing face of a nation that now stretched from coast to coast. Clark died of natural causes in St. Louis, September I, 1838.

Sacajawea

Sacajawea/Sacagawea
Biography
http://www.pbs.org/lewisandclark/inside/saca.html

In 1800, when she was about 12 years old, Sacagawea was kidnapped by a war party of Hidatsa Indians -- enemies of her people, the Shoshones. She was taken from her Rocky Mountain homeland, located in today's Idaho, to the Hidatsa-Mandan villages near modern Bismarck, North Dakota. There, she was later sold as a slave to Toussaint Charbonneau, a French-Canadian fur trader who claimed Sacagawea and another Shoshone woman as his "wives." In November 1804, the Corps of Discovery arrived at the Hidatsa-Mandan villages and soon built a fort nearby. In the American Fort Mandan on February 11, 1805, Sacagawea gave birth to her son Jean-Baptiste Charbonneau, who would soon become America's youngest explorer.

Captain Clark wrote that the “great object was to make every letter sound” in recording Indian words in their journals. The pronunciation of Sacagawea’s name in years since the expedition as “Sacajawea” does not match “Sah-cah' gah-we-ah,” the way that the captains recorded the young Shoshone woman’s name. In fact, her name -- made by joining the Hidatsa words for bird (“sacaga”) and woman (“wea”) -- was written 17 times by the explorers in their journals and on their maps, and each time it was spelled with a “g” in the third syllable.

The Shoshones possessed horses that the expedition needed to cross the Bitterroot Mountains. The captains felt that because of her Shoshone heritage, Sacagawea could be important in trading for horses when the Corps reached the western mountains and the Shoshones. While Sacagawea did not speak English, she spoke Shoshone and Hidatsa. Her husband Charbonneau spoke Hidatsa and French. In effect, Sacagawea and Charbonneau would become an intepreter team. As Clark explained in his journals, Charbonneau was hired “as an interpreter through his wife.” If and when the expedition met the Shoshones, Sacagawea would talk with them, then translate to Hidatsa for Charbonneau, who would translate to French. The Corps’ Francois Labiche spoke French and English, and would make the final translation so that the two English-speaking captains would understand.

Sacagawea, with the infant Jean Baptiste, was the only woman to accompany the 33 members of the permanent party to the Pacific Ocean and back. Baptiste, who Captain Clark affectionately named “Pomp” or “Pompy” for his “little dancing boy” frolicking, rode with Sacagwea in the boats and on her back when they traveled on horseback. Her activities as a member of the Corps included digging for roots, collecting edible plants and picking berries; all of these were used as food and sometimes, as medicine. On May 14, 1805, the boat Sacagawea was riding in was hit by a high wind and nearly capsized. She recovered many important papers and supplies that would otherwise have been lost, and her calmness under duress earned the compliments of the captains.

On August 12, 1805, Captain Lewis and three men scouted 75 miles ahead of the expedition’s main party, crossing the Continental Divide at today’s Lemhi Pass. The next day, they found a group of Shoshones. Not only did they prove to be Sacagawea’s band, but their leader, Chief Cameahwait, turned out to be none

other than her brother. On August 17, after five years of separation, Sacagawea and Cameahwait had an emotional reunion. Then, through their intepreting chain of the captains, Labiche, Charbonneau, and Sacagawea, the expedition was able to purchase the horses it needed.

Sacagawea turned out to be incredibly valuable to the Corps as it traveled westward, through the territories of many new tribes. Some of these Indians, prepared to defend their lands, had never seen white men before. As Clark noted on October 19, 1805, the Indians were inclined to believe that the whites were friendly when they saw Sacagawea. A war party never traveled with a woman -- especially a woman with a baby. During council meetings between Indian chiefs and the Corps where Shoshone was spoke, Sacagawea was used and valued as an interpreter.

On November 24, 1805, when the expedition reached the place where the Columbia River emptied into the Pacific Ocean, the captains held a vote among all the members to decide where to settle for the winter. Sacagawea's vote, as well as the vote of the Clark's manservant York, were counted equally with those of the captains and the men. As a result of the election, the Corps stayed at a site near present-day Astoria, Oregon, in Fort Clatsop, which they constructed and inhabited during the winter of 1805-1806.

While at Fort Clatsop, local Indians told the expedition of a whale that had been stranded on a beach some miles to the south. Clark assembled a group of men to find the whale and possibly obtain some whale oil and blubber, which could be used to feed the Corps. Sacagawea had yet to see the ocean, and after willfully asking Clark, she was allowed to accompany the group to the sea. As Captain Lewis wrote on January 6, 1806, "[T]he Indian woman was very impo[r]tunate to be permited to go, and was therefore indulged; she observed that she had traveled a long way with us to see the great waters, and that now that monstrous fish was also to be seen, she thought it very hard she could not be permitted to see either." During the expedition's return journey, as they passed through her homeland, Sacagawea proved a valuable guide. She remembered Shoshone trails from her childhood, and Clark praised her as his "pilot." The most important trail she recalled, which Clark described as "a large road passing through a gap in the mountain," led to the Yellowstone River. (Today, it is known as Bozeman Pass, Montana.) The Corps returned to the Hidatsa-Mandan villages on August 14, 1806, marking the end of the trip for Sacagawea, Charbonneau and their boy, Jean Baptiste. When the trip was over, Sacagawea received nothing, but Charbonneau was given $500.33 and 320 acres of land.

Six years after the expedition, Sacagawea gave birth to a daughter, Lisette. On December 22, 1812, the Shoshone woman died at age 25 due to what later medical researchers believed was a serious illness she had suffered most of her

adult life. Her condition may have been aggravated by Lisette's birth. At the time of her death, Sacagawea was with her husband at Fort Manuel, a Missouri Fur Company trading post in present-day South Dakota. Eight months after her death, Clark legally adopted Sacagawea's two children, Jean Baptiste and Lisette. Baptiste was educated by Clark in St. Lous, and then, at age 18, was sent to Europe with a German prince. It is not known whether Lisette survived past infancy.

During most of the 20th century, several generations of Americans have believed a theory that originated in 1907 by Dr. Grace Raymond Hebard, Librarian, University of Wyoming. According to Dr. Hebard's theory, a person who lived to age 100 on the Wind River Indian Reservation (Wyoming) was the Sacagawea of the Lewis and Clark expedition. Alleged to have been "Sacajawea," which was interpreted to mean "boat launcher," that woman died and was buried on the reservation on April 9, 1884. Dr. Hebard formalized her theory in her 1932 book, Sacagawea: A Guide and Intepreter of the Lewis and Clark Expedition.

The only written documents that have been found positively identifying that elderly woman are the listing of her name on a November 1, 1877 census roll of the Wind River Shoshone and Bannock Indians, and the woman's April 9, 1884 death certificate. Both of these official documents clearly record her name as "Bazil's Mother." At age 100 in 1884, Bazil's Mother would have been born in 1784, making her 21 years old in 1805 -- the year Sacagawea set out with Lewis and Clark. Most 20th century books, encyclopedias, and movies have perpetuated this theory, creating the mistaken identity of the Wind River woman.

Videos about Sacajawea can be found here:

http://www.biography.com/articles/Sacagawea-9468731

Searching for Sacagawea

By Margaret Talbot
http://ngm.nationalgeographic.com/ngm/0302/feature4/fulltext.html

MAY 14, 1805, started off auspiciously for the Lewis and Clark expedition, but by evening a gusty wind was blowing along the Missouri River, threatening disaster. It was late afternoon when a sudden squall nearly capsized one of the boats, the white pirogue that carried the most vital instruments, trade goods, and papers—"in short," wrote Meriwether Lewis, "almost every article indispensibly necessary to further the views, or insure the success of the enterprize."

At the helm of the pirogue, alas, was Toussaint Charbonneau, the French-Canadian fur trader who served as an interpreter for the expedition. Charbonneau had an unfortunate tendency to panic in a crisis, which, coupled with the fact that he

couldn't swim, made him, in Lewis's estimation, "perhaps the most timid waterman in the world."

Lewis and Clark themselves were stranded on shore, reduced to shooting into the air in a futile attempt to attract the crew's attention. The waves were mounting higher, the boat was filling to its gunwales, and Charbonneau, who was "crying to his god for mercy," had "not yet recollected the rudder." Lewis was about to hurl himself into the river when it occurred to him that swimming the 300 yards (274 meters) to the boat in freezing, turbulent water would be "madness." To convince the petrified Charbonneau to do his duty and take hold of the rudder, another man on board the pirogue finally threatened to shoot him.

Amid all the shouting and gunshots and waves, however, there was one member of the expedition who proved calm and resourceful: Charbonneau's teenage wife, Sacagawea, the only woman in the party. Though no one seems to have instructed her to, Sacagawea reached into the water and fished out the articles that were swiftly floating away from the boat. A day and a half later, with most of these precious goods dried and repacked, Lewis realized the expedition had averted disaster.

"The Indian woman," he wrote in his journal on May 16, "to whom I ascribe equal fortitude and resolution, with any person onboard at the time of the accedent, caught and preserved most of the light articles which were washed overboard."

It is one of those rare but powerful moments in the journals that make you long to know more about this woman whom we recognize mostly as a sturdy figure of American mythology—a face on a coin. The very sketchiness of our knowledge has permitted novelists, feminists, and Native American tribes with dueling claims to project what they wish upon Sacagawea, to see her as a metaphor more than a human being. But who was she, really?

There was no likeness made of Sacagawea in her lifetime, and there is nothing left that belonged to her. The glimpses we are allowed of her in the expedition journals are all through the eyes of men to whom much about her must have been utterly opaque. And yet through the journals we know more about Sacagawea than about almost any other Indian woman of her time.

Lewis and Clark first met Sacagawea when she was a girl of about 17, pregnant with her first child. It was November 1804, and the Corps of Discovery, as the expedition was known, had arrived among the Mandan and Hidatsa Indian tribes on the upper Missouri River, in what is now North Dakota. The explorers planned to winter there among these agricultural tribes known to be friendly to whites, tribes whose earth lodge villages—dotted with gardens of squash, beans, sunflowers, and corn—made up a conurbation that was larger than St. Louis at the time.

From the age of about 13 Sacagawea had lived with the Hidatsa near the confluence of the Missouri and Knife Rivers. The place is now a national historic site, and one day last summer I spent some time there trying to reimagine Sacagawea's world. None of the original earth lodges remain, but one beautiful replica helps tune the senses to that distant time. The lodge's interior is spacious and cool, and smells pleasantly of hide and smoke. Light streams through the single hole in the earth- and-willow-branch roof like a golden column.

With me that afternoon was Amy Mossett, a Mandan-Hidatsa from New Town, North Dakota, and an expert on Sacagawea. Thin and elegant with a cascade of nearly waist-length black hair, Mossett is something of a celebrity as a Sacagawea stand-in. Her image appears in travel brochures and on billboards promoting tourism—an uphill battle in North Dakota, among the least visited states in the country. She has lectured and told stories about Sacagawea everywhere from kindergarten classrooms to convents to a biker convention.

On a bluff above the narrow gray-green Knife, Mossett and I look out over shallow, bowl-shaped indentations in the ground that are the only suggestions of the earth lodges that once stood close together here. (So close, in fact, that smallpox spread rapidly when it struck here in the 1830s.) Around us the ground is strewn with shells and bleached bits of animal bones. Even on this warm mid-summer afternoon, the prairie wind feels powerful, rattling the historical placards, riffling the surface of the Knife, keeping up a steady sibilance in the cottonwood leaves. It carries the scent of wild mint and prairie roses.

"This is where I feel closest to Sacagawea," says Mossett, who likes to wander around here by herself and think about where, exactly, Sacagawea might have lived on this land. Sometimes, Mossett says, she can almost see her walking along the river, peering up at the sky and spotting eagles.

It has been customary to describe Sacagawea as a slave of the Hidatsa, sold in marriage to Toussaint Charbonneau. But terms like "slave" and "sold" can be misleading. She was certainly a war captive, kidnapped from the Shoshone, the tribe into which she had been born, by a Hidatsa war party some four years before Lewis and Clark showed up. But when present-day Hidatsa such as Mossett object to the term "slave," they have a point, says historian Carolyn Gilman.

"Plains Indians did have a type of slavery, but it was different and more ambiguous than the kind practiced in the American South," says Gilman, curator of the National Lewis and Clark Bicentennial Exhibition, which is being organized by the Missouri Historical Society. "A onetime slave could be adopted by a clan, for example, and his or her status could change. It was a more fluid identity."

It's also hard to say definitively that Sacagawea was "sold" to Charbonneau. As Gilman points out, "Euro-Americans observing Indian weddings often talked about the women being 'sold,' mistaking the exchange of gifts between the families for purchases." More-over, in the early 19th century there was a great deal of intermarriage between white (especially French) fur traders and Indian women, and these alliances generally conferred some advantages on the woman. "That may have changed over time as tribes got more acquainted with white society and more contemptuous of it," says Gilman. "But in Sacagawea's time being a trader's wife was still a mark of status."

In any case, Euro-American explorers, Lewis and Clark included, tended to take ample note of how hard Indian women worked while overlooking the power they wielded. The Hidatsa, for example, was a matrilineal society in which women owned the earth lodges and gardens—this at a time when married Euro-American women could not own property in their own name—and men moved into their mothers-in-law's lodges when they married.

But while marrying a trader might have been a good move in general, Charbonneau may not have been a great catch. He has the sort of shabby reputation that seems impervious to revisionism, though in fairness it may owe something to blustering Francophobia. Gary Moulton, editor of the definitive edition of the Lewis and Clark journals, notes that historians have portrayed Charbonneau as "a coward, a bungler, and a wife-beater." Clark recorded that Charbonneau hit Sacagawea on at least one occasion—along with the fact that he upbraided him for doing so.

There aren't many occasions in the journals when Sacagawea attracts the captains' notice, but those that do tend to be dramatic moments rendered in characteristically laconic prose and decidedly unfussy spelling. In February 1805, at the fort the corps had built for itself near the Mandan and Hidatsa villages, Sacagawea "was delivered of a fine boy," Captain Lewis recorded. "It is worthy of remark that this was the first child which this woman had boarn and as is common in such cases her labor was tedious and the pain vilent." A French-Canadian trader named René Jusseaume administered a tribal remedy for speeding up labor—a small portion of a rattlesnake's rattle. "Whether this medicine was truly the cause or not," Lewis noted, Sacagawea "brought forth" Jean Baptiste Charbonneau within ten minutes.

The Corps of Discovery set out from its winter quarters on April 7, 1805. Less than two months after giving birth, Sacagawea gathered up her infant son and embarked with her husband on a roughly 5,000-mile (8,000 kilometer), 16-month journey. Contrary to her romanticized image, however, Sacagawea was not the expedition's "girl-guide." On a few occasions in Shoshone country she recognized features of the landscape and was able to reassure the captains that they were heading in the right direction. But most of the territory they passed through was as unfamiliar to

her as it was to Lewis and Clark.

Still, in ways both large and small Sacagawea proved herself an asset. Throughout their travels she supplemented the men's diets with wild artichokes and other edible plants she found and dug up. Lewis thought that "our epicures would admire" the root called the white apple. "It would serve them in their ragouts and gravies in stead of the truffles morella."

One of Sacagawea's greatest contributions was her mere presence, which seems to have disarmed potentially hostile tribes along the way. As Clark wrote, "The wife of Shabono our intepreter we find reconsiles all the Indians, as to our friendly intentions a woman with a party of men is a token of peace."

In mid-August, when the captains met with the leaders of the Shoshone and called upon Sacagawea's services as a translator, the journals record one of those fortunate coincidences you usually forgive only in beloved movies from childhood. Sacagawea, who spoke Hidatsa and Shoshone but neither English nor French, was to translate the Shoshone chief's words into Hidatsa for Charbonneau, who was to translate into French for a member of the corps named Labiche, who would translate into English for the captains. They were just about to begin this unwieldy relay when Sacagawea suddenly "jumped up, and ran and embraced" the Shoshone chief, "throwing over him her blanket and weeping profusely." He was, of all people, her long-lost brother.

Sacagawea's reaction on this occasion surprised Lewis, who had written her off as an inscrutable "squaw" of little feeling. Clark was different. Popular historical novels and plays about the expedition written in the 20th century hint at a romantic (though properly sublimated) attraction between Sacagawea and one of the captains, usually Clark. There is no evidence whatsoever for that scenario, and yet it does seem fair to say, even at this distant vantage point, that a genuine fondness developed between Sacagawea and William Clark. He had a nickname for her—Janey—and doted on Jean Baptiste, whom he called Pomp or Pompy or "my little danceing boy Baptiest." For her part, Sacagawea gave Clark a Christmas present of two dozen white weasel tails.

"Clark protected her," says Amy Mossett. "He put her out of harm's way during a flash flood early on. She and her husband and son slept in the same tent as the captains for her protection. I think she was fond of William Clark in the way a younger sister is of an older brother who looks out for her."

On the return voyage, just a few days after leaving the Charbonneau family at the Mandan villages in August 1806, Clark wrote a letter to Charbonneau that is remarkable for its openness of heart toward companions of the road he seems truly, already, to be missing. In it he regrets not having compensated Sacagawea

for her services and offers repeatedly to pay for the education of "my little" Jean Baptiste. The child was then 18 months old, and Clark regarded him, he wrote in his journal, as "a butifull promising Child." (This offer he eventually made good on: Jean Baptiste was educated in St. Louis at Clark's expense and went on to become the traveling companion of a European prince.)

"I think the baby was an important bond," says Mossett. "You can't be with a child every day from the day he was born and not develop an attachment. When you're tired, so weary, way out there in the unknown, and you don't know who or what you're going to encounter next, a little child coming up to and smiling or laughing or even just looking at you, it would pick up your spirits, it would soften your heart. It would remind you of why you're doing this—for the future."

Of all the episodes in which Sacagawea plays a part, there is only one in which she expresses a longing of her own. One afternoon at Fort Clatsop, in what is now Oregon, Captain Clark announced that he would be taking a party out to the coast to see a beached whale. He wrote, "The last evening Shabono and his Indian woman was very impatient to be permitted to go with me, and was therefore indulged, She observed that She had traveled a long way with us to See the great waters, and that now that monstrous fish was also to be Seen, she thought it verry hard that She Could not be permitted to See either (She had never yet been to the Ocian.)"

There is no record of what Sacagawea said or felt when she saw the great waters, but the moment is rich still. If she were a character in a novel, it would be the first hint of an inner life to which we'd soon be admitted in full. In Sacagawea's story it is the deepest insight we get.

After the 21 months in which Sacagawea's story intersects with that of the expedition, she disappears almost entirely from our view. The best evidence we have suggests that she died in her mid-20s at Fort Manuel on the Missouri River shortly after giving birth to a daughter, Lisette. A year later, when Charbonneau was presumed dead (incorrectly, as it turned out—he lived into his eighties), Clark became Lisette's guardian. But there is no record of the girl after the age of one, and most historians believe she died very young.

Today there are reportedly more statues of Sacagawea than of any other American woman. Many of them were erected early in the last century with the support of local women's clubs and suffragists like Susan B. Anthony. Several of these monuments—like the lovely one in Portland, Oregon's Washington Park in which Sacagawea resembles a winged victory—make her look older than she was during the expedition, and grander, not a teenager dragged along but a woman who led.

In the hundred years or so after the expedition Sacagawea was nothing like the

icon she has since become. The journals languished mostly unread, and there was little to remind Americans of Sacagawea's contributions to a party of discovery that had, in any case, been overshadowed by the legends of other 19th-century frontiersmen. It was the suffragists, on the lookout for a folk heroine, who rediscovered her. In their portrayals Sacagawea was both an Indian "princess" and a patriotic American. With a little rhetorical exertion, her services to Thomas Jefferson and his vision could be fashioned into an argument for rewarding all American women with the vote.

For many years after her rediscovery, most of the white Americans who wrote about Sacagawea seized upon her as the archetypal "good Indian," one who, like Pocahontas, had aided white men. But in the past couple of decades, and especially for Native Americans, Sacagawea has become a different sort of symbol: a reminder of the extent to which the Lewis and Clark story is also a Native American story. The expedition was, as the historian James Ronda has written, not a "'tour of discovery' through an empty West" but a "diverse human community moving through the lands and lives of other communities." Lately, historians have taken to studying the expedition's mutually informative encounters with native populations and have been more interested in Lewis and Clark as pioneering naturalists and ethnographers than as standard-bearers of manifest destiny. At times this has meant paying less attention to Sacagawea, taking pains not to focus on her as the token Indian presence in the story. "For a long time, Sacagawea was representative of all native people," says Ronda. "A lot of folks seemed to think, If I mention her, I don't have to mention other native people. I've done my job."

But if you think of her as the native informant closest to Lewis and Clark, then she acquires a new symbolic significance. "I see her as a source of pride for all the tribes," says Amy Mossett. "I know of at least seven tribes that have oral traditions about her or someone like her. I see that as a sign of their really wanting to have some connection to the woman who went on the journey with Lewis and Clark."

For some Native Americans, disputes about Sacagawea's life and legacy—where and when she died, even how to spell and pronounce her name—are of far more than academic interest. For the 400 or so remaining Lemhi Shoshone, who live on a reservation in Idaho, the connection to Sacagawea is one thread on which to hang their hopes for federal tribal recognition and a return of the ancestral lands they say were stripped from them. For the Wind River Shoshone in Wyoming, the connection to the woman they insist is "Sacajawea" (their spelling) and who died on their reservation (most historians dispute this) could anchor them in the Lewis and Clark story, if only they could get people to believe she's really buried there.

Amy Mossett sometimes wonders why Sacagawea didn't stay behind with the Shoshone when the expedition met up with the band headed by her brother. For Mossett the fact that she did not means that Sacagawea had come to feel more

like a Hidatsa than a Shoshone. For Carolyn Gilman it suggests that "her experiences may have made her one of those people permanently stuck between cultures, not entirely welcome in her new life nor able to return to her old."

I like to think there was another reason Sacagawea did not stay behind: because by then she wanted to go on—that she, too, had been seized with curiosity about what came next, and where the journey would take her.

Fun Expedition Facts

http://www.lewisclark.net/dyk/index.html

Long Haul
The expedition traveled over 8000 total miles over a period of 2 years, 4 months and 10 days.

Good Guess
When the expedition reached the Pacific, Clark estimates they have traveled 4,162 miles from the mouth of the Missouri to the Pacific. His guess was within 40 miles of the actual distance.

What a Deal
Thomas Jefferson purchased the Louisiana Territory, 820,000 square miles, for $15 million. After interest the final total came to be $27,267,622. That still works out to be only about 3¢ an acre!

An Equal Opportunity Expedition
When the expedition reached the Pacific the party voted on where to spend the winter. York, Clark's slave, is allowed to vote, nearly 60 years before slaves in the U.S. would be emancipated. Sacagawea is also allowed to vote, more than a century before either women or Native Americans are granted full rights of citizenship.

Oops
While hunting in present day North Dakota, Lewis was accidentally shot (in the behind) by Pierre Cruzatte, a nearsighted member of the crew.

Good Boy
Before the expedition began Lewis purchased a Newfoundland dog, Seaman, for $20. Although not mentioned very often in their journals, it is believed that Seaman made the entire journey.

What's for Dinner?
When game was plentiful, each man ate about 9 pounds of meat per day.

Circa 1803

http://www.pbs.org/lewisandclark/inside/idx_cir.html

Woolly mammoths, Peruvian llamas, blue-eyed, Welsh-speaking Indians. In 1803, such myths defined the uncharted West. The Lewis and Clark expedition later dispelled such speculations, including the most widely held myth and hope: the existence of a “northwest passage.”

Such a passage -- a river or series of connected rivers that would cross the western mountains and reach the Pacific Ocean -- would have allowed more direct commerce with the Orient. Thomas Jefferson believed the discovery of the northwest passage would break open the wealth of North America.

Living in America

When Jefferson took the Oath of Office as the third President of the United States on March 4, 1801, the nation had 5,308,483 people within its boundaries, which reached from the Atlantic Ocean in the east to the Mississippi River in the west, from the Great Lakes in the north nearly to the Gulf of Mexico in the south (roughly 1,000 miles by 1,000 miles). Only a comparably small area was occupied, however, and two-thirds of the population lived within 50 miles of the Atlantic.

Jefferson and many of his contemporaries were plantation owners. He and other “Virginia gentlemen” ascribed to a distinct lifestyle. On their vast estates, they led lives of refinement and enlightenment, hosting balls and dinners or discussing politics, philosophy and religion.

A party at Jefferson’s plantation, for example, often followed a day of riding and hunting. Guests feasted on sweet potatoes, peas, corn, breads, nuts, quail, ham, venison, bear, duck, milk and beer. Jefferson personally selected the best wines from France. For entertainment, he often played the violin while guests danced the Virginia reel and other favorites. Choice guests were men of the Enlightenment who conversed in French, Italian and German. They were well-educated and well-read, raptly curious about many topics, especially natural history, geography and the rights of man.

In spite of their interest in personal rights, country gentlemen built their abundant lifestyles with slave labor. Slave life--enforced by the lash-was filled with planting and harvesting. Owners did not perform this manual labor--they managed the details necessary to run the plantation. In that day, plantation owners did not practice crop rotation, so they continually sought more land to cultivate. Thus, as their plantations expanded, the owners’ economic survival hinged on the availability of slaves to work the land.

Other Virginia gentlemen, such as Meriwether Lewis, lacked the higher education and wealth of Jefferson's peers. Public schools did not exist, so planters often were educated by boarding with teachers-usually preachers or parsons-who would school them in grammar, math, natural science and Latin. Thus, a well-balanced education would complement their expertise in planting.

Since the country estates were so far apart, men such as Lewis acquired distinct wilderness skills. Lewis was, for example, a great horseman, hunter and hiker. And such gentlemen traveling through the region were presumed to know the social refinements of plantation life, such as dancing, boxing and fiddle-playing.

Virginia gentlemen were expected to be hospitable, generous, courteous and kind to their inferiors. Debauchery, sexual liaisons, heavy drinking and other vices were common but condoned, as long as they did not hinder relations among members of the society. Instead, the unpardonable offenses were lying and meanness of spirit.

Not all men were content with or pursued the plantation life, and like Lewis, many sought adventure. One means to find it was by enlisting in the Army, where life often was spent on the frontier. It was the Army's job to maintain order in the outer U.S. boundaries, usually with small, isolated groups of fewer than 100 officers and men.

The officer corps often struggled with internal conflicts, because it was one of the rare institutions in early America in which citizens from various regional, religious, ethnic, educational, and social backgrounds mingled in close quarters.

Rules for the officers were strict and specific. They were allowed at least one soldier from the line as a personal servant. Officers were not allowed to swear, express disrespect for their commanding officer or federal or state officials, be intoxicated on duty or absent without leave, or participate in duels. They also were forbidden to take mistresses. Despite the rules, many officers on the frontier lived flamboyantly, drank heavily, and were promiscuous.

Flogging and other harsh punishments were commonly imposed on the enlisted men. Many of them deserted, lured by the chance to run off and lose themselves on the frontier, where they could establish squatters' rights and escape the discipline. Desertion was a serious problem and was severely punished, because the loss of just a few men in the small garrisons would damage fighting capability in the event of an Indian attack.

Most of the soldiers and others who trekked through the frontier ended up in Tennessee or Kentucky. Some traders and trappers went as far as the Missouri River, but the idea of a mass migration further west was still unrealistic.

Navigating Towards Commerce

In 1803, Only four roads crossed the Appalachian Mountains. But the United States had the potential to become a powerful nation if it could add the area west of the Mississippi to its territory. At that time, however, people were skeptical that one nation could govern an entire continent. The distance between the Appalachians and the Mississippi, the limited transportation options, and the unanswered questions about the western land were barriers to westward expansion. Also, horses were the fastest mode of transportation, and the few roads or trails that existed were in poor condition. It was impossible to get anything from the Mississippi to the Atlantic seaboard in fewer than six weeks. These barriers helped quell ideas of spreading national interests further west.

The half-million Americans (one out of 10) who already lived west of the Appalachian Mountains, however, felt they had found their own “national” interests. Since water routes were viewed as a source of commerce, many people along the Mississippi viewed themselves as the seeds of an independent nation that would tap into the world marketplace, not by going east to the Atlantic seaboard, but by following the Ohio and Mississippi river system down to the Gulf of Mexico.

Jefferson knew the inhabitants of this region posed a risk of secession from the United States. After all, the nation, only 18 years old, was born of rebellion. He was determined to obtain the vital trading port of New Orleans for the United States, in part to prevent the West from breaking away.

Other nations also sought to control the West’s destiny but still knew little about the region. Spanish conquistadors had explored the Southwest. French and Spanish fur traders had ventured part of the way up the Missouri River, and the British had visited the Mandan Indians in what is now North Dakota.

The Idea of the West

Like his fellow scholars, Jefferson had many ideas about the unknown areas westward. He was keenly interested in the region, and his personal library at Monticello had more books about the subject than did any other library in the world. Some of Jefferson’s books described a landmass of erupting volcanoes and mountains of undissolved salt. Other readings led him to believe that Virginia’s Blue Ridge Mountains might be the continent’s highest. (The Blue Ridge Mountains peak at around 6,500 feet, while the Rocky Mountains in Colorado top out at over 14,400 feet.)

Depictions of land and creatures in the west often came from the imaginations of men who had never been there. Many reports told of western terrain spotted with wondrous creatures: unicorns, gargantuan woolly mastodons, seven-foot-tall beavers, and friendly, slim-waisted buffalo.

Maps of the west proved equally fictitious. European geographers, for example, drew maps depicting California as an island. Other maps showed the Rocky Mountains to be narrow and undaunting.

The lack of detail in maps circa 1803 hinted at the enormous task to be faced by the Lewis and Clark expedition. Before the journey, Meriwether Lewis had map collector Albert Gallatin make a special map that showed North America from the Pacific coast to the Mississippi.

The map depicted only three points of certainty: the latitude and longitude of the mouth of the Columbia and of St. Louis, and details of what was known of the Missouri River up to the Mandan villages in the Great Bend of the river (today's Bismarck, North Dakota). The map also estimated how the Rockies might look and the course of the Columbia, which no one had charted beyond its mouth.

But the area that lay between the Mandans west was blank, and the best minds in the world could not fill in that blank until someone had walked the land, taken measurements and described the flora, fauna, rivers, mountains, and people. Observations of the commercial and agricultural possibilities of the regions were equally crucial.

Jefferson: Planning a Nation's Destiny
On January 18, 1803, President Jefferson sent a confidential message to Congress, stating in part, "The river Missouri and the Indians inhabiting it, are not as well known as is rendered desirable by their connection with the Mississippi, and consequently with us. . ."

Jefferson went on to propose that an "intelligent officer with ten or twelve chosen men . . . might explore the whole line, even to the Western Ocean."

This proposal culminated Jefferson's long-standing but quiet plans to send a trailblazing expedition into the great void beyond the Mississippi. And although the president was a scholar of the sciences, his push for such an expedition was as much for political reasons as it was for advancing botany or topography. He viewed commercial growth in the west as the key to a United States stronghold in the region.

The political climate in 1803 complicated Jefferson's request. He had asked Congress to authorize a military reconnaissance into unknown lands that already were claimed by the two most powerful nations in the world, France and Britain, with a third, Spain, clinging to a hold in the south and far west. Jefferson already had approached Spanish officials administering the region on behalf of France, seeking their approval to pass through the Louisiana Territory for the purposes of

exploration. Spanish ambassador Don Carlos Martinez objected, but Jefferson pressed ahead with his request to Congress.

Knowing there would be skeptics, especially among his foes in the Federalist party, Jefferson worded his message in a way that minimized military risks and used commercial gains as the bait. He made the temptation cheap, asking only $2,500 to fund the expedition (although actual costs reached $38,722). On February 28, 1803, Congress approved Jefferson's request.

Jefferson was elated. For nearly two decades he had actively strategized to traverse the west and find the northwest passage to the Pacific. Before becoming president, he had been the force behind at least two other aborted expeditions. Some historians have speculated that when Jefferson was first elected, he already had begun planning for another expedition because he had hired rural Virginian Captain Meriwether Lewis as his private secretary, instead of qualified applicants who lived nearby.

Louisiana
Congress' approval of the journey was a big step forward, yet within months it would be eclipsed by an agreement that not only transformed the purpose of the expedition but the very destiny of the United States.

It began with a bid from Jefferson's emissaries in Paris to buy the vital trading port of New Orleans. Negotiations had gone nowhere until Napoleon Bonaparte, preparing for another war with England, suddenly announced that the United States could have New Orleans if it would take the entire 820,000-square mile Louisiana Territory for $15 million (about three cents an acre).

Bonaparte had his own reasons for the dramatic offer. He held title to Louisiana but had little power to enforce it. The Americans, he believed, were sure to overrun the area long before he could get an army there, if he ever could. Further, the land sale would empower a young nation that shared one of France's common rivals: England.

Amazed by the offer, Jefferson accepted and rushed the treaty through Congress, in spite of doubts about its constitutionality. Federalists attacked the purchase not only as a blatant use of executive power, but as a waste of money. Nevertheless, the treaty was signed on April 30, 1803. In a single stroke, the size of the United States was doubled.

The Louisiana Purchase was not publicly announced until July 3, just two days before Meriwether Lewis left Washington, D.C., for Pittsburgh to begin purchasing supplies and hiring men for the expedition. For Lewis, the purchase changed what

would have been a semi-covert mission through foreign territory into a bold survey of American-owned land.

Jefferson sent Lewis off with several pages of specific instructions about what information to collect during the journey: What were the Indians like? What were their languages, their customs, their medical habits? Jefferson craved details of the plant and animal life, the minerals and the mountains. And, of course, he wanted to know the possibilities for trade.

To ensure the expedition's success in obtaining whatever it would need to meet his goals, Jefferson signed and gave Lewis a one-page letter pledging "the faith of the United States" to reimburse anyone for any goods or services that Lewis needed. So the expedition had a limitless line of credit, and rightly so, in Jefferson's view. He was asking Meriwether Lewis and William Clark not only to chart the new territory of the United States, but the nation's destiny.

Rush's Bilious Pills

http://lewis-clark.org/content/content-article.asp?ArticleID=2564

American-made from imported ingredients — One significant medicine was not imported--the famous Bilious Pills of Benjamin Rush. (They were actually anti-bilious pills. A patient was said to be "bilious" when supposed poor flow of bile in the body caused a complex of symptoms including constipation, headache, and lassitude.) Dr. Rush had expressly indicated to Lewis that when one of his men showed the "sign of an approaching disease...take one or two of the opening pills." Nicknamed "Rush's Thunderbolts," the pills were reputed to contain 10 grains of calomel and 10 to 15 grains of jalap, both potent laxatives. By opening up the bowels, Rush believed that the body would then expel the excess bile or other matter causing illness. (With active ingredients weighing at least 1295 mg, these would have been large pills indeed. A common aspirin tablet weighs 5 grains or 1/4 the weight of the "thunderbolts.")

A milder version of Rush's Pills remained an official compound until the 1940s. This "mild" formula was nontheless a big gun, combining four purgatives of slightly differing qualities. Early 19th-century physicians regarded jalap as "active" and "rapid." Gamboge, from Cambodia, was a "drastic" and "powerful" purge. Calomel (mercurous chloride) was believed to stimulate the liver and the gall bladder, although the opposite was true. Colocynth, or bitter apple, from India and Saharan Africa, was termed a "drastic" and "powerful" purge. According to the United States Dispensatory[2] of 1918, the compound extract of colocynth "combined with calomel, extract of jalap, and gamboge, . . . forms a highly efficient and safe cathartic, especially useful in congestion of the portal circle and torpidity of the liver."

By the 1960s, newer drugs and concerns about heavy metal poisoning led to the disappearance of mercury compounds for internal use. Only a few external mercury-containing antiseptics remained into the 1990s.

Food

Recipe – Honey-Black Walnut Bread

From *The Food Journal of Lewis & Clark: Recipes for an Expedition* by Mary Gunderson
http://www.historycooks.com/index.php?option=com_content&view=article&id=26:honey-black-walnut-bread&catid=14:recipes&Itemid=33

At Wheeling, Virginia (now West Virginia), Lewis looked forward to freshly baked bread. He had directed an unnamed corporal to trade flour with a woman who would bake ninety pounds of bread for them. The corporal and the baker had a disagreement at delivery. The corporal returned to the boats without the bread—and to a displeased Lewis. After a reprimand, Lewis gave him a dollar and told him to go back and get the bread and "pay the woman for her trouble."

2 cups boiling water
1/2 cup cracked wheat
3 1/2 cups all-purpose flour
2 cups whole wheat flour
4 1/2 teaspoons active dry yeast
2 teaspoons salt
1/2 cup warm water (120°F)
1/4 cup honey
3 tablespoons melted butter
1/2 cup chopped black or English walnuts

Pour boiling water over the cracked wheat in a small bowl. Let stand for 20 minutes.

Combine 2 cups of the all-purpose flour, the whole wheat flour, yeast, and salt in a large mixer bowl. Stir in the softened cracked wheat with the soaking water, 1/2 cup warm water, honey, and melted butter. Mix on low speed for 1 minute. Increase the speed to medium and mix for 2 to 3 minutes. Using the mixer or stirring by hand, add 1 cup all-purpose flour and walnuts, mixing until smooth. Turn the dough out onto a lightly floured board. Add as much remaining all-purpose flour, 1/4 to 1/2 cup, as needed to leave the dough not sticky. Knead for about 5 minutes, or until the dough is smooth to the touch.

Cover with a clean towel and set in a warm place (75° to 80°F) and let the dough rise 50 to 60 minutes, or until doubled in size. Turn the dough out and shape into 2 loaves.

Place in well-greased 8 x 4- or 9 x 5-inch bread pans. Let rise another 45 to 50 minutes, or until doubled. Bake in a 375°F oven for 30 to 40 minutes, or until the loaves are lightly browned and sound hollow when thumped.

Makes 2 loaves.

Timeline for Lewis & Clark

http://www.lewisclark.net/timeline/index.html

August 1, 1770 –
- William Clark, Born
August 18, 1774 -
- Meriwether Lewis, Born March 6, 1801 -
- Lewis is asked by President Jefferson to be his secretary-aide
Spring, 1803 -
- Lewis picked as commander of expedition. Writes to ask William Clark to join him and share command. Clark accepts.
July 4, 1803 -
- Announcement of Louisiana Purchase.
Summer, 1803 -
- Large keelboat constructed in Pittsburgh, overseen by Lewis. After construction Lewis takes it down the Ohio River picking up Clark and recruits along the way.
Fall/Winter, 1803 -
- Camp Wood established upstream from St. Louis.
May 14, 1804 -
-Expedition begins.
July 4, 1804 -
-Expedition marks first 4th of July west of the Mississippi by firing the keelboat's cannon, and naming Independence Creek.
August 3, 1804 -
- Corps of Discovery meet with representatives of the Oto and Missouri Indians, give peace medals, 15 star flags and other gifts.
August 20, 1804 -
- Near present day Sioux City, Iowa, Sgt. Charles Floyd dies of a probable burst appendix. Captains name hilltops where he is buried Floyd's Bluff and a nearby stream, Floyd's River.
August 30, 1804 -
- Friendly council with Yankton Sioux held.

September 7, 1804 -
- All of the men attempt to drown a never-before-seen prairie dog out of its hole for shipment back to Jefferson.
September 25, 1804 -
- Confrontation with Teton Sioux, who demand one of the expedition's boats as a toll to travel farther upriver. Chief Black Buffalo resolves situation before any fighting. Expedition stays with tribe for 3 more days.
October 24, 1804 -
- Expedition discovers earthlodge villages of the Mandan and Hidatsas Indians. The captains decide to build Fort Mandan across the river from the main village.
November 4, 1804 -
- Toussaint Charbonneau, a French Canadian fur trapper living with the Hidatsas, is hired as an interpreter. His wife, Sacagawea, a Shoshone who had been captured by the Hidatsas and sold to Charbonneau, is also considered helpful as the Shoshones are said to live at the headwaters of the Missouri.
December 24, 1804 -
- Fort Mandan completed, expedition moves in for the winter.
February 11, 1805 -
- Sacagawea gives birth to baby boy, Jean Baptiste.
April 7, 1805 -
- Lewis and Clark send the keelboat and approx. a dozen men back downriver, with maps, reports, Indian artifacts and other scientific specimens for Jefferson. The remaining party heads west.
April 29, 1805 -
- Lewis and another hunter kill a large grizzly bear, which had never before been described for science.
May 29, 1805 -
- Clark names the Judith River in honor of a girl back in Virginia he hopes to marry.
June 2, 1805 -
-The expedition comes to a fork in the river. Lewis and Clark believe the south fork is the Missouri, while all of the other men believe it is the north fork. Although they are not convinced that the south fork is the Missouri the captains recount; "they were ready to follow us any where we thought proper to direct."
June 13, 1805 -
- Scouting ahead of the rest of the expedition, Lewis comes across the Great Falls of the Missouri. He also discovers four more waterfalls farther upstream. The expedition will have to portage over eighteen miles, taking nearly a month, to get past them.
Late July, 1805 -
- The expedition reaches the three forks of the Missouri River, and name them the Gallatin, the Madison, and the Jefferson, after the Secretary of the Treasury, Albert Gallatin, the Secretary of State, James Madison, and President Thomas Jefferson. The expedition continues southwest, up the Jefferson.
August 8, 1805 -

- Sacagawea recognizes Beaverhead Rock and says they are nearing the headwaters of the Missouri, and her people, the Shoshones. Lewis and three others scout ahead.
August 12, 1805 -
- The shipment sent from fort Mandan arrives in the East and is delivered to Jefferson. Lewis ascends the final ridge toward the Continental Divide expecting to see plains and a river flowing to the Pacific, but he finds even more mountains.
August 17, 1805 -
- Lewis discovers a village of Shoshones and tries to negotiate for horses. Clark and the rest of the expedition arrives as well, and it is discovered that the Shoshone chief Cameahwait is Sacagawea's brother. Lewis and Clark name the site Camp Fortunate.
August 31, 1805 -
- The expedition sets out with a Shoshone guide called Old Toby, along with 29 horses and a mule.
September 9, 1805 -
- The expedition camps at present day Missoula, Montana, a spot Lewis and Clark called Travelers Rest to prepare for the mountain crossing.
September 22, 1805 -
- After nearly starving in the mountains the expedition emerges near present-day Weippe, Idaho.
October 16, 1805 -
- The expedition reaches the Columbia River.
October 18, 1805 -
- Clark sees Mount Hood in the distance, named by a British sea captain in 1792, proof that they are near the ocean.
November 7, 1805 -
- Clark, who believes he can see the ocean writes his most famous journal entry: "Ocian in view! O! the joy." The expedition is actually still 20 miles from the sea. Terrible storms halt the expedition for nearly 3 weeks.
November 24, 1805 -
- By majority vote the expedition decides to cross to the south side of the Columbia River to build winter quarters.
January 4, 1806 -
- President Jefferson welcomes a delegation of Missouri, Oto, Arikara, and Yankton Sioux chiefs who had met with Lewis and Clark more than a year earlier.
March 7, 1806 -
- The expedition runs out of tobacco. They had run out of their whiskey ration the previous fourth of July.
March 23, 1806 -
- Fort Clatsop is presented to the Clatsop Indian, for which it was named, and the expedition begins the journey home.
May - Late June, 1806 -
- The expedition reaches the Bitterroot mountains, but must wait for the snow to

melt before crossing them. During this time the expedition again stays with the Nez Perce, Lewis describes them as "the most hospitable, honest and sincere people that we have met with in our voyage."
July 3, 1806 -
- Having crossed the Bitterroots again, the expedition breaks into smaller groups in order to explore more of the Louisiana Territory. Clark and his group head down the Yellowstone River, while Lewis takes the shortcut to the Great Falls, and then heads north along the Maris River.
July 25, 1806 -
- Near present-day Billings, Montana, Clark names a sandstone outcropping Pompy's Tower, after sacagawea's son, nicknamed Little Pomp. On the rock face Clark enscribes his name and the date.
July 26-27, 1806 -
- While making their way back to the Missouri, Lewis' party encounters eight Blackfeet warriors. They camp together, but the morning of the 27th the party catches the blackfeet attempting to steal their horses and guns. During a fight two of the Blackfeet were killed.
August 12, 1806 -
- All of the parties are reunited downstream from the mouth of the Yellowstone River.
August 14, 1806 -
- The expedition returns to the Mandan village. Charbonneau, Sacagawea, and Jean Baptist stay, while John Colter is granted permission to return to the Yellowstone to trap beaver.
September, 1806 -
- With the current of the Missouri behind them, they are able to cover over 70 miles per day. The expedition also begins meeting boats of American traders heading upriver.
September 23, 1806 -
- Lewis and Clark reach St. Louis.
Fall, 1806 -
- Lewis and Clark are treated as national heroes. They return to Washington, D.C. The men receive double pay and 320 acres of land as reward, the captains get 1,600 acres. Lewis is named governor of the Louisiana Territory, Clark is made Indian agent for the West and brigadier general of the territory's militia.
October 11, 1809 -
- Lewis commits suicide at Grinders Stand, an inn south of Nashville.
December 20, 1812 -
- Sacagawea dies at Fort Manuel. Clark, who is St. Louis, assumes custody of Jean Baptiste, as well as her daughter, Lisette.
September 1, 1838 -
- William Clark dies at the home of his eldest son, Meriwether Lewis Clark. William Clark had married Julia "Judith" Hancock for whom he had named a river while on the expedition.

The Frontier/Westward Expansion

One of the major inspirations for Volcanic in Origins, mentioned by Gregory Hischak, is on essay by Frederick Jackson Turner called “The Significance of the Frontier in American History.” Turner gave this paper at the American Historical Association during the World’s Columbian Exposition in Chicago in 1893. Below is some information on Turner, on the “Frontier Thesis” or “Turner Thesis,” and a complete copy of the essay. Turner eventually turned his paper into a book, and you can find that book in its entirety at the Kindle store for free, through Google Books, or online here: http://xroads.virginia.edu/~hyper/turner/

Frederick Jackson Turner

Biography
http://www.pbs.org/weta/thewest/people/s_z/turner.htm

"The existence of an area of free land, its continuous recession, and the advance of American settlement westward explain American development." With these words, Frederick Jackson Turner laid the foundation for modern historical study of the American West and presented a "frontier thesis" that continues to influence historical thinking even today.

Turner was born in Portage, Wisconsin, in 1861. His father, a journalist by trade and local historian by avocation, piqued Turner's interest in history. After his graduation from the University of Wisconsin in 1884, Turner decided to become a professional historian, and received his Ph.D. from Johns Hopkins University in 1890. He served as a teacher and scholar at the University of Wisconsin from 1889 to 1910, when he joined Harvard's faculty. He retired in 1924 but continued his research until his death in 1932.

Turner's contribution to American history was to argue that the frontier past best explained the distinctive history of the United States. He most cogently articulated this idea in "The Significance of the Frontier in American History," which he first delivered to a gathering of historians in 1893 at Chicago, then the site of the World's Columbian Exposition, an enormous fair to mark the four-hundredth anniversary of Columbus' voyage. Although almost totally ignored at the time, Turner's lecture eventually gained such wide distribution and influence that a contemporary scholar has called it "the single most influential piece of writing in the history of American history."

Three years before Turner's pronouncement of the frontier thesis, the U.S. Census Bureau had announced the disappearance of a contiguous frontier line. Turner took this "closing of the frontier" as an opportunity to reflect upon the influence it had exercised. He argued that the frontier had meant that every American generation returned "to primitive conditions on a continually advancing frontier line." Along this

frontier -- which he also described as "the meeting point between savagery and civilization" -- Americans again and again recapitulated the developmental stages of the emerging industrial order of the 1890's. This development, in Turner's description of the frontier, "begins with the Indian and the hunter; it goes on with the disintegration of savagery by the entrance of the trader... the pastoral stage in ranch life; the exploitation of the soil by the raising of unrotated crops of corn and wheat in sparsely settled farm communities; the intensive culture of the denser farm settlement; and finally the manufacturing organization with the city and the factory system."

For Turner, the deeper significance of the frontier lay in the effects of this social recapitulation on the American character. "The frontier," he claimed, "is the line of most rapid Americanization." The presence and predominance of numerous cultural traits -- "that coarseness and strength combined with acuteness and acquisitiveness; that practical inventive turn of mind, quick to find expedients; that masterful grasp of material things... that restless, nervous energy; that dominant individualism" -- could all be attributed to the influence of the frontier.

Turner's essay reached triumphalist heights in his belief that the promotion of individualistic democracy was the most important effect of the frontier. Individuals, forced to rely on their own wits and strength, he believed, were simply too scornful of rank to be amenable to the exercise of centralized political power.

Turner offered his frontier thesis as both an analysis of the past and a warning about the future. If the frontier had been so essential to the development of American culture and democracy, then what would befall them as the frontier closed? It was on this forboding note that he closed his address: "And now, four centuries from the discovery of America, at the end of a hundred years of life under the Constitution, the frontier has gone, and with its going has

closed the first period of American history."

More than a century after he first delivered his frontier thesis, historians still hotly debate Turner's ideas and approach. His critics have denied everything from his basic assumptions to the small details of his argument. The mainstream of the profession has long since discarded Turner's assumption that the frontier is the key to American history as a whole; they point instead to the critical influence of such factors as slavery and the Civil War, immigration, and the development of industrial capitalism. But even within Western and frontier history, a growing body of historians has contested Turner's approach.

Some have long disputed the very idea of a frontier of "free land." Turner's formulation ignored the presence of the numerous Indian peoples whose subjugation was required by the nation's westward march, and assumed that the bulk of newly acquired lands were actually democratically distributed to yeomen pioneers. The numerous Indian wars provoked by American expansion belie Turner's argument that the American "free land" frontier was a sharp contrast with European nations' borders with other states.

On a more analytic level, an increasing number of Western historians have found the very concept of a frontier dubious, because it applies to too many disparate places and times to be useful. How much do Puritan New England and the California of the transcontinental railroad really have in common? Many such critics have sought to replace the idea of a moving frontier with the idea of the West as a distinctive region, much like the American South.

Where Turner told the triumphalist story of the frontier's promotion of a distinctly American democracy, many of his critics have argued that precisely the opposite was the case. Cooperation and communities of various sorts, not isolated individuals, made possible the absorption of the West into the United States. Most migrant wagon trains, for example, were composed of extended kinship networks. Moreover, as the 19th century wore on, the role of the federal government and large corporations grew increasingly important. Corporate investors headquartered in New York laid the railroads; government troops defeated Indian nations who refused to get out of the way of manifest destiny; even the cowboys, enshrined in popular mythology as rugged loners, were generally low-level employees of sometimes foreign-owned cattle corporations.

Moreover, these revisionist scholars argue, for many places the West has not been the land of freedom and opportunity that both Turnerian history and popular mythology would have us believe. For many women, Asians, Mexicans who suddenly found themselves residents of the United States, and, of course, Indians, the West was no promised land.

The more foreboding and cautionary tale which increasing numbers of Western historians have offered in place of Turner's account has provoked sharp controversy. "New" Western historians -- many of whom actually echo and draw upon fairly old scholarly works -- often argue that their accounts offer a more inclusive and honest reckoning of the Western past. Western historians who still adhere roughly to Turner's approach accuse their opponents of mistaking a simple-minded political correctness for good scholarship in their quest to recount only the doom and gloom of the Western past. Often the rhetoric reaches an acrimonious crescendo. But in a sense, the very acrimony of these debates takes us full circle back to Turner and his legacy, for debates about the significance of Western history are hardly ever confined to the past. In our understanding of what we are as a nation, if on no other level, the Western past continues to define us today.

“The Significance of the Frontier in American History”

by Frederick Jackson Turner
http://www.learner.org/workshops/primarysources/corporations/docs/turner.html

In a recent bulletin of the Superintendent of the Census for 1890 appear these significant words: "Up to and including 1880 the country had a frontier of settlement, but at present the unsettled area has been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line. In the discussion of its extent, its westward movement, etc., it can not, therefore, any longer have a place in the census reports." This brief official statement marks the closing of a great historic movement. Up to our own day American history has been in a large degree the history of the colonization of the Great West. The existence of an area of free land, its continuous recession, and the advance of American settlement westward, explain American development.

Behind institutions, behind constitutional forms and modifications, lie the vital forces that call these organs into life and shape them to meet changing conditions. The peculiarity of American institutions is, the fact that they have been compelled to adapt themselves to the changes of an expanding people--to the changes involved in crossing a continent, in winning a wilderness, and in developing at each area of this progress out of the primitive economic and political conditions of the frontier into the complexity of city life. Said Calhoun in 1817, "We are great, and rapidly--I was about to say fearfully--growing!", So saying, he touched the distinguishing feature of American life. All peoples show development; the germ theory of politics has been sufficiently emphasized. In the case of most nations, however, the development has occurred in a limited area; and if the nation has expanded, it has met other growing peoples whom it has conquered. But in the case of the United States we have a different phenomenon. Limiting our attention to the Atlantic coast, we have the familiar phenomenon of the evolution of institutions in a limited area, such as the rise of representative government; into complex organs; the progress

from primitive industrial society, without division of labor, up to manufacturing civilization. But we have in addition to this a recurrence of the process of evolution in each western area reached in the process of expansion. Thus American development has exhibited not merely advance along a single line, but a return to primitive conditions on a continually advancing frontier line, and a new development for that area. American social development has been continually beginning over again on the frontier. This perennial rebirth, this fluidity of American life, this expansion westward with its new opportunities, its continuous touch with the simplicity of primitive society, furnish the forces dominating American character. The true point of view in the history of this nation is not the Atlantic coast, it is the Great West. Even the slavery struggle, which is made so exclusive an object of attention by writers like Professor von Holst, occupies its important place in American history because of its relation to westward expansion.

In this advance, the frontier is the outer edge of the wave-- the meeting point between savagery and civilization. Much has been written about the frontier from the point of view of border warfare and the chase, but as a field for the serious study of the economist and the historian it has been neglected.

The American frontier is sharply distinguished from the European frontier--a fortified boundary line running through dense populations. The most significant thing about the American frontier is, that it lies at the hither edge of free land. In the census reports it is treated as the margin of that settlement which has a density of two or more to the square mile. The term is an elastic one, and for our purposes does not need sharp definition. We shall consider the whole frontier belt including the Indian country and the outer margin of the "settled area " of the census reports. This paper will make no attempt to treat the subject exhaustively; its aim is simply to call attention to the frontier as a fertile field for investigation, and to suggest some of the problems which arise in connection with it.

In the settlement of America we have to observe how European life entered the continent, and how America modified and developed that life and reacted on Europe. Our early history is the study of European germs developing in an American environment. Too exclusive attention has been paid by institutional students to the Germanic origins, too little to the American factors. The frontier is the line of most rapid and effective Americanization. The wilderness masters the colonist. It finds him a European in dress, industries, tools, modes of travel, and thought. It takes him from the railroad car and puts him in the birch canoe. It strips off the garments of civilization and arrays him in the hunting shirt and the moccasin. It puts him in the log cabin of the Cherokee and Iroquois and runs an Indian palisade around him. Before long he has gone to planting Indian corn and plowing with a sharp stick, he shouts the war cry and takes the scalp in orthodox Indian fashion. In short, at the frontier the environment is at first too strong for the man. He must accept the conditions which it furnishes, or perish, and so he fits himself into the Indian

clearings and follows the Indian trails. Little by little he transforms the wilderness, but the outcome is not the old Europe, not simply the development of Germanic germs, any more than the first phenomenon was a case of reversion to the Germanic mark. The fact is, that here is a new product that is American. At first, the frontier was the Atlantic coast. It was the frontier of Europe in a very real sense. Moving westward, the frontier became more and more American. As successive terminal moraines result from successive glaciations, so each frontier leaves its traces behind it, and when it becomes a settled area the region still partakes of the frontier characteristics. Thus the advance of the frontier has meant a steady movement away from the influence of Europe, a steady growth of independence on American lines. And to study this advance, the men who grew up under these conditions, and the political, economic, and social results of it, is to study the really American part of our history.

In the course of the seventeenth century the frontier was advanced up the Atlantic river courses, just beyond the "fall line," and the tidewater region became the settled area. In the first half of the eighteenth century another advance occurred. Traders followed the Delaware and Shawnee Indians to the Ohio as early as the end of the first quarter of the century. Gov. Spotswood, of Virginia, made an expedition in 1714 across the Blue Ridge. The end of the first quarter of the century saw the advance of the Scotch-Irish and the Palatine Germans up the Shenandoah Valley into the western part of Virginia, and along the Piedmont region of the Carolinas. The Germans in New York pushed the frontier of settlement up the Mohawk to German Flats. In Pennsylvania the town of Bedford indicates the line of settlement. Settlements had begun on New River, a branch of the Kanawha, and on the sources of the Yadkin and French Broad. The King attempted to arrest the advance by his proclamation of 1763, forbidding settlements beyond the sources of the rivers flowing into the Atlantic, but in vain. In the period of the Revolution the frontier crossed the Alleghanies into Kentucky and Tennessee, and the upper waters of the Ohio were settled. When the first census was taken in 1790, the continuous settled area was bounded by a line which ran near the coast of Maine, and included New England except a portion of Vermont and New Hampshire, New York along the Hudson and up the Mohawk about Schenectady, eastern and southern Pennsylvania, Virginia well across the Shenandoah Valley, and the Carolinas and eastern Georgia. Beyond this region of continuous settlement were the small settled areas of Kentucky and Tennessee, and the Ohio, with the mountains intervening between them and the Atlantic area, thus giving a new and important character to the frontier. The isolation of the region increased its peculiarly American tendencies, and the need of transportation facilities to connect it with the East called out important schemes of internal improvement, which will be noted farther on. The "West," as a self-conscious section, began to evolve.

From decade to decade distinct advances of the frontier occurred. By the census of 1820 the settled area included Ohio, southern Indiana and Illinois, southeastern

Missouri, and about one-half of Louisiana. This settled area had surrounded Indian areas, and the management of these tribes became an object of political concern. The frontier region of the time lay along the Great Lakes, where Astor's American Fur Company operated in the Indian trade, and beyond the Mississippi, where Indian traders extended their activity even to the Rocky Mountains; Florida also furnished frontier conditions. The Mississippi River region was the scene of typical frontier settlements.

The rising steam navigation on western waters, the opening of the Erie Canal, and the westward extension of cotton culture added five frontier states to the Union in this period. Grund, writing in 1836, declares: "It appears then that the universal disposition of Americans to emigrate to the western wilderness, in order to enlarge their dominion over inanimate nature, is the actual result of an expansive power which is inherent in them, and which by continually agitating all classes of society is constantly throwing a large portion of the whole population on the extreme confines of the State, in order to gain space for its development. Hardly is a new State of Territory formed before the same principle manifests itself again and gives rise to a further emigration; and so is it destined to go on until a physical barrier must finally obstruct its progress."

In the middle of this century the line indicated by the present eastern boundary of Indian Territory, Nebraska, and Kansas marked the frontier of the Indian country. Minnesota and Wisconsin still exhibited frontier conditions, but the distinctive frontier of the period is found in California, where the gold discoveries had sent a sudden tide of adventurous miners, and in Oregon, and the settlements in Utah. As the frontier had leaped over the Alleghanies, so now it skipped the Great Plains and the Rocky Mountains; and in the same way that the advance of the frontiersmen beyond the Alleghanies had caused the rise of important questions of transportation and internal improvement, so now the settlers beyond the Rocky Mountains needed means of communication with the East, and in the furnishing of these arose the settlement of the Great Plains and the development of still another kind of frontier life. Railroads, fostered by land grants, sent an increasing tide of immigrants into the Far West. The United States Army fought a series of Indian wars in Minnesota, Dakota, and the Indian Territory.

By 1880 the settled area had been pushed into northern Michigan, Wisconsin, and Minnesota, along Dakota rivers, and in the Black Hills region, and was ascending the rivers of Kansas and Nebraska. The development of mines in Colorado had drawn isolated frontier settlements into that region, and Montana and Idaho were receiving settlers. The frontier was found in these mining camps and the ranches of the Great Plains. The superintendent of the census for 1890 reports, as previously stated, that the settlements of the West lie so scattered over the region that there can no longer be said to be a frontier line.

In these successive frontiers we find natural boundary lines which have served to mark and to affect the characteristics of the frontiers, namely: the "fall line;" the Alleghany Mountains; the Mississippi; the Missouri where its direction approximates north and south; the line of the arid lands, approximately the ninety-ninth meridian; and the Rocky Mountains. The fall line marked the frontier of the seventeenth century; the Alleghanies that of the eighteenth; the Mississippi that of the first quarter of the nineteenth; the Missouri that of the middle of this century (omitting the California movement); and the belt of the Rocky Mountains and the arid tract, the present frontier. Each was won by a series of Indian wars.

At the Atlantic frontier one can study the germs of processes repeated at each successive frontier. We have the complex European life sharply precipitated by the wilderness into the simplicity of primitive conditions. The first frontier had to meet its Indian question, its question of the disposition of the public domain, of the means of intercourse with older settlements, of the extension of political organization, of religious and educational activity. And the settlement of these and similar questions for one frontier served as a guide for the next. The American student needs not to go to the "prim little townships of Sleswick" for illustrations of the law of continuity and development. For example, he may study the origin of our land policies in the colonial land policy; he may see how the system grew by adapting the statutes to the customs of the successive frontiers. He may see how the mining experience in the lead regions of Wisconsin, Illinois, and Iowa was applied to the mining laws of the Sierras, and how our Indian policy has been a series of experimentations on successive frontiers. Each tier of new States has found in the older ones material for its constitutions. Each frontier has made similar contributions to American character, as will be discussed farther on.

But with all these similarities there are essential differences, due to the place element and the time element. It is evident that the farming frontier of the Mississippi Valley presents different conditions from the mining frontier of the Rocky Mountains. The frontier reached by the Pacific Railroad, surveyed into rectangles, guarded by the United States Army, and recruited by the daily immigrant ship, moves forward at a swifter pace and in a different way than the frontier reached by the birch canoe or the pack horse. The geologist traces patiently the shores of ancient seas, maps their areas, and compares the older and the newer. It would be a work worth the historian's labors to mark these various frontiers and in detail compare one with another. Not only would there result a more adequate conception of American development and characteristics, but invaluable additions would be made to the history of society.

Loria, the Italian economist, has urged the study of colonial life as an aid in understanding the stages of European development, affirming that colonial settlement is for economic science what the mountain is for geology, bringing to light primitive stratifications. "America," he says, "has the key to the historical

enigma which Europe has sought for centuries in vain, and the land which has no history reveals luminously the course of universal history." There is much truth in this. The United States lies like a huge page in the history of society. Line by line as we read this continental page from West to East we find the record of social evolution. It begins with the Indian and the hunter; it goes on to tell of the disintegration of savagery by the entrance of the trader, the pathfinder of civilization; we read the annals of the pastoral stage in ranch life; the exploitation of the soil by the raising of unrotated crops of corn and wheat in sparsely settled farming communities; the intensive culture of the denser farm settlement; and finally the manufacturing organization with city and factory system. This page is familiar to the student of census statistics, but how little of it has been used by our historians. Particularly in eastern States this page is a palimpsest. What is now a manufacturing State was in an earlier decade an area of intensive farming. Earlier yet it had been a wheat area, and still earlier the "range" had attracted the cattleherder. Thus Wisconsin, now developing manufacture, is a State with varied agricultural interests. But earlier it was given over to almost exclusive grain-raising, like North Dakota at the present time.

Each of these areas has had an influence in our economic and political history; the evolution of each into a higher stage has worked political transformations. But what constitutional historian has made any adequate attempt to interpret political facts by the light of these social areas and changes?

The Atlantic frontier was compounded of fisherman, fur trader, miner, cattle-raiser, and farmer. Excepting the fisherman, each type of industry was on the march toward the West, impelled by an irresistible attraction. Each passed in successive waves across the continent. Stand at Cumberland Gap and watch the procession of civilization, marching single file-- the buffalo following the trail to the salt springs, the Indian, the fur trader and hunter, the cattle-raiser, the pioneer farmer --and the frontier has passed by. Stand at South Pass in the Rockies a century later and see the same procession with wider intervals between. The unequal rate of advance compels us to distinguish the frontier into the trader's frontier, the rancher's frontier, or the miner's frontier, and the farmer's frontier. When the mines and the cow pens were still near the fall line the traders' pack trains were tinkling across the Alleghanies, and the French on the Great Lakes were fortifying their posts, alarmed by the British trader's birch canoe. When the trappers scaled the Rockies, the farmer was still near the mouth of the Missouri.

Why was it that the Indian trader passed so rapidly across the continent? What effects followed from the trader's frontier? The trade was coeval with American discovery. The Norsemen, Vespuccius, Verrazani, Hudson, John Smith, all trafficked for furs. The Plymouth pilgrims settled in Indian cornfields, and their first return cargo was of beaver and lumber. The records of the various New England colonies show how steadily exploration was carried into the wilderness by this

trade. What is true for New England is, as would be expected, even plainer for the rest of the colonies. All along the coast from Maine to Georgia the Indian trade opened up the river courses. Steadily the trader passed westward, utilizing the older lines of French trade. The Ohio, the Great Lakes, the Mississippi, the Missouri, and the Platte, the lines of western advance, were ascended by traders. They found the passes in the Rocky Mountains and guided Lewis and Clark, Fremont, and Bidwell. The explanation of the rapidity of this advance is connected with the effects of the trader on the Indian. The trading post left the unarmed tribes at the mercy of those that had purchased fire-arms--a truth which the Iroquois Indians wrote in blood, and so the remote and unvisited tribes gave eager welcome to the trader "The savages," wrote La Salle, "take better care of us French than of their own children; from us only can they get guns and goods." This accounts for the trader's power and the rapidity of his advance. Thus the disintegrating forces of civilization entered the wilderness. Every river valley and Indian trail became a fissure in Indian society, and so that society became honeycombed. Long before the pioneer farmer appeared on the scene, primitive Indian life had passed away. The farmers met Indians armed with guns. The trading frontier, while steadily undermining Indian power by making the tribes ultimately dependent on the whites, yet, through its sale of guns, gave to the Indian increased power of resistance to the farming frontier. French colonization was dominated by its trading frontier; English colonization by its farming frontier. There was an antagonism between the two frontiers as between the two nations. Said Duquesne to the Iroquois, "Are you ignorant of the difference between the king of England and the king of France? Go see the forts that our king has established and you will see that you can still hunt under their very walls. They have been placed for your advantage in places which you frequent. The English, on the contrary, are no sooner in possession of a place than the game is driven away. The forest falls before them as they advance, and the soil is laid bare so that you can scarce find the wherewithal to erect a shelter for the night."

And yet, in spite of this opposition of the interests of the trader and the farmer, the Indian trade pioneered the way for civilization. The buffalo trail became the Indian trail, and this became the trader's "trace;" the trails widened into roads, and the roads into turnpikes, and these in turn were transformed into railroads. The same origin can be shown for the railroads of the South, the Far West, and the Dominion of Canada. The trading posts reached by these trails were on the sites of Indian villages which had been placed in positions suggested by nature; and these trading posts, situated so as to command the water systems of the country, have grown into such cities as Albany, Pittsburgh, Detroit, Chicago, St. Louis, Council Bluffs, and Kansas City. Thus civilization in America has followed the arteries made by geology, pouring an ever richer tide through them, until at last the slender paths of aboriginal intercourse have been broadened and interwoven into the complex mazes of modern commercial lines; the wilderness has been interpenetrated by lines of civilization growing ever more numerous. It is like the steady growth of a complex nervous system for the originally simple, inert continent. If one would

understand why we are to-day one nation, rather than a collection of isolated states, he must study this economic and social consolidation of the country. In this progress from savage conditions lie topics for the evolutionist.

The effect of the Indian frontier as a consolidating agent in our history is important. From the close of the seventeenth century various intercolonial congresses have been called to treat with Indians and establish common measures of defense. Particularism was strongest in colonies with no Indian frontier. This frontier stretched along the western border like a cord of union. The Indian was a common danger, demanding united action. Most celebrated of these conferences was the Albany congress of 1754, called to treat with the Six Nations, and to consider plans of union. Even a cursory reading of the plan proposed by the congress reveals the importance of the frontier. The powers of the general council and the officers were, chiefly, the determination of peace and war with the Indians, the regulation of Indian trade, the purchase of Indian lands, and the creation and government of new settlements as a security against the Indians. It is evident that the unifying tendencies of the Revolutionary period were facilitated by the previous coöperation in the regulation of the frontier. In this connection may be mentioned the importance of the frontier, from that day to this, as a military training school, keeping alive the power of resistance to aggression, and developing the stalwart and rugged qualities of the frontiersman.

It would not be possible in the limits of this paper to trace the other frontiers across the continent. Travelers of the eighteenth century found the "cowpens" among the canebrakes and peavine pastures of the South, and the "cow drivers" took their droves to Charleston, Philadelphia, and New York. Travelers at the close of the War of 1812 met droves of more than a thousand cattle and swine from the interior of Ohio going to Pennsylvania to fatten for the Philadelphia market. The ranges of the Great Plains, with ranch and cowboy and nomadic life, are things of yesterday and of to-day. The experience of the Carolina cowpens guided the ranchers of Texas. One element favoring the rapid extension of the rancher's frontier is the fact that in a remote country lacking transportation facilities the product must be in small bulk, or must be able to transport itself, and the cattle raiser could easily drive his product to market. The effect of these great ranches on the subsequent agrarian history of the localities in which they existed should be studied.

The maps of the census reports show an uneven advance of the farmer's frontier, with tongues of settlement pushed forward and with indentations of wilderness. In part this is due to Indian resistance, in part to the location of river valleys and passes, in part to the unequal force of the centers of frontier attraction. Among the important centers of attraction may be mentioned the following: fertile and favorably situated soils, salt springs, mines, and army posts.

The frontier army post, serving to protect the settlers from the Indians, has also acted as a wedge to open the Indian country, and has been a nucleus for settlement. In this connection mention should also be made of the government military and exploring expeditions in determining the lines of settlement. But all the more important expeditions were greatly indebted to the earliest pathmakers, the Indian guides, the traders and trappers, and the French voyageurs, who were inevitable parts of governmental expeditions from the days of Lewis and Clark. Each expedition was an epitome of the previous factors in western advance.
In an interesting monograph, Victor Hehn has traced the effect of salt upon early European development, and has pointed out how it affected the lines of settlement and the form of administration. A similar study might be made for the salt springs of the United States. The early settlers were tied to the coast by the need of salt, without which they could not preserve their meats or live in comfort. Writing in 1752, Bishop Spangenburg says of a colony for which he was seeking lands in North Carolina, "They will require salt & other necessaries which they can neither manufacture nor raise. Either they must go to Charleston, which is 300 miles distant .. . Or else they must go to Boling's Point in V[a] on a branch of the James & is also 300 miles from here. . . Or else they must go down the Roanoke--I know not how many miles--where salt is brought up from the Cape Fear." This may serve as a typical illustration. An annual pilgrimage to the coast for salt thus became essential. Taking flocks or furs and ginseng root, the early settlers sent their pack trains after seeding time each year to the coast. This proved to be an important educational influence, since it was almost the only way in which the pioneer learned what was going on in the East. But when discovery was made of the salt springs of the Kanawha, and the Holston, and Kentucky, and central New York, the West began to be freed from dependence on the coast. It was in part the effect of finding these salt springs that enabled settlement to cross the mountains.

From the time the mountains rose between the pioneer and the seaboard, a new order of Americanism arose. The West and the East began to get out of touch of each other. The settlements from the sea to the mountains kept connection with the rear and had a certain solidarity. But the over-mountain men grew more and more independent. The East took a narrow view of American advance, and nearly lost these men. Kentucky and Tennessee history bears abundant witness to the truth of this statement. The East began to try to hedge and limit westward expansion. Though Webster could declare that there were no Alleghanies in his politics, yet in politics in general they were a very solid factor.

The exploitation of the beasts took hunter and trader to the west, the exploitation of the grasses took the rancher west, and the exploitation of the virgin soil of the river valleys and prairies attracted the farmer. Good soils have been the most continuous attraction to the farmer's frontier. The land hunger of the Virginians drew them down the rivers into Carolina, in early colonial days; the search for soils took the Massachusetts men to Pennsylvania and to New York. As the eastern lands were

taken up migration flowed across them to the west. Daniel Boone, the great backwoodsman, who combined the occupations of hunter, trader, cattle-raiser, farmer, and surveyor-learning, probably from the traders, of the fertility of the lands of the upper Yadkin, where the traders were wont to rest as they took their way to the Indians, left his Pennsylvania home with his father, and passed down the Great Valley road to that stream. Learning from a trader of the game and rich pastures of Kentucky, he pioneered the way for the farmers to that region. Thence he passed to the frontier of Missouri, where his settlement was long a landmark on the frontier. Here again he helped to open the way for civilization, finding salt licks, and trails, and land. His son was among the earliest trappers in the passes of the Rocky Mountains, and his party are said to have been the first to camp on the present site of Denver. His grandson, Col. A. J. Boone, of Colorado, was a power among the Indians of the Rocky Mountains, and was appointed an agent by the government. Kit Carson's mother was a Boone.[35] Thus this family epitomizes the backwoodsman's advance across the continent

The farmer's advance came in a distinct series of waves. In Peck's New Guide to the West, published in Boston in 1837, occurs this suggestive passage:
Generally, in all the western settlements, three classes, like the waves of the ocean, have rolled one after the other. First comes the pioneer, who depends for the subsistence of his family chiefly upon the natural growth of vegetation, called the "range," and the proceeds of hunting. His implements of agriculture are rude, chiefly of his own make, and his efforts directed mainly to a crop of corn and a "truck patch." The last is a rude garden for growing cabbage, beans, corn for roasting ears, cucumbers, and potatoes. A log cabin, and, occasionally, a stable and corn-crib, and a field of a dozen acres, the timber girdled or "deadened," and fenced, are enough for his occupancy. It is quite immaterial whether he ever becomes the owner of the soil. He is the occupant for the time being, pays no rent, and feels as independent as the " lord of the manor." With a horse, cow, and one or two breeders of swine, he strikes into the woods with his family, and becomes the founder of a new county, or perhaps state. He builds his cabin, gathers around him a few other families of similar tastes and habits, and occupies till the range is somewhat subdued, and hunting a little precarious, or, which is more frequently the case, till the neighbors crowd around, roads, bridges, and fields annoy him, and he lacks elbow room. The preëmption law enables him to dispose of his cabin and cornfield to the next class of emigrants; and, to employ his own figures, he "breaks for the high timber," "clears out for the New Purchase," or migrates to Arkansas or Texas, to work the same process over.

The next class of emigrants purchase the lands, add field to field, clear out the roads, throw rough bridges over the streams, put up hewn log houses with glass windows and brick or stone chimneys, occasionally plant orchards, build mills, school-houses, court-houses, etc., and exhibit the picture and forms of plain, frugal, civilized life.

Another wave rolls on. The men of capital and enterprise come. The settler is ready to sell out and take the advantage of the rise in property, push farther into the interior and become, himself, a man of capital and enterprise in turn. The small village rises to a spacious town or city; substantial edifices of brick, extensive fields, orchards, gardens, colleges, and churches are seen. Broad-cloths, silks, leghorns, crepes, and all the refinements, luxuries, elegancies, frivolities, and fashions are in vogue. Thus wave after wave is rolling westward; the real Eldorado is still farther on. A portion of the two first classes remain stationary amidst the general movement, improve their habits and condition, and rise in the scale of society.

The writer has traveled much amongst the first class, the real pioneers. He has lived many years in connection with the second grade; and now the third wave is sweeping over large districts of Indiana, Illinois, and Missouri. Migration has become almost a habit in the West. Hundreds of men can be found, not over 50 years of age, who have settled for the fourth, fifth, or sixth time on a new spot. To sell out and remove only a few hundred miles makes up a portion of the variety of backwoods life and manners.

Omitting those of the pioneer farmers who move from the love of adventure, the advance of the more steady farmer is easy to understand. Obviously the immigrant was attracted by the cheap lands of the frontier, and even the native farmer felt their influence strongly. Year by year the farmers who lived on soil whose returns were diminished by unrotated crops were offered the virgin soil of the frontier at nominal prices. Their growing families demanded more lands, and these were dear. The competition of the unexhausted, cheap, and easily tilled prairie lands compelled the farmer either to go west and continue the exhaustion of the soil on a new frontier, or to adopt intensive culture. Thus the census of 1890 shows, in the Northwest, many counties in which there is an absolute or a relative decrease of population. These States have been sending farmers to advance the frontier on the plains, and have themselves begun to turn to intensive farming and to manufacture. A decade before this, Ohio had shown the same transition stage. Thus the demand for land and the love of wilderness freedom drew the frontier ever onward.

Having now roughly outlined the various kinds of frontiers, and their modes of advance, chiefly from the point of view of the frontier itself, we may next inquire what were the influences on the East and on the Old World. A rapid enumeration of some of the more noteworthy effects is all that I have time for.

First, we note that the frontier promoted the formation of a composite nationality for the American people. The coast was preponderantly English, but the later tides of continental immigration flowed across to the free lands. This was the case from the early colonial days. The Scotch-Irish and the Palatine Germans, or " Pennsylvania Dutch," furnished the dominant element in the stock of the colonial frontier. With

these peoples were also the freed indented servants, or redemptioners, who at the expiration of their time of service passed to the frontier. Governor Spotswood of Virginia writes in 1717, "The inhabitants of our frontiers are composed generally of such as have been transported hither as servants, and, being out of their time, settle themselves where land is to be taken up and that will produce the necessarys of life with little labour." Very generally these redemptioners were of non-English stock. In the crucible of the frontier the immigrants were Americanized, liberated, and fused into a mixed race, English in neither nationality nor characteristics. The process has gone on from the early days to our own. Burke and other writers in the middle of the eighteenth century believed that Pennsylvania was "threatened with the danger of being wholly foreign in language, manners, and perhaps even inclinations." The German and Scotch-Irish elements in the frontier of the South were only less great. In the middle of the present century the German element in Wisconsin was already so considerable that leading publicists looked to the creation of a German state out of the commonwealth by concentrating their colonization. Such examples teach us to beware of misinterpreting the fact that there is a common English speech in America into a belief that the stock is also English.

In another way the advance of the frontier decreased our dependence on England. The coast, particularly of the South, lacked diversified industries, and was dependent on England for the bulk of its supplies. In the South there was even a dependence on the Northern colonies for articles of food. Governor Glenn, of South Carolina, writes in the middle of the eighteenth century: "Our trade with New York and Philadelphia was of this sort, draining us of all the little money and bills we could gather from other places for their bread, flour, beer, hams, bacon, and other things of their produce, all which, except beer, our new townships begin to supply us with, which are settled with very industrious and thriving Germans. This no doubt diminishes the number of shipping and the appearance of our trade, but it is far from being a detriment to us. Before long the frontier created a demand for merchants. As it retreated from the coast it became less and less possible for England to bring her supplies directly to the consumer's wharfs, and carry away staple crops, and staple crops began to give way to diversified agriculture for a time. The effect of this phase of the frontier action upon the northern section is perceived when we realize how the advance of the frontier aroused seaboard cities like Boston, New York, and Baltimore, to engage in rivalry for what Washington called "the extensive and valuable trade of a rising empire."

The legislation which most developed the powers of the national government, and played the largest part in its activity, was conditioned on the frontier. Writers have discussed; the subjects of tariff, land, and internal improvement, as subsidiary to the slavery question. But when American history comes to be rightly viewed it will be seen that the slavery question is an incident. In the period from the end of the first half of the present century to the close of the Civil War slavery rose to primary,

but far from exclusive, importance. But this does not justify Dr. von Holst (to take an example) in treating our constitutional history in its formative period down to 1828 in a single volume, giving six volumes chiefly to the history of slavery from 1828 to 1861, under the title "Constitutional History of the United States." The growth of nationalism and the evolution of American political institutions were dependent on the advance of the frontier. Even so recent a writer as Rhodes, in his "History of the United States since the Compromise of 1850," has treated the legislation called out by the western advance as incidental to the slavery struggle.

This is a wrong perspective. The pioneer needed the goods of the coast, and so the grand series of internal improvement and railroad legislation began, with potent nationalizing effects. Over internal improvements occurred great debates, in which grave constitutional questions were discussed. Sectional groupings appear in the votes, profoundly significant for the historian. Loose construction increased as the nation marched westward. But the West was not content with bringing the farm to the factory. Under the lead of Clay--"Harry of the West"--protective tariffs were passed, with the cry of bringing the factory to the farm. The disposition of the public lands was a third important subject of national legislation influenced by the frontier. The public domain has been a force of profound importance in the nationalization and development of the government. The effects of the struggle of the landed and the landless States, and of the Ordinance of 1787, need no discussion. Administratively the frontier called out some of the highest and most vitalizing activities of the general government. The purchase of Louisiana was perhaps the constitutional turning point in the history of the Republic, inasmuch as it afforded both a new area for national legislation and the occasion of the downfall of the policy of strict construction. But the purchase of Louisiana was called out by frontier needs and demands. As frontier States accrued to the Union the national power grew In a speech on the dedication of the Calhoun monument Mr. Lamar explained: "In 1789 the States were the creators of the Federal Government; in 1861 the Federal Government was the creator of a large majority of the States."

When we consider the public domain from the point of view of the sale and disposal of the public lands we are again brought face to face with the frontier. The policy of the United States in dealing with its lands is in sharp contrast with the European system of scientific administration. Efforts to make this domain a source of revenue, and to withhold it from emigrants in order that settlement might be compact, were in vain. The jealousy and the fears of the East were powerless in the face of the demands of the frontiersmen. John Quincy Adams was obliged to confess: "My own system of administration, which was to make the national domain the inexhaustible fund for progressive and unceasing internal improvement, has failed." The reason is obvious; a system of administration was not what the West demanded; it wanted land. Adams states the situation as follows: "The slaveholders of the South have bought the coöperation of the western country by the bribe of the western lands, abandoning to the new Western States their own proportion of the

public property and aiding them in the design of grasping all the lands into their own hands. Thomas H. Benton was the author of this system, which he brought forward as a substitute for the American system of Mr. Clay, and to supplant him as the leading statesman of the West. Mr. Clay, by his tariff compromise with Mr. Calhoun, abandoned his own American system. At the same time he brought forward a plan for distributing among all the States of the Union the proceeds of the sales of the public lands. His bill for that purpose passed both Houses of Congress, but was vetoed by President Jackson, who, in his annual message of December, 1832, formally recommended that all public lands should be gratuitously given away to individual adventurers and to the States in which the lands are situated.

"No subject," said Henry Clay, "which has presented itself to the present, or perhaps any preceding, Congress, is of greater magnitude than that of the public lands." When we consider the far-reaching effects of the government's land policy upon political, economic, and social aspects of American life, we are disposed to agree with him. But this legislation was framed under frontier influences, and under the lead of Western statesmen like Benton and Jackson. Said Senator Scott of Indiana in 1841: "I consider the preemption law merely declaratory of the custom or common law of the settlers."

It is safe to say that the legislation with regard to land, tariff, and internal improvements-the American system of the nationalizing Whig party--was conditioned on frontier ideas and needs. But it was not merely in legislative action that the frontier worked against the sectionalism of the coast. The economic and social characteristics of the frontier worked against sectionalism. The men of the frontier had closer resemblances to the Middle region than to either of the other sections. Pennsylvania had been the seed plot of frontier emigration, and, although she passed on her settlers along the Great Valley into the west of Virginia and the Carolinas, yet the industrial society of these Southern frontiersmen was always more like that of the Middle region than like that of the tide water portion of the South, which later came to spread its industrial type throughout the South. The Middle region, entered by New York harbor, was an open door to all Europe. The tide-water part of the South represented typical Englishmen, modified by a warm climate and servile labor, and living in baronial fashion on great plantations; New England stood for a special English movement-- Puritanism. The Middle region was less English than the other sections. It had a wide mixture of nationalities, a varied society, the mixed town and county system of local government, a varied economic life, many religious sects. In short, it was a region mediating between New England and the South, and the East and the West. It represented that composite nationality which the contemporary United States exhibits, that juxtaposition of non-English groups, occupying a valley or a little settlement, and presenting reflections of the map of Europe in their variety. It was democratic and nonsectional, if not national; "easy, tolerant, and contented;" rooted strongly in material prosperity. It was typical of the modern United States. It was least sectional, not only because it lay between

North and South, but also because with no barriers to shut out its frontiers from its settled region, and with a system of connecting waterways, the Middle region mediated between East and West as well as between North and South. Thus it became the typically American region. Even the New Englander, who was shut out from the frontier by the Middle region, tarrying in New York or Pennsylvania on his westward march, lost the acuteness of his sectionalism on the way.

The spread of cotton culture into the interior of the South finally broke down the contrast between the "tide-water " region and the rest of the State, and based Southern interests on slavery. Before this process revealed its results the western portion of the South, which was akin to Pennsylvania in stock, society, and industry, showed tendencies to fall away from the faith of the fathers into internal improvement legislation and nationalism. In the Virginia convention of 1829-30, called to revise the constitution, Mr. Leigh, of Chesterfield, one of the tide-water counties, declared:

One of the main causes of discontent which led to this convention, that which had the strongest influence in overcoming our veneration for the work of our fathers, which taught us to contemn the sentiments of Henry and Mason and Pendleton, which weaned us from our reverence for the constituted authorities of the State, was an overweening passion for internal improvement. I say this with perfect knowledge, for it has been avowed to me by gentlemen from the West over and over again. And let me tell the gentleman from Albemarle (Mr. Gordon) that it has been another principal object of those who set this ball of revolution in motion, to overturn the doctrine of State rights, of which Virginia has been the very pillar, and to remove the barrier she has interposed to the interference of the Federal Government in that same work of internal improvement, by so reorganizing the legislature that Virginia, too, may be hitched to the Federal car.

It was this nationalizing tendency of the West that transformed the democracy of Jefferson into the national republicanism of Monroe and the democracy of Andrew Jackson. The West of the War of 1812, the West of Clay, and Benton and Harrison, and Andrew Jackson, shut off by the Middle States and the mountains from the coast sections, had a solidarity of its own with national tendencies. On the tide of the Father of Waters, North and South met and mingled into a nation. Interstate migration went steadily on--a process of crossfertilization of ideas and institutions. The fierce struggle of the sections over slavery on the western frontier does not diminish the truth of this statement; it proves the truth of it. Slavery was a sectional trait that would not down, but in the West it could not remain sectional. It was the greatest of frontiersmen who declared: "I believe this Government can not endure permanently half slave and half free. It will become all of one thing or all of the other." Nothing works for nationalism like intercourse within the nation. Mobility of population is death to localism, and the western frontier worked irresistibly in

unsettling population. The effect reached back from the frontier and affected profoundly the Atlantic coast and even the Old World.

But the most important effect of the frontier has been in the promotion of democracy here and in Europe. As has been indicated, the frontier is productive of individualism. Complex society is precipitated by the wilderness into a kind of primitive organization based on the family. The tendency is anti-social. It produces antipathy to control, and particularly to any direct control. The tax-gatherer is viewed as a representative of oppression. Prof. Osgood, in an able article, has pointed out that the frontier conditions prevalent in the colonies are important factors in the explanation of the American Revolution, where individual liberty was sometimes confused with absence of all effective government. The same conditions aid in explaining the difficulty of instituting a strong government in the period of the confederacy. The frontier individualism has from the beginning promoted democracy. The frontier States that came into the Union in the first quarter of a century of its existence came in with democratic suffrage provisions, and had reactive effects of the highest importance upon the older States whose peoples were being attracted there. An extension of the franchise became essential. It was western New York that forced an extension of suffrage in the constitutional convention of that State in 1821; and it was western Virginia that compelled the tide-water region to put a more liberal suffrage provision in the constitution framed in 1830, and to give to the frontier region a more nearly proportionate representation with the tide-water aristocracy. The rise of democracy as an effective force in the nation came in with western preponderance under Jackson and William Henry Harrison, and it meant the triumph of the frontier-- with all of its good and with all of its evil elements. An interesting illustration of the tone of frontier democracy in 1830 comes from the same debates in the Virginia convention already referred to. A representative from western Virginia declared:
But, sir, it is not the increase of population in the West which this gentleman ought to fear. It is the energy which the mountain breeze and western habits impart to those emigrants. They are regenerated, politically I mean, sir. They soon become working politicians, and the difference, sir, between a talking and a working politician is immense. The Old Dominion has long been celebrated for producing great orators; the ablest metaphysicians in policy; men that can split hairs in all abstruse questions of political economy. But at home, or when they return from Congress, they have negroes to fan them asleep. But a Pennsylvania, a New York, an Ohio, or a western Virginia statesman, though far inferior in logic, metaphysics, and rhetoric to an old Virginia statesman, has this advantage, that when he returns home he takes off his coat and takes hold of the plow. This gives him bone and muscle, sir, and preserves his republican principles pure and uncontaminated.

So long as free land exists, the opportunity for a competency exists, and economic power secures political power. But the democracy born of free land, strong in selfishness and individualism, intolerant of administrative experience and education,

and pressing individual liberty beyond its proper bounds, has its dangers as well as its benefits. Individualism in America has allowed a laxity in regard to governmental affairs which has rendered possible the spoils system and all the manifest evils that follow from the lack of a highly developed civic spirit. In this connection may be noted also the influence of frontier conditions in permitting lax business honor, inflated paper currency and wild-cat banking. The colonial and revolutionary frontier was the region whence emanated many of the worst forms of an evil currency. The West in the War of 1812 repeated the phenomenon on the frontier of that day, while the speculation and wild-cat banking of the period of the crisis of 1837 occurred on the new frontier belt of the next tier of States. Thus each one of the periods of lax financial integrity coincides with periods when a new set of frontier communities had arisen, and coincides in area with these successive frontiers for the most part. The recent Populist agitation is a case in point. Many a State that now declines any connection with the tenets of the Populists, itself adhered to such ideas in an earlier stage of the development of the State. A primitive society can hardly be expected to show the intelligent appreciation of the complexity of business interests in a developed society. The continual recurrence of these areas of paper-money agitation is another evidence that the frontier can be isolated and studied as a factor in American history of the highest importance.

The East has always feared the result of an unregulated advance of the frontier, and has tried to check and guide it. The English authorities would have checked settlement at the headwaters of the Atlantic tributaries and allowed the "savages to enjoy their deserts in quiet lest the peltry trade should decrease." This called out Burke's splendid protest:

If you stopped your grants, what would be the consequence? The people would occupy without grants. They have already so occupied in many places. You can not station garrisons in every part of these deserts. If you drive the people from one place, they will carry on their annual tillage and remove with their flocks and herds to another Many of the people in the back settlements are already little attached to particular situations. Already they have topped the Appalachian Mountains. From thence they behold before them an immense plain, one vast, rich, level meadow; a square of five hundred miles. Over this they would wander without a possibility of restraint; they would change ,their manners with their habits of life; would soon forget a government by which they were disowned; would become hordes of English Tartars; and, pouring down upon your unfortified frontiers a fierce and irresistible cavalry, become masters of your governors and your counselers, your collectors and comptrollers, and of all the slaves that adhered to them. Such would, and in no long time must, be the effect of attempting to forbid as a crime and to suppress as an evil the command and blessing of Providence, "Increase and multiply." Such would be the happy result of an endeavor to keep as a lair of wild beasts that earth which God, by an express charter, has given to the children of men.

But the English Government was not alone in its desire to limit the advance of the frontier and guide its destinies. Tidewater Virginia and South Carolina gerrymandering those colonies to insure the dominance of the coast in their legislatures. Washington desired to settle a State at a time in the Northwest; Jefferson would reserve form settlement the territory of his Louisiana Purchase north of the thirty-second parallel, in order to offer it to the Indians in exchange for their settlements east of the Mississippi. "When we shall be full on this side," he writes, "we may lay off a range of States on the western bank from the head to the mouth, and so range after range, advancing compactly as we multiply." Madison went so far as to argue to the French minister that the United States had no interest in seeing population extend itself on the right bank of the Mississippi, but should rather fear it. When the Oregon question was under debate, in 1824, Smyth, of Virginia, would draw an unchangeable line for the limits of the United States at the outer limit of two tiers of States beyond the Mississippi, complaining that the seaboard States were being drained of the flower of their population by the bringing of too much land into market. Even Thomas Benton, the man of widest views of the destiny of the West, at this stage of his career declared that along the ridge of the Rocky mountains "the western limits of the Republic should be drawn, and the statue of the fabled god Terminus should be raised upon its highest peak, never to be thrown down." But the attempts to limit the boundaries, to restrict land sales and settlement, and to deprive the West of its share of political power were all in vain. Steadily the frontier of settlement advanced and carried with it individualism, democracy, and nationalism, and powerfully affected the East and the Old World.

The most effective efforts of the East to regulate the frontier came through its educational and religious activity, exerted by interstate migration and by organized societies. Speaking in 1835, Dr. Lyman Beecher declared: "It is equally plain that the religious and political destiny of our nation is to be decided in the West," and he pointed out that the population of the West "is assembled from all the States of the Union and from all the nations of Europe, and is rushing in like the waters of the flood, demanding for its moral preservation the immediate and universal action of those institutions which discipline the mind and arm the conscience and the heart. And so various are the opinions and habits, and so recent and imperfect is the acquaintance, and so sparse are the settlements of the West, that no homogeneous public sentiment can be formed to legislate immediately into being the requisite institutions. And yet they are all needed immediately in their utmost perfection and power. A nation is being 'born in a day.' . . . But what will become of the West if her prosperity rushes up to such a majesty of power, while those great institutions linger which are necessary to form the mind and the conscience and the heart of that vast world. It must not be permitted. . . . Let no man at the East quiet himself and dream of liberty, whatever may become of the West.... Her destiny is our destiny."

With the appeal to the conscience of New England, he adds appeals to her fears lest other religious sects anticipate her own. The New England preacher and school-teacher left their mark on the West. The dread of Western emancipation from New England's political and economic control was paralleled by her fears lest the West cut loose from her religion. Commenting in 1850 on reports that settlement was rapidly extending northward in Wisconsin, the editor of the Home Missionary writes: "We scarcely know whether to rejoice or mourn over this extension of our settlements. While we sympathize in whatever tends to increase the physical resources and prosperity of our country, we can not forget that with all these dispersions into remote and still remoter corners of the land the supply of the means of grace is becoming relatively less and less." Acting in accordance with such ideas, home missions were established and Western colleges were erected. As seaboard cities like Philadelphia, New York, and Baltimore strove for the mastery of Western trade, so the various denominations strove for the possession of the West. Thus an intellectual stream from New England sources fertilized the West. Other sections sent their missionaries; but the real struggle was between sects. The contest for power and the expansive tendency furnished to the various sects by the existence of a moving frontier must have had important results on the character of religious organization in the United States. The multiplication of rival churches in the little frontier towns had deep and lasting social effects. The religious aspects of the frontier make a chapter in our history which needs study.

From the conditions of frontier life came intellectual traits of profound importance. The works of travelers along each frontier from colonial days onward describe certain common traits, and these traits have, while softening down, still persisted as survivals in the place of their origin, even when a higher social organization succeeded. The result is that to the frontier the American intellect owes its striking characteristics. That coarseness and strength combined with acuteness and inquisitiveness; that practical, inventive turn of mind, quick to find expedients; that masterful grasp of material things, lacking in the artistic but powerful to effect great ends; that restless, nervous energy; that dominant individualism, working for good and for evil, and withal that buoyancy and exuberance which comes with freedom-these are traits of the frontier, or traits called out elsewhere because of the existence of the frontier. Since the days when the fleet of Columbus sailed into the waters of the New World, America has been another name for opportunity, and the people of the United States have taken their tone from the incessant expansion which has not only been open but has even been forced upon them. He would be a rash prophet who should assert that the expansive character of American life has now entirely ceased. Movement has been its dominant fact, and, unless this training has no effect upon a people, the American energy will continually demand a wider field for its exercise. But never again will such gifts of free land offer themselves. For a moment, at the frontier, the bonds of custom are broken and unrestraint is triumphant. There is not tabula rasa. The stubborn American environment is there with its imperious summons to accept its conditions; the inherited ways of doing

things are also there; and yet, in spite of environment, and in spite of custom, each frontier did indeed furnish a new field of opportunity, a gate of escape from the bondage of the past; and freshness, and confidence, and scorn of older society, impatience of its restraints and its ideas, and indifference to its lessons, have accompanied the frontier. What the Mediterranean Sea was to the Greeks, breaking the bond of custom, offering new experiences, calling out new institutions and activities, that, and more, the ever retreating frontier has been to the United States directly, and to the nations of Europe more remotely. And now, four centuries from the discovery of America, at the end of a hundred years of life under the Constitution, the frontier has gone, and with its going has closed the first period of American history.

New Perspectives on the West

A Note from the Filmmakers (Ken Burns & Stephen Ives)
http://www.pbs.org/weta/thewest/index_cont.htm

In a conversation with us several years ago, the Kiowa poet N. Scott Momaday remarked that the American West "is a place that has to be seen to be believed, and it may have to be believed in order to be seen." For five years we have travelled that landscape, photographed its vistas, talked to its people, sought out its history, all as part of our production of THE WEST, an eight-part documentary series for public television.

Now -- 100,000 air-miles and 72 filmed interviews and 74 visits to archives and collections and more than 250 hours of film later -- we have begun to understand at least something of what Momaday meant.

In the West, everything seems somehow larger, grander, than life, and we now can see why so many different peoples have come to consider their own most innermost lives inextricably linked with it. Over the centuries, the West has been the repository of the dreams of an astonishing variety of people -- and it has been on the long, dusty roads of the West that these dreams have crisscrossed and collided, transforming all who travelled along them, rewarding some while disappointing others.

The story of the West was once told as an unbroken series of triumphs -- the victory of "civilization" over "barbarism," a relentlessly inspirational epic in which greed and cruelty were often glossed over as enterprise and courage. Later, that epic would be turned upside down by some, so that the story of the West became another -- equally misleading -- morality tale, one in which the crimes of conquest and dispossession were allowed to overshadow everything else that ever happened beyond the Mississippi. The truth about the West is far more complicated, and much more compelling.

America without the West is unthinkable now. Yet there was nothing inevitable about our taking it. Others had prior claim to its vastness, after all, and we could quite easily have remained forever huddled east of the Mississippi. In resolving to move west and become a continental nation we would exact a fearful price from those already living on the land. But we also became a different people, and it is no accident that that turbulent history -- and the myths that have grown up around it -- have made the West the most potent symbol of the nation as a whole, overseas as well as in our own hearts.

Of course, no film series can ever encompass the whole story of the West. There are as many valid approaches to telling it as there are able historians willing to try. We believe that history is really biography, and have chosen to focus on the experiences of individual men and women, many of whom tell their own stories in their own words, through diaries and letters and autobiographical accounts.

Our cast is deliberately diverse, including some celebrated figures and some who will be new to most viewers. None plays the stereotyped part that one or another of the West's contradictory myths dictates. All were selected because they seemed to us both to illuminate the times through which they lived and to tell us something important about the West, as well.

Our subjects were chosen, too, to demonstrate that in the often stirring story of the West, a human price was paid for every gain. The stories we've tried to tell at least suggest, we hope, the outlines of a more inclusive story of the West than is conventionally told; a story that is more frank about our failures and more clear-eyed about the cost of even our greatest successes than the old one, but also a story in which each of us can find a place and all can take pardonable pride.

The story of the American West, we believe, is at once the story of a unique part of the country and a metaphor for the country as a whole. With all its heroism and inequity, exploitation and adventure, sober realities and bright myths, it is the story of all of us, no matter where on the continent we happen to live, no matter how recently our ancestors arrived on its shores.

The American West as Classroom, Art and Metaphor

By Randy Kennedy, May 3, 2011
http://www.nytimes.com/2011/05/04/arts/design/land-arts-of-the-american-west-a-texas-tech-program.html?nl=todaysheadlines&emc=tha28

LUBBOCK, Tex. — The native son Buddy Holly aside, this small city on the tableland of the southern Great Plains has never had a lot to recommend it, culturally or aesthetically. When Coronado passed

through the area in the 16th century, he described an acute sense of European disorientation as his men struggled to plot a course across a place “with no more landmarks than if we had been swallowed up by the sea.”

These days a few landmarks rise above the flatness — water towers, radio antennae, lonely-looking trees. Mostly, though, there is still “a lot of land but nowhere to go,” as the artist Donald Judd observed of West Texas. So there may be few better bases of operation for an unusual academic program that has taken root here under the guidance of a Harvard-trained architecture professor at Texas Tech University, in which scholars study and make art in places about as far away from museums and galleries — and from bathrooms, decent beds and air-conditioning — as is possible within the continental United States.

Called Land Arts of the American West, the classes take place in a pair of heavy-duty Ford vans or wherever the vans and the camping gear they carry end up stopping during a 7,000-mile, two-month drive that a handful of participants — mostly architecture graduate and undergraduate students, but also artists, art historians and students recruited from other disciplines — make throughout the West.

The tangible result of the trip is an annual exhibition of art, writing and other documentary material about the journey; this year’s show, by the seven students and artists who traveled in the fall of 2010, remains on view by appointment through Friday in Lubbock at a warehouse gallery near the university campus (landarts.org for more information).

But the heart of the program exists out on the road, where it has found common ground with a growing number of idiosyncratic, environment-focused art initiatives like it that have sprung up in the West over the last several years: quasi collectives like the Center for Land Use Interpretation, based in Los Angeles; the Center for Art and Environment at the Nevada Museum of Art in Reno; and in San Francisco, the For-Site Foundation, which describes itself as “art about place” and conducts a residency program in the Sierra, Nev., foothills outside the gold-mining town of Nevada City, Calif.

The Lubbock program is directed by Chris Taylor, who helped develop the concept, along with an artist named Bill Gilbert, who has run an initiative with the same name and similar concerns at the University of New Mexico, Albuquerque, since 2000. Mr. Taylor moved his program two years ago from the University of Texas, Austin, to Texas Tech, which puts him and his students at the eastern edge of a huge swath of territory — southwestern Texas, New Mexico, Arizona, Utah and Nevada — that he has made his classroom.

Many of the stops along the trip are expected, the legacies of the land-art and Earthworks movement, which transplanted the idea of sculpture to the country's trackless open spaces beginning in the 1960s: Robert Smithson's "Spiral Jetty," off the shore of the Great Salt Lake near Rozel Point, Utah; Walter De Maria's "Lightning Field," in western New Mexico; Nancy Holt's "Sun Tunnels," in northwestern Utah; Michael Heizer's "Double Negative," two deep trenches cut into the edge of a mesa in the Nevada desert.

But other stops, some requiring close observation of the odometer in places so remote that GPS maps are of little use, suggest a kind of Addams Family sightseeing vacation with an itinerary drawn up by Rachel Carson and Howard Zinn, with help from Foucault and the Marquis de Sade. Students have spent time near one of the world's largest open-pit uranium mines, now inactive, on the Laguna Pueblo reservation west of Albuquerque. They have camped on a desolate patch of New Mexico desert land called Cabinetlandia, owned by the art magazine Cabinet, wedged between an active rail line and screaming traffic on Interstate 10, where there is little more in the way of amenities than a mailbox and a filing-cabinet community "library" embedded in a concrete-and-soil wall.

"It might be one of the worst places on the face of the earth to try to inhabit — to try to be stationary while everything else is only there for a moment, moving through at high speed," recalled Meredith James, a New York sculptor and video artist who participated in the field trip in 2009, when she was a graduate art student at Yale. The campers that year tried to reimagine the roar from the highway as the roar of the surf, and they set up beach chairs along the road. But after only a couple of days on the land, they became so encrusted with dirt and grime that they had to drive to Deming, N.M., nearby and wash themselves in the sinks of a coin-operated laundry.

The program operates on a shoestring budget of about $30,000, provided by participants' fees and some money from private donors. Mr. Taylor describes it as a "semester abroad in our own backyard," and said he planned it to try to be as agnostic about the definition of art as the vast landscape itself is. "I define art as anything people have done on the land," he said, adding that the West is an ideal place for such an approach. ("Arid lands are unable to hold secrets," Mr. Taylor once wrote.)

He added: "I think there are important lessons here that are more than just art history lessons. Not to take anything away from art history, but this is more broadly about how we've shaped the land, and how it has shaped us."

William L. Fox, a writer and the director of the Center for Art + Environment in Reno, said he believed that these kinds of wildly interdisciplinary art-making and academic activities might be flourishing in the West because artists see it as a place where

boundaries are less rigid, and they can go looking for insights from many fields of knowledge, the way hard sciences have long done.

“For me, art is about making metaphors, and to do that you feed on new sources of information,” said Mr. Fox, who has served as a field lecturer for the Lubbock program. “In a sense that’s all artists are doing, the same as scientists: ‘What areas can we poke our noses into that give us new information and show us how to make work in a way we’ve never thought of?’ ”

Rocio Mendoza, an architecture graduate student who traveled with the group in 2010, returned to Lubbock to propose a kind of design idea that at first glance might seem like merely a fantastical conceptual exercise: to erect tens of thousands of small, cheap shelters along the United States’ border with Mexico. But the idea came to her after she walked away from the group one morning in the southern Arizona scrub and ran into two disoriented Mexican men who were crossing illegally into the country and asked her for food.

She made a video about the experience, in which she recalled her mother’s stories of being carried across the Rio Grande many years before, seven months pregnant with Ms. Mendoza. “Meeting those two guys,” she says in the video, looking into the camera, “it all suddenly clicked and became personal and political.”

Nice Work if You Can Get It – This American Life

http://www.thisamericanlife.org/radio-archives/episode/329/nice-work-if-you-can-get-it

Act III (at the 38 minute mark) of this *This American Life* episode is an interesting piece by Sarah Vowell. You need to go to the web site to listen. The segment is called “The Homesick Explorer.” Here is a description from the page: “This American Life contributor Sarah Vowell tells the story of a mapmaker named Charles Preuss who charted the Western Territories with two of American history's legendary explorers—John Charles Fremont and Kit Carson. The maps Preuss made were best sellers and helped open the Western frontier to settlement. But, as he wrote in the diary he kept while in the wilderness, he hated pretty much every minute of the expedition. Actor Dermot Mulroney reads excerpts from Preuss's diary. Sarah Vowell is the author, most recently, of Assassination Vacation.”

Lewis and Clark Would Have Approved

By M. Sanjayan, Lead Scientist, the Nature Conservancy
http://www.huffingtonpost.com/m-sanjayan/lewis-and-clark-would-hav_b_823814.html

Were Meriwether Louis and William Clark to return today and retrace the steps of their famed early 19th century voyage of continental discovery, there is only one place in the lower 48 United States left they would recognize as ecologically intact -- where all the animals that they saw, described, shot and ate some 200 years ago still abound. It's called the Crown of the Continent -- and I live on its border.

Now the future of the Crown may finally be secure, through a last-minute agreement this week by two environmental organizations (The Nature Conservancy and Nature Conservancy of Canada) to help the British Columbia government pay coal and gold mining companies to walk away from their leases there. The $10 million deal was a bargain -- and it came not a moment too soon.

The Crown is about as close to true wilderness as I have seen on any continent. It's nestled on the northwestern edge of Montana, abutting Canada, and follows the mountainous spine (or crown) of the continent. Elk, mountain goats, wolves and grizzly bears are plentiful here, but it's really the elusive lynx and the wolverine -- species that I have seen just once in all my time hiking around wild places -- that makes this place truly remarkable. Through it all runs the Flathead River, its north Fork beginning 50 miles north of the border in Canada. The river runs steadily south, gathering tributaries along the way, and defines the western border of Glacier National Park. By the time it enters the broad Flathead valley and loses itself within the embrace of a gigantic lake, its milky glacial waters have been enjoyed by wildlife, farmers, and recreating celebrities alike.

Worldwide, rivers are in serious trouble. Growing cities and human activity are putting enormous and accelerating pressure on rivers' capacity to deliver their many ecological benefits. So far, the North Fork of the Flathead River has largely escaped this fate, unencumbered by dams or pollution. Native fish, including the massive bull trout, ply this cold, clear waterway. But despite the river's significance, potential development makes it the one weak link in the long-term conservation of the Crown.

The threat to the Flathead comes from the steadily rising price of minerals and metals. Its headwaters' area contains significant coal deposits -- enough to extract 2 million tons of material per year for decades, with markets (such as China) hungry enough to pay top price for it. And if the prospect of coal mining gashing this paradise weren't worrisome enough, gold mining also looms. Mining companies in Canada have sunk money into developing and exploring claims that, if fully exploited, could significantly threaten the quality of the water and the intactness of

the Crown. The threat has been on the table for some years, but market conditions are increasing the momentum to mine -- and environmentalists have been relatively powerless to intervene.

This week, a minor (and some would argue major) miracle happened. Montana Governor Brian Schweitzer and British Columbia Premier Gordon Campbell had announced almost a year ago that they would each withdraw mineral rights that impact the Flathead on both sides of the border. (As part of last week's deal, Premier Campbell announced legislation to make that withdrawal permanent.) On the U.S. side, Senators John Tester and Max Baucus secured the voluntary release of mineral leases from the leaseholders. The only step left? On the Canadian side, where more valuable deposits exist, the mining companies that had sunk money into the development of their claims had to be compensated for those investments.

With bi-national cooperation between governments and agreeable mining companies willing to forgo their leases for the simple reimbursement of costs, all the pieces to secure the headwaters of the Flathead River had suddenly fallen into place -- if someone could act quickly to come up with $10 million so the mining companies would walk away. Speed was critical: Coal and gold are not getting cheaper, and both Premier Campbell and Governor Schweitzer are leaving office soon.

Two non-profit organizations -- one on each side of the border, fittingly -- stepped up to the challenge. With The Nature Conservancy and Nature Conservancy of Canada each agreeing to put up half the amount due, the fate of the Flathead River, so long in the balance, has suddenly and dramatically been determined.
Some might argue that $10 million in donated money is too much to hand over to mining companies. Some might claim the area should simply be designated a National Park and put out of reach. To make those arguments is to privilege the perfect over the good -- and ignores the willingness of people to work together to solve problems like saving the Crown. Here, government set the stage, private industry proved willing, and non-profits stepped in to remove the last logjam. The process was one of compromise, but the result proved definitive.

When I fish the Flathead River this summer, the fish I will most frequently catch is the Westslope cutthroat trout -- whose scientific name, *Oncorhynchus clarkii lewis*, derives from Lewis and Clark. They first described this fish while traversing Montana. Today, it and the other species that inhabit the river -- along with the surrounding lands of the Crown -- stand a fighting chance of remaining as the explorers found them. Lewis and Clark would probably agree: $10 million dollars to secure such an intact landscape, where people and nature have found a way to make room for one another, is a bargain.

John Logan Allen

Bio from Society for the History of Discoveries
http://www.sochistdisc.org/fellows/allen.htm

This year's honoree, John Logan Allen, Emeritus Professor of Geography at the University of Wyoming and the University of Connecticut, is one of our country's foremost authorities on the discovery and exploration of the American West. During a distinguished academic career spanning more than 40 years he has introduced two generations of scholars and students to the geographical lore of the West and the exploratory process through publications and lectures.

Our honoree's interest in western history and exploration began early. John was born in Laramie, Wyoming on December 27, 1941. His grandfather, a former supervisor of the Shoshone National Forest who had moved to Cody, Wyoming when Buffalo Bill was still alive, sparked his interest with stories about mountain men and government hunters he had known, and he pointed out sites of nineteenth century trapper rendezvous during their travels together across the high plains of Wyoming and in the Central Rockies. Summer vacations were spent retracing sections of the Lewis and Clark trail or tracking the various routes of John Charles Fremont with his father. And from his mother, a librarian who had taken western history courses at the University of Wyoming, John developed a love of western literature.

John attended the University of Wyoming in Laramie where he earned a BA degree in International Affairs (1963), and a MA in Political Science (1964). Influenced by a geography teacher, he then enrolled in the Graduate School of Geography at Clark University in Worcester, Massachusetts, where he obtained his PhD in 1969 and completed a National Science Post-Doctoral Fellowship two years later. His dissertation, which reconstructed the contemporary geographical knowledge of the American Northwest on the eve of the Lewis and Clark expedition, was published as Passage through the Garden: Lewis and Clark and the Image of the American Northwest. It was republished in paperback in 1991 in time to serve as the basic reference work for the research sparked by the Lewis and Clark Bicentennial. Historian William H. Goetzmann described Passage Through the Garden as one of the three best books on Lewis and Clark while Stephen E. Ambrose considered it "a seminal work."

John's other major publication is North American Exploration (1997), a remarkable three-volume work on the description and interpretation of the geographical discovery and exploration of North America that he conceived, assembled and edited. It contains contributions from more than 20 leading authorities, including many SHD members. He also wrote two books for young adults, Jedediah Smith the Mountain Men of the American West (1991) and Explorers and Discoverers from Ancient Times to the Space Age, another three-volume work (1998). In addition,

John has prepared some 50 book chapters and articles, and numerous book reviews devoted to geographical discovery and exploration. A sample reflects the scope and vision of his scholarship: "An analysis of the exploratory process" (Geographical Review, 1972), "The Garden-Desert Continuum: Competing Views of the Great Plains in the Nineteenth Century", Great Plains Quarterly, 1985), "Horizons of Romance: Invention of the Romantic Tradition of the American West (Journal of Historical Geography, 1992), "Cabot to Cartier: Early Exploration of Eastern North America, 1497-1540" (Annals of the Association of American Geographers 1992), and “Jefferson, von Humboldt, and Zebulon Pike: Explorations into America’s Interior” (Essays on the Bicentennial of Zebulon Montgomery Pike, 2007).

John’s professional writing is not limited to the field of discovery and exploration. His interest in maps, politics and the environment found expression in a series of popular student atlases for college courses that he began in 1991. These include the Student Atlas of World Politics and Student Atlas of World Geography, which are in their ninth and seventh editions, respectively. He is also the author of Atlas of Economic Development (1996); Atlas of Environmental Issues (1997); Atlas of Anthropology (with Audrey Shalinsky) (2003); and Atlas of World Events (2005). A Student Atlas of American History is in preparation. If this was not enough to keep him busy, he served as editor of Annual editions: Environment for 23 years.

John’s teaching career began as an instructor at the University of Connecticut in 1967 where he went on to become founding head of the Department of Geography and director of the Graduate Program in Geography. Retiring in 2000 after 33 years at the University of Connecticut, John returned home to the University of Wyoming, where he served as Professor and Chair of the Department of Geography until his second retirement in 2007. The University of Connecticut recognized him with an Outstanding Teacher Award in 1987.

From the beginning of our Society, one of its main purposes has been to stimulate and encourage interest in the history of geographical exploration beyond the academic community. John has contributed significantly to this objective. He has been a lecturer at the Larom Summer Institute, Buffalo Bill Historical Center, Cody, Wyoming, for the past 18 years; a historian/interpreter for the Ambrose-Tubbs, Incorporated Lewis and Clark Tours; and a Scholar-in-residence at the National Lewis and Clark Trail Interpretive Center in Great Falls, Montana.

As a nationally recognized expert on Lewis and Clark, he was especially active during the National Lewis and Clark Bicentennial Celebration (2003-2006), presenting over 30 invited papers. Additionally, he was on the advisory boards of the National Lewis and Clark Council, the National Lewis and Clark Interpretive Center in Great Falls, Montana, and the planning committees of the American Philosophical Society and the Missouri Historical Society. He also served on the

editorial advisory board of the Lewis and Clark Journals and the Maximilian Diaries for the University of Nebraska Press, and curated or co-curated major exhibitions at the Library of Congress, the University of Virginia, the Museum of the Rockies in Bozeman, Montana, and the Columbia Gorge Discovery Center, The Dalles, Oregon. In one of his most interesting projects, he was an advisor to Florentine Films for the PBS Documentary Lewis and Clark: The Journey of the Corps of Discovery, produced by Ken Burns. Its accompanying website includes a "Living History" section, which begins with a print and audio interview of our honoree. John continues to carry a heavy lecture schedule, most recently describing the forgotten explorers of the early fur trade at the annual Fur Trade Symposium, held at Three Forks, Montana.

John's association with our Society dates from 1966, when John K. Wright, one of the intellectual leaders of the American Geographical Society, invited John and his wife Anne to attend the only annual meeting that SHD held at the U. S. Military Academy at West Point, where many of the early Army explorers of the West were trained. Since then, John has served on our council, contributed book reviews to Terrae Incognitae, and presented papers at annual meetings. All who attended our 2004 meeting at the Buffalo Bill Historical Center and Yellowstone National Park in Cody and Mammoth, Wyoming, remember with fondness the two outstanding field trips that he led that retraced the routes of mountain men John Colter and George Drouillard in the vicinity of the Grand Tetons, and geologist Ferdinand Vandeveer Hayden and other early government explorers in Yellowstone.

For his pioneering work on the Lewis and Clark expedition, his masterful trilogy on North American exploration, and a lifetime of scholarly contributions to our field, we honor John Logan Allen, and name him FSHD – Fellow of the Society for the History of Discoveries.

John Logan Allen Interview

http://www.pbs.org/lewisandclark/archive/allen.html

What do you think it is about the L&C story that draws people to it...what's the appeal?

There are a number of things that, that draw people to Lewis and Clark. First of all, is first of all. They were the first. Nobody had done this before. They happened to be caught in really a fortuitous situation in that, although the expedition had been planned and was set in motion before the purchase of, of Louisiana, the timing was such that Louisiana had been transferred to the United States. And as a consequence, here's a set of, of people, Army personnel, going into the west at exactly the same time that the United States had purchased this huge chunk of territory that doubled the size of, of the US. And, partly because of that, I mean, because of being the first, there was an attraction for the American people,

immediately. And it's something that hasn't really been lost. It was an adventure story. It was a romance. There was a woman involved. It was a... it was an epochal kind of thing, and when it's set against other 19th century exploration, in particular, it stands head and shoulders above virtually any exploration, with the possible exception of, of John Fremont's. Fremont, like Lewis and Clark, wrote enormously. And it's partly that volume of material that we have that's been reproduced in a number of different forms that, that has made it attractive to the American public. It, it's always intrigued me the degree to which you see Lewis and Clark appearing in, in a variety of forms, including "The Adventures of Lois and Clark" on, on, on television, which, which is obviously a, a play on words. It, it, it is The American Epic.

Was it like going to the moon??

In many respects, the, the expedition was like going to the moon. With, with one remarkable exception, that I think a lot of people forget about and that is that when Apollo 13 is having its difficulty, those people are in constant contact with, with Earth. They're, they're speaking with Houston, and, and they're getting advice on how to deal ... with, with problems. Lewis and Clark were on their own. Communications were, were absent. They had no way of, of communicating. Even during the first summer, when, when they're working their way up M..., the Missouri River, they haven't a way to communicate with, with anybody. They can send information back... it's going to take months for that information to work its way to, to Washington, to Jefferson. It, it would be impossible for anybody to catch up with them once they've left. They're, they're totally out of touch with, with the United States and, and with their sponsor. And, what this means, in a sense, is that they're even more cut off than the astronauts are. They're cut off physically. The, the time, even though the distance isn't as great, obviously, as a quarter of a million miles. The, the time factor i..., is so great, that, that they are detached. They're, they're by themselves. They're, they're operating, making their own decisions with no input from anybody else, and, obviously their very low level of technology.

If this is an early 19th century moonshot, who is NASA? Where's Mission Control??

Mission Control is, is Thomas Jefferson, with the Houston Space Center being the American Philosophical Society in, in Philadelphia. Those people, Jefferson and the Philadelphia scientists, along with Gallatin, in, in Washington, are the people who had made the key decisions from the, the point, the planning, to training Lewis. And, and that's the, that's the nerve center of the operation.

Give me a sense of in 1803, 1802, what's the state of geographic knowledge of the west??

The state of geographic knowledge of the west at, at this point in time, at, at the time Jefferson became President ... is, is myth and mystery, mingled with a few hard facts, which, in, on closer examination, don't turn out to be very hard, after all.

Jefferson was a, was a terrifically good scientist, one of the best scientists in, in the world at that time. And, and yet he seriously believed and reported the existence of a mountain of rock salt 180 miles long and 45 miles wide ... in the western interior, in, in the new territory of, of Louisiana. Nothing was known because no one had been there. The various levels or grades of, of geographical information. There, there's good information based on, on empirical evidence. There's conjecture and rumor. W... what we're dealing with in the case of the American west in the early 19th century is conjecture, is rumor. ...nobody had been there to do the mapping. There had been explorers across Canada. But that's different. It wasn't the, the United States, or it wasn't below the 49th parallel. And, and so, Lewis and Clark essentially were entering an area for which there was a vacuum for any kind of, of hard information. This is what makes the success of the expedition even more of a remarkable story because they were able to deal at every step of the way with the inadequacies of their data and were able to discover those points at which their, their conjecture, their rumor, their belief was not matching up with the geography of reality. And to adjust their plans accordingly. Unsuccessful explorers aren't able to do that, and that's why they're unsuccessful.

What's the geography of desire??

The geography of desire or the geography of hope, to use Stegner's wonderful phrase, is the, the world as we would like it to be, or any part of the world as we would like it to be. From the time that Europeans recognized the existence of a continental barrier, between European commerce and the Orient, part of the geography at hope, of hope had been the discovery of some easy water communication between Atlantic waters and the waters of those seas that, that washed Asian shores. Literally, from of Columbus on and down to the time of, of Thomas Jefferson, part of the geography of the world as people would like it to have been, was the concept of, of a water passageway. And it took a number of different forms, and it evolved as geographical knowledge of the North American continent evolved. But, it was always there. It was an invention of, of geography that was designed to fulfill certain kinds objectives, commercial objectives, in, in many instances.

It helped that they'd never been there...?

Oh, obviously. If, if you, if you know nothing about an area, you can imagine all kinds of things about it. If you have no frame of reference... to tell you that, that it's impossible for rivers to flow out of both sides of a lake, with one river going to Atlantic and one to Pacific, then there's, there's nothing to say that that can't exist.

Tell me, as they set out in 1804, there are very few fixed points on their map. What are those??

The, the real fixed points are, are the Mandan villages on, on the east side of, of the Rocky Mountains. That's an area that was a nerve center of the Rocky Mount..., of the Missouri River fur trade. First contact between the Mandans and, and French

traders in the 1730's. A point that had, had been fixed, had been mapped, and, and was well known. The other fixed point is, is clear at the other end of, of, of the trek and, and that's the mouth of, of the Columbia River... discovered in 1792. Vancouver and, and William Broughton had traveled up-river, nearly as far as, as, as the end of tidewater. And so, that lower stretch of, of, of the Columbia, roughly from, from the mouth of the Willamette down to, to the ocean was known. Between that, a, a vacuum of, of knowledge. There was considerable conjecture that the mountains visible from near the Columbia's mouth, were the same mountains that, that had been crossed by MacKenzie in Canada, were the same mountains that had been reported by the British fur trade, north of, of the 49th parallel, which no room really, in anybody's conception for something like the Rocky Mountains. There was no room in anybody's conception for the inter-mountain area between the Rockies and, and the Cascades.

There was just going to be a single line of... single ridge...??
One single ridge, or, or at best, a series of parallel ridges which were sort of western analogs of, of the Appalachians. With that last dividing ridge, between Atlantic and Pacific waters, being like the last dividing ridge of, of the, the Allegheny plateau that separated the upper Potomac, say, from, from the upper Ohio. One of the things it's important to keep in mind is that Americans at this time had a, had a notion of, of continental symmetry. This is something that goes all the way back to sort of Puritan theology, or, or even Puritan teleology: the idea that North America was designed for, by God, for certain, specific purposes, and, and in this idealized view of the North American continent, there was this sort of impression of, of, of almost fan shaped continental area bisected by the Mississippi River. On the east side is the Ohio, flowing into the Mississippi. The, the Appalachian system with waters having sources close to that of the Ohio. On, on the west side of the Mississippi is the Missouri, heading in mountains that are western analogs of the Appalachians with waters having their sources near those of the Missouri and flowing down to the Pacific. It, it, it seems far-fetched to us, but, to people who, again have no other information, have no better information, it, it's logical, it's sensible, and, and if you have an idea that the Creation is designed by God for specific purposes, to benefit the young republic of the United States, then there's nothing illogical about this at all. As a matter of fact, it makes perfect sense.

It's called the Corps of Discovery. What is it that they discovered??
They discovered, among other things, themselves. They discovered America in, in a 19th century sense. Their discovery of the west, of distance, and tremendous resources of agricultural potential, forests, furs, great rivers, mountains, was, was just as critical a, a set of discovery as, as John Cabot's landing in New England shores, or, or Columbus's landing in, in the Caribbean. And, to a very large degree, it meant the same kind of thing. It meant that after discovery could come exploration. Lewis and Clark, we think of as explorers. In, in a larger sense, they were discoverers. They were the first. The people who came after them were the

people who filled in the gaps, and that's what explorers do, is, is fill in the gaps left by those critical discoveries. They also, I think, discovered, as I said, themselves... themselves as Americans in a new land. Dealing with totally unfamiliar sets of circumstances based in, in physical geography, dealing with totally unexpected and unfamiliar sets of circumstances, dealing with, with indigenous peoples. Dealing with, with distances that had never been conceived of. Dealing with, with heights and elevations that had never been conceived of. They learned how to cope with, with those kinds of things, and, and because they had discovered that they could do it, it was proven to other people that it could be done. And, therefore, within a very short time span after their return, other people are beginning to follow in their footsteps and, and to, to explore on the basis of, of their discoveries.

What kind of map maker was William Clark??

As, as a cartographer, Clark was without peer, not in the sense that he produced elegant maps, in, in the same sense that, that the Army topographers of, of the 1850's produced elegant maps. What made Clark so, so marvelous as a cartographer, even though his, his maps look to us today to be a bit crude, was that he had an incredible instinct and, and feel for the landscape. He seemed to know what was the most logical direction for a river to take, once it got out of his line of sight. If you look at, at Clark's maps as, as field exercises in and by themselves, as opposed to looking at them as finished products of, of cartography, you, you see a, a, a beauty in the ability of, of this guy to, to recognize the landscape, to convert what he's seeing in a horizontal perspective into that vertical map perspective. It, it's the hardest thing that people do in, in dealing with space. As a geographer, one of the things that I, I have to teach my students at the very beginning of their training, is how to convert what they're seeing to that map perspective. Most people can't do that, most people can't see that readily. Clark could, and he could see it better than, than almost any other explorer that I know of, and, and as a consequence, he is without peer as a map maker, given the state of his equipment, given the nature of, of overall cartographic technology, that nobody is his equal.

How do they rank as explorers and discoverers in American hx , or world hx??

As explorers, as discoverers in, in, in American history, or indeed in world history, I think, and obviously, I'm biased, I think that they rank right at the, at the very, very top. A, a big part of the reason for that ranking is the fact that they were so successful in dealing with field conditions that, that with only the loss of, of Sergeant Floyd, who would have died anywhere in the world, of, of what was probably a ruptured appendix at, at this point in time. They didn't lose anybody. They managed with, with really great style and grace to pull off this, this 2-year, 4-month journey, and, and live to tell the tale.

The second part is the telling of the tale. They were as, as Jim Ronda has said, as Don Jackson has said, as a number of people have said, the writing-est explorers

ever. And they returned with, with voluminous amounts of data. They had fulfilled Jefferson's instructions, which were in themselves, voluminous. And Jefferson had this sort of Humboldtian concept of, of what exploration should be, and Lewis and Clark really pulled that off. They pulled off the Humboldtian ideal and, and they returned with this enormous amount of material. They also told us about decisions that they were making during the course of, of exploration. Why we're doing this instead of doing something else. Part of it is, is their success, part of it is the fact that we know so much about them, and that we don't know about so many other explorers that, that puts them right at, at the very, very top.

I want you to tell me the story of, your personal story of, your camping at the Bitterroots...??

Years ago, when I was doing research on, on the Lewis and Clark book, Passage Through the Garden, I was doing field work. One of the great beauties of, of doing this kind of, research is, is it gets you out into the field, out of musty libraries and archives. Far back up in the Bitterroot Mountains, trying to trace as much of the Lolo Trail as I could reasonably get to with, with a pickup truck. Almost evening, about ready to, to make camp, came around a corner in this incredibly narrow dirt road, and, and there, pulled off in, in a little niche by the side of the road was a guy taking the camping space that, that I'd figured to use. Stopped and visited with him for a minute and discovered there was plenty of room for both of us. We got to visiting and, and it turns out that this guy's a plumber from Boise. I wish I could remember his name, I've got it written down somewhere. I'm a university professor. I'm, I'm writing a book, I'm out doing research. This man is, is spending a part of his summer vacation retracing a section of, of the trail of Lewis and Clark and it's something that he did every single summer. A high school education, not terribly well-read, to, to put it mildly. But he knew Lewis and Clark, and he had a fascination with Lewis and Clark, and that encounter, which had to be similar, I guess, to, to some of Lewis and Clark's strange encounters, demonstrated for me the, the depth of their story and, and the depth to which it is felt among the American population. Particularly people from the west, for, for whom, Lewis and Clark's event is something that is, is fairly immediate in terms of time and, and space. Here's this guy who, who really is not approaching it from at all the same kind of scholarly perspective that I have. But he's getting just as much out of it and perhaps even more. And there are thousands exactly like him.

It's everybody's story.?

It is everybody's story. It's an American story.

There's something for anybody in the angles that you want.....??

Screenwriters, scripters have, have used the angles to, to a fairly well ad nauseam, one would say, in the case of, of a number of, of lamentable Hollywood productions. I'm sure that Sacajawea didn't look anything like Donna Reed, for example. The angles are there. It's, it's a lengthy expedition, and obviously they're

out for such a long period of time and, and they're traveling through so many different kinds of environments that if you want to capture some kind of moment of drama, whether it's, it's human against environment, whether it's human against human, whether it's human against a, another antimate? part of the environment such as the grizzly bear, it, it's there. You can find it in the journals. It, it's there in the landscape itself.

What do you think the biggest misconception is about the expedition??

Well, I think there are, perhaps two central misconceptions that appear in, in almost all of the lower level stuff you read about Lewis and Clark. One, they were sent out to explore the Louisiana Purchase. They weren't. The, the, the expedition was mounted long before the purchase of Louisiana became fact. It happened to be fortuitous, that, that they were going in the area that, that had been purchased. But, but, it's not an afterthought. Louisiana comes first, and then Lewis and Clark. And that, that's a major misconception. The, the second misconception that, that also appears in, in most of the stuff, particularly that that's designed for, for kids, is Sacajawea guided Lewis and Clark to the Pacific. She didn't. She'd not been to the Pacific. She was an important of, of the expedition in a relatively small section of, of their, their travels in, in western Montana and in one of those truth-is-stranger-than-fiction kinds of things, she paves the way for relationships with the Shoshones because she turns out to be Chief Cameahwait's long-lost sister, and, and so-forth. Hollywood scripters couldn't, couldn't write that or you'd say, "Well no, that, that's too hokey." Or, "It wouldn't work." But I think those are probably the, the two biggest misconceptions.

...what you were just telling me about William Clark and start William Clark was...??

I, I think if William Clark walked into this room right now that, that instantly I would like him a lot. I, I think he's an incredibly bright guy. He was inventive. He was a little "laid-back". He didn't tend to get as upset about, about things as, as Lewis did. And yet he was stern disciplinarian, as, as we've learned from the, from the journals at Wood River. more..... This is a guy who just had all kinds of qualities that, that I think I would, would, would really find very appealing and, and he's somebody I'd like for a friend, somebody you go out and have beer with. He seems to be a likeable guy.

Lewis??

Lewis, on the other hand, probably wouldn't come across as, as being as likeable. And maybe more depth. Lewis certainly was introspective. If you wanted to sit down and have a serious long discussion, with, with Lewis, he, he would be willing to accommodate you. But, probably not an awful lot of, of chit-chat. I get the impression that there's, that there's more business involved here. Certainly, a, a

terrific person like Clark, extremely intelligent... My, my guess is that most of ..?.. wouldn't find him as likeable as, as we would find Clark.

Encapsulate for me fairly briefly, what kind of map maker was William Clark??
William Clark was one of the best field cartographers in, in the 19th century, no question about it. Of, of any century, for that matter. He's operating with limited technology. He's operating under horrible conditions. And yet he has this, this incredible ability, almost an instinctive ability to translate the landscape from, from a horizontal perspective like we all see the landscape, to a vertical perspective, as we see the landscape from within? a window of an airplane, or, or on a map. And he could do that. Most others can't, can't capture that as, as readily as he could.

But he wasn't trained for that was he??
He wasn't trained for it, as such, but nobody who served in the US Army during this time period got away with not learning how to do some field mapping. Lewis could do field mapping, too. It's just that Clark was better at it. And he probably had to do some of it in, in his Army service.

They're called the Corps of Discovery. What is it that they discovered??
The, the Corps of Discovery, or the Corps of Discoverers, I guess, in to a certain extent. I think they discovered a number of things. One of the things, obviously, they discovered was, was an unknown land, and, and that's one of the things that discoverers do. They were the first, up the Missouri, across the mountains, down the rivers to the Pacific. And they discovered many things, in, in terms of the physical geography and the cultural geography, and the economic geography of, of the American west. They also discovered themselves. They discovered that, that they, armed with their level of technology could, could deal with distances and altitudes and, and climates that no other Americans had ever had to deal with. And, and having discovered that they could deal with these kinds of things, it was a quick jump for others to make that, if Lewis and Clark can do this, we can do it, too. And in that sense, what they did through their discovery of themselves and of the land was to open the way for, for immediate American exploitation, travel and additional exploration in the American west.

Without them, what would have happened??
Without them, probably in the long run, by the end of, of the century, things might have worked out very much the same. I'm, I'm pretty much a believer in the notion that, that historical conditions and geographic conditions are as important as individuals, and I don't want to diminish the significance of Lewis and Clark at, at all, as individuals. But if it hadn't been them, it probably would have been somebody remarkably like them. Jefferson would have seen to it for, you know, for that matter, that somebody would, would do the kinds of things that they did.

You call your book Passage Through the Garden. They were expecting, their vision was that they were going to encounter the Garden and did they??

There, there were two dominant themes about the western interior of, of North America that had been current in geographical lore since the 16th century. One was the idea that somewhere through the interior, there was this water passageway to the Pacific. The other was that the western interior was an area of incredible agricultural potential. When Lewis uses the word 'beautiful' in the journals, he's talking about land that is good for agriculture. And, and most Americans of the time, assumed that, that the areas west of the Mississippi had enormous agricultural potential. When Jefferson talks about the territory of Louisiana, when, when the news is released of the purchase, he describes much of the area as tree-less, yes, but it's because the soil is too rich for the growth of, of forest trees. The, the old concept of the garden of the world is one that was very current, particularly among the, the rural populations, the agricultural populations, on the American frontier. This land to the west was a garden.

When you boil this all down, what's the story about... is it about the land, building an empire, discovery, encountering different...??

The, the essence of the story of Lewis and Clark is, is people in contact with, with new geographies. Not just the new geographies of reality, and not just the new conceptions of distance. Not just the, the, the new geography of mountains, where mountains had not been understood to be. Not just the geography of, of a, of a route across the interior to the Pacific. But, but the geography of, of other elements that are present in, in people's spatial perspectives. The, the geography of empire, that's certainly a part of it. The, the geography of, of a global economy, which focuses on this one part of, of the American west as, as a core area for the future. Lewis and Clark discovered the wealth of beaver and this sets in motion, almost a global reaction, in terms of, of, of economic enterprise and economic activity. So, I, I think what it all boils down to is, is Lewis and Clark as, as the openers of, of new geographies, both the geographies of, of reality, and the geographies of the imagination, of hope, of desire, of objective, what-have-you.

They made the ??? They opened up the door or a window or something??

They, they opened a window on the west. A window that had been closed and, and you could see through it sort of dimly and, and make out vague shadows. And, and they threw it wide open so that things came much more into focus. The, the view was a lot more clear from St. Louis in 1806 than it was in 1804.

If you had one moment on the Lewis and Clark on the Lewis and Clark expedition that you could be transported back to, what would it be??

If, if I had one moment that, that I, that I could capture and that I, I'd love to, to see, it would be Lewis's ascent of, of the final dividing ridge, at the head of, of Lemhi Pass. When I think he, he's anticipating to find just exactly what the Indians at Fort Mandan had told him he would find, and that is that last dividing ridge, at the foot of which would be a large river flowing through a plains area. This was the short portage from, from the upper part of the Jefferson across Lemhi Pass, and, and down to this great river which flowed to the Pacific. Obviously, he didn't see that and what he saw from the top of Lemhi Pass, is mountains after mountains after mountains. And, there, there's no comment in the journal about this. There's no comment in the journal about what he saw, or didn't see, for that matter. And I, I'd, I'd love to be there, to, to sample his reaction. It, it had to be one of the most dramatic moments of, of the expedition.

Two geographies come face to face there??
Geography of reality and the geography of hope are, are clashing at that point, and, it, it has to be a, a situation in which he feels tremendous elation as he expresses in the journals, about thanking God that he's lived to describe / stride? the mighty Missouri, but tremendous disappointment at, at the recognition that his pre-conceived ideas about what was west of, of this last dividing ridge, simply weren't true.

What do you think it was like back at Mission Control when Jefferson finds out that there's no Northwest Passage??
I, I think Jefferson, by the time he discovers that, that the Northwest Passage doesn't exist, is not as disappointed as he might have been, had he learned three or four years earlier that it didn't exist. He's gone on to other kinds of things. The, the Desideratum, as he put it, of, of a short water connection, is becoming less of an issue because the, the ocean trade with the Pacific Northwest has begun to open up. Very shortly after Lewis and Clark, the, the Arikara and the Sioux begin closing off the Missouri River. Jefferson probably, at this point, began to feel, that, well, it, it's not as important as I thought it was going to be.

Maps

http://chnm.gmu.edu/worldhistorysources/unpacking/mapsmain.html

The map is one of the oldest forms of nonverbal communication. Humans were probably drawing maps before they were writing texts. Mapmaking may even predate formal language. As far as historians and geographers can determine, every culture in every part of the world uses and makes maps. This deep lineage reflects the descriptive usefulness of a map—a map is one of the best proofs that a "picture is worth a thousand words."

To demonstrate this, try this brief experiment: try describing to a friend precisely where you are now, the route you took to get to this place from your previous location, where you are in relation to, let's say, the nearest food market and or the post office, and the route you would take to get to those two places. You'll find that it's very hard to effectively formulate this explanation—which requires that you create an image of space, place, relational geography, and direction—using only words. I wouldn't be surprised if you soon find yourself drawing "air-maps," gesturing forcefully with your hands. If you're sitting at a kitchen table, you'll probably start sketching an imaginary picture on the table-top, using the salt and pepper shakers as place-markers. Congratulations, you've just made a map!

What is a map? By this, I mean to ask what is a "formal map," of the kind that historians are most likely to study (your kitchen-table imaginary tracing is an informal, ephemeral map). It is almost impossible to arrive at a single authoritative definition of what constitutes a "map." There are too many varieties of map-like sketches, too many pictures that look like maps and maps that look like pictures, too many ephemeral representations of spatial relations for us to say simply and finally what a map is and isn't. Geographers and cartographers are continuously embroiled in ongoing debate about this very question. But without doing disservice to this rich discussion, we might distill the conventional wisdom about maps to a few key elements:

A map is a representation of space or place, or of phenomena as they exist in space. A map portrays geographical features, spatial features, or a "geography." A map can be of micro-space (the layout of your bedroom), or of the biggest expanse we know, perhaps a schematic of the cosmos.
A map represents three-dimensional reality, but usually it is drawn on a flat two-dimensional plane (often a piece of paper). To "translate" effectively between these dimensions, the mapmaker employs various cartographic devices, especially "scale" and "projection." Most maps have formal elements printed right on the map that give you guidance about how the mapmaker has represented the scene: directional information, keys, and scales are part of most maps. In the next section you'll learn how to use these devices.

A map is much smaller than its subject, sometimes by astonishing degrees of magnitude—for example, a map of the largest country in the world (Russia) might be rendered on a piece of paper as small as an index card. Because of this size differential between real geography and mapped geography, mapmakers must be selective—a map can't represent all of "reality" in absolute terms, but only some parts of reality. Which parts of "reality" get included on a map varies: first of all, selectivity is determined by the mechanics of drafting and the limitations inherent in drawing big objects on small pieces of paper; but selectivity is also subjective and which parts of "reality" get put on a map depends on the purpose of the map, the mapmaker's intentions, and the mapmaker's biases and preferences.

Maps are rich historical sources. Like narrative documents, both the form and substance of historical maps tell a story. The "form" of an historical map—its artwork, its "style" and presentation—in itself provides an insight into past eras and cultures. The "substance" of a map (what it shows, literally) provides a record of past landscapes and features that may no longer exist. It also reflects the priorities, sensibilities, fears, and the state of knowledge of the mapmaker and his or her cultural context.

A map offers a reader a new dimension of analysis, a visual dimension. One of the particular advantages of a map is that it conveys nonlinear and simultaneous

knowledge. In a single glance at a map, a reader can tell what's going on over the whole map at a single moment in time.

In a single frame, a map also offers rich contextualization that might otherwise take pages and pages of text to convey. Because of its visual properties, almost by definition a map represents its subject in a broader context—that is, in drawing any single place, the mapmaker also situates that place in relation to other nearby places. Sometimes "relational geography" is the primary purpose of a map (to show how close A is to B), and sometimes this contextualizing effect is just a fortuitous byproduct of the nature of graphic representation.

On the other hand, a single map is not very effective at showing "process." A narrative can move a reader through time very quickly; a map tends to be static and to show a single place at a single moment. A map then, in distinction from written texts, can be understood as privileging place over process, contextuality over linearity.

"Thematic mapping" is a particularly powerful geographic tool. A thematic map shows the distribution of "non-geographic" features and phenomena (social, cultural, political, or economic features) in their geographic context: for example, a map of poverty rates across a city or country or a map of the distribution of deaths from cholera are "thematic" maps. In showing not only what is happening but where, thematic mapping makes patterns visible—similarities and differences, continuities and contrasts across space—that would be extremely difficult to discern in a narrative treatment.

Obviously not all details about a place or topic can be shown on a single map. The mapmaker selects which details to include, and which to omit. When you look at a map it is important to think about what is on the map and why, and what is not on the map, and why not.

Sometimes it's impossible to know what is not on a map and what features the mapmaker has consciously privileged. But in general, the degree and nature of map-selectivity is dictated by several factors, including:

- the limits of drafting, scale, and size of the finished map: On an 8"x11" piece of paper, you could draw an extraordinarily detailed map of your bedroom, including the exact placement of doors, windows, and posters on the wall; drawing a map of Canada on the same size of paper, however, you could only show the major cities and geographic divisions and not much else.

- the "politics of importance" and the contours of curiosity: For every feature included on a map, dozens are left off. For every map that is made, dozens are not. What individual mapmakers and societies find "interesting,"

"important," and worthy of study changes over time—and is influenced by myriad factors, including fashion, politics, social and economic currents. Few mapmakers today would bother making maps of whaling stations in the South Pacific (commercial whaling is currently practiced by only a few nations, and the use of whaling stations has all but ended). But in the mid-1800s, maps of whaling stations were highly prized commercial commodities and were produced at a frenzied pace. In the 1890s it was easy to find atlases and maps in the United States of wines, railroads, and voting patterns, but not a single map on the status of women.

- the purpose of the map and the audience served: A military map designed to guide an armed attack on a city will show quite different detail than a map designed to showcase the recreational parks and gardens of that same city. A map reflects not only what is "there," but what the user needs to see—or what the mapmaker thinks the user wants to see. Sometimes purpose-driven design leads to outright fraud or fanciful embellishments on maps as mapmakers try to anticipate what users most want to believe is there. Sometimes this leads to deceit. For example, in the 1950s in the name of national security, Soviet mapmakers always left several large (strategically-important) cities off their maps and American maps always left off several large military facilities and testing ranges. As map readers, we hope or assume that outright fraud, deceit, or manipulation is at the extreme end of the purpose-driven design spectrum, but all maps are influenced by "purpose" and "audience." A critical reader of historical maps needs to explore beyond the map itself in order to interpret the map.

Mapping – This American Life

http://www.thisamericanlife.org/radio-archives/episode/110/mapping

"Five ways of mapping the world. One story about people who make maps the traditional way — by drawing things we can see. And other stories about people who map the world using smell, sound, touch, and taste. The world redrawn by the five senses."

Continental Divide

http://www.nationalatlas.gov/mld/condivl.html

The Continental Divide, also called the Great Divide, is a natural boundary line separating waters that flow into the Atlantic Ocean or Gulf of Mexico from those that flow into the Pacific Ocean. It runs north-south from Alaska to northwestern South America. In the conterminous United States, it follows the crest of the Rocky Mountains.

Being Lost

How to Survive Being Lost
http://www.ehow.com/how_136351_survive-lost.html

Despite modern communications and equipment, more people than ever are getting lost in the wilderness. Cellular and satellite phones and global positioning systems (GPSs) make the world seem smaller, but the reality is, there's still a lot of emptiness out there and you can't always rely on technology for a rescue. It helps to have the best gear possible, but you also need to make smart choices.
Difficulty: Moderately challenging

Instructions
General strategies
1 Stay put as soon as you realize you're lost. Rescue crews will find you faster if you stay in one spot. If you have no idea where you are or how to get back to where you started, further movement is just wasted energy.
2 Make yourself visible. Move to a clear area and do whatever you can to make a signal. Flags or markers can be made from food wrappers, clothing or anything that is colorful. If you're in the snow, stomp out a large X. In the desert, form an X with rocks.
3 Stay dry. Avoid crossing streams unless absolutely necessary. If you get warm, take off excess clothing before you become sweaty. Build a fire and dry wet clothes if possible. Getting wet can quickly lead to hypothermia, the inability of your body to warm itself. Don't wear cotton clothes in cold weather. Cotton retains water, providing little or no insulation when wet.
4 Stay hydrated. It's harder for your body to maintain the proper temperature if you're low on fluids. This is also very important if you're injured and have lost some blood: You need liquids in order to maintain normal blood pressure.
5 Make a shelter. Where it's hot, find shade. Where it's cold, create warmth. Tree branches, snow, sheets of plastic or cloth--almost anything can be fashioned into a basic shelter.
6 Treat any injuries. Dislocations, such as to a shoulder, should be replaced at the earliest opportunity. This will be extremely painful but will reduce overall trauma. Severe bleeding to an arm or a leg can be reduced with a tourniquet, a tight wrap of cloth around the limb above the wound. Study basic first aid before embarking on any potentially hazardous adventures.
7 Carry extra food. Energy bars and candy bars are easy to stash in pockets and provide many needed calories.

In the mountains
1 Prepare ahead of time by wearing and packing the proper clothing. Dress in several layers, starting with polypropylene underwear, then a fleece sweater and a waterproof outer jacket that extends below your waist. Use similar layers on your lower body, and make sure your pants cover your boot tops snugly to keep out snow. Boots should be tall and have a waterproof outer shell and plenty of insulation. A warm hat and gloves are also essential.
2 Understand avalanche risks before heading into the snow. Most avalanche accidents occur during or soon after a large snowfall. Forecasts are available for popular U.S. recreation sites, either through the National Weather Service (nws.noaa.gov) or the National Forest Service (www.fs.fed.us). Or call an outdoor recreation store for advice.
3 Descend as low as possible without making yourself invisible under trees or by descending into a remote spot. High elevations are colder and windier and have less oxygen. You'll work harder to stay warm.
4 Dig into the snow at the base of a small incline to make a cave for shelter in snowy areas. If you anticipate an avalanche and can't leave the danger area, dig a snow trench. Shovel out a ditch and cover the top with tree branches and more snow. Line the floor of the shelter with more branches.
5 Remove any fresh snow from your signals so they remain visible.
6 Consider climbing to a high vantage point if rescue doesn't appear imminent and the weather is clear. You might see a familiar landmark. Be cautious about how far you hike out; it's easy to convince yourself that help is just over the next ridge.
7 Use snow for water. Stay hydrated or you'll have increasing difficulty keeping warm. If you have a water bottle, fill it with snow and hold it inside your jacket until it melts.

In the desert
1 Stay in the shade. You absolutely will not survive in the sun. Walking more than a few miles without a steady water supply is unrealistic. Stay with your car if you have one. Try to move only at night, if you must.
2 Dig at the base of cliffs in search of water. Avoid doing strenuous work in direct sunlight; find shade or wait for nightfall.
3 Resist the urge to drink your urine even if you feel desperate. You won't get any usable water from it because your body will just have to filter and excrete it all again.
4 Carry several clear plastic bags. Seal the bags around plants (except those with thorns) in bright sunlight. Water transpired by the plants condenses in the bags and can be collected.

At sea
1 Conserve as much energy as possible; avoid trying to row (or swim) to land unless you know exactly where it is.

2 Wait to trade a damaged or foundering boat for a life raft until you absolutely have to. There are countless stories of abandoned boats later being found intact while the raft is never seen again.
3 Supply yourself with as much freshwater as possible. Keep a tarp on hand to catch any rain.
4 Never drink seawater. Some people claim small amounts are OK (an appealing notion to someone in distress). Unfortunately, it's not true. In the absence of freshwater, seawater will destroy your liver and kill you.
5 Create shade and stay in it if it's hot or sunny.
6 Conserve water and energy by remaining inactive. Some life raft survivors claim they made it only by entering a trancelike state for days at a time.

Tips & Warnings
Avoid the most common cause of delayed rescue: forgetting to tell anyone where you're going. Always leave a detailed description of your trip route and schedule with a responsible person. Direct that person to call the authorities if you don't return by a specific time or date.
Carry fire-starting equipment such as a cigarette lighter and toilet paper. In wet weather, your best bet for finding dry wood is to look for small dead branches at the base of evergreen trees.
You need to consume more calories in a cold climate than you do in a warm one.
Distinguish between desert survival myths and truths. Many people believe you can squeeze drinkable water out of cactuses. That may be true of some cactuses, but others are toxic. If you're headed into the desert, pick up a guidebook that describes the various types. Also review poisonous reptiles and insects in case you think you might be dining al fresco a` la Survivor.
Don't enter into any adventure with the expectation that you will find help in case of trouble, since there's no guarantee of rescue. Be responsible for yourself and plan as though rescue will not be possible.

This American Life – Lost in America

http://www.thisamericanlife.org/radio-archives/episode/239/lost-in-america

“Stories of people who are lost, histories that are lost, and things that are lost. This show was recorded onstage in front of audiences on a five-city tour in May 2003. The cities: Boston, Washington DC, Portland Oregon, Denver and Chicago.” You can listen to the episode by going to the web page.

Lost & Found – Radiolab

http://www.radiolab.org/2011/jan/25/

An episode of the radio show, Radiolab, on being lost and found.

10 Thoughts n the Spiritual Practice of Getting Lost

http://www.ucc.org/feed-your-spirit/your-life-better/10-thoughts-on-the-spiritual-practice-of-getting-lost-wilderness/

Go to the web address to read this article from the United Church of Christ about spiritual aspects of being lost.

The Art Of Being Lost: An Alternate Approach To Mapping

From PDF
By Associate Professor Laurene Vaughan

Introduction

It is interesting to consider the relationship between the Art of Being Lost and the creation of maps and atlases. Although it is generally assumed that maps, atlases and other cartographic way-finding devices are designed to help us find clarity, there are many who see the value of breaking this rule. For the readers of maps there is a belief that what lies within a map is true. Maps and atlases have authority. They are designed and presented in a manner that reassures the reader of their validity, that truth lies within their representation; for this is what a map is, a representation, a visualisation of something else. A map is not a place, a map is an thematic articulation of somewhere (Ackerman & Karrow 2007, Harley 2001). It is by reading maps that we can make sense of our world and place ourselves, we create some sense of here in relation to there (Noble Wilford 2002, p.6); and it by reading maps that we translate these representations to create our own meaning and understanding of where we are. We trust that maps will enable us to find our way, that we can place ourselves along or within their marks and from there move toward our destiny (this is true whether it is a map of a place or a thing). Through the tracing of our gaze or our finger across the surface of its representation we place ourselves there (literally or throughassociation); we trust the integrity of the visualization until we are told or discover otherwise. This is the measure of 'success' for a way-finding device: its ability to assure us of where we are, it has the ability to enable us to know that we are here. At the same time that this is the layperson's belief about maps, within the field of cartography there is recognition that this may not be the case. Maps are socio-cultural artefacts and our ability to engage with has evolved over time (Thrower 1999, Dorling & Faribairn 2001). Through design and communication devices the content of maps can be distorted or manipulated, what is represented may not be what is (Monmier 1996). In fact the distortion of reality in the form of map projections, are in themselves essential for cartographic readability and with time have become the conventional representation of the world (ibid. 8). Monmier goes on to argue that all maps are distortions of truth, they are representations of something created as a means to communicate something. '(M)aps like speeches and paintings, are authored collections of information and are also subject to distortions arising from ignorance, greed,

ideological ignorance and malice' (p.2). In this way it is both the nature and intention of the communication that is essential to the maps design and subsequent use, and this is a tension that exists. Maps are artefacts of science, and at the same time, maps are subject to all the vagaries of the human condition. 'Cartographic disorientation, which challenges the rationalised perspective that so many were used to, emphasises the human dimension of mapmaking and demonstrates that all maps rely on rhetoric and artifice parading around as objective science' (Bulson 2007, p. 122).

First – lostness
What does it mean to be lost? Why would we want to be lost and what devices and mechanisms, in form and concept, can we use when designing spaces and systems to be lost in? The Art of Being Lost, and the art of designing maps and atlases that enable people to be lost is the focus of this discussion.
If the conventional expectation of a way finding device is that it will enable the reader/user to find their way, to gain clarity and certainty about their place in the world; then what is the benefit of getting lost, of being mis-placed?

There are a number of different ways that we understand the experience of being lost. Usually lostness is understood to be a negative thing. For example, to be lost and wandering the desert forever, to be discarded, to be outside and, even though we can be lost in a group, there is a sense of aloneness and abandonment with the lost. Whether it is a sock, a cat or person, to break the set, the connection or the family through unknown absence causes levels of anxiety and uncertainty. If someone cared, then they would seek you out. If you are beyond or outside of the desired membership then you are left destitute, you are alone you must find your own way. Lostness is disorderly, careless even; it disrupts order and expectation, in an odd way it is confrontational. In societies and contexts where order and conformity are highly valued, to be lost is to break that order, it is to bring attention to the self and it creates discomfort for others. Even if we are comfortable in our own mis-placement, our absence can cause such distress for others, that they must seek us out in order to try to re-place us, and thereby re-create the known, and re-establish the norm.

The counter side to this understanding of lostness as absence (waiting to be placed) is lostness as freedom; this is lostness as a space or experience of potential. It is possible to actively engage with being lost. To embrace the freedom of the unknown and the uncertain, and to seek out in this the possibility of where we are and where we could be, rather than where we should be. Embracing the potential of being lost has been central to some of the creative fields of art and literature. Bulson (2007) in his investigation into Novels, Maps, Modernity; The spatial imagination, 1850 – 2000 explores the relationship between disorientation and modernity, maps and knowing places through literature, arguing that the ability of novels to both enable us to 'read' places and to become familiar can equally be a

process of finding and loosing. Losing oneself and of getting lost. This desire to both, know and to deliberately not know was also integral to some of the place-based interventions of Guy Debord and the Situationist International. In this case Debord deliberately manipulates the relationship between the individual, the map and the city as a means to confront notions of certainty and efficiency, of placed-ness (Careri 2003).

Wandering is one way that we describe this kind of approach to positive lostness. To wander or meander from here to there, suggests a freedom of transition and the ability to move from place to place (Solnit 2000) without a focus on arriving. Physically this can be realised as a walk through a forest or city streets. It can be the aimless Sunday afternoon drive where there is no destination, just time and motion and a sense of going from here to there. To randomly meander in this way is to let go of (or confront) expectations of certainty. The focus of our trust has to shift from being in the object or thing that we expect to guide us, to the integrity and possibility of the process that we are in. In this way we loose ourselves, our attention shifts and ideally we are open to the unexpected. There are many ways that we hand over our control and loose ourselves in the world or the context of another. We can become lost and flow through random connections to find new ones. For example, beyond meanderings along roads or pathways, there is the deliciousness of hours spent with unknown books in a library or a bookshop moving from shelf to shelf: mindlessly following links within the Internet or listening to the play lists of others on Internet radio. These are all examples of us loosing ourselves to the structure of another – roads, bookshelves, computer code and taste. In this way, lostness is generative, pleasurable and opens up our world.

This positive perspective on the creative potential of being lost is a theme that often finds its way into publications, films and recently in Australia, tourism campaigns. Stevenson (2007) in his guidebook titled Lost and Found, New York uses the richness of these two states to open up understandings of the city for others. Presented as a picture book he uses narrative, historical facts and chance observations to engage others in the city through his eyes. His interpretation of New York expands our experience of that place, but it does not make it ours, his devices are his, the experience is his, all we can do is add to it through our own. The form of the text doesn't allow us to share this with him or others directly; this is only possible through our own connections, conversations and materialised artefacts. Being lost in Australia is a potent theme for films, literature and the cultural psyche. Our history is full of lost explorers and settlers, of foreign and dangerous people and landscapes. Then there are those who came to this southern land because they were lost to civilised society (convicts), there are those who had lost all that they had and, those who wish to be lost (refugees, immigrants and travellers). The potential for lostness to rejuvenate is, and has been in the past, the focus of national tourism campaigns. Australia, a county, a place so large, foreign and full of

potential, that you can come and loose yourself here (but preferably don't get to lost!).

As we can see from these alternate perspectives, lostness has a wondrous power about it. There is a productive tension in the complexity of our experiences and expectations of the fear, anxiety, adventure and discovery that are held within it.

Subversive cartographies

Many artists and designers have explored methods and methodologies for facilitating 'lostness', ambiguity and confusion within their creative production: for example there are the Dada or Situationist interventions into the experience of the city and place (Careri 2003). Similar to the tradition of 'treasure maps', through the use of devices such as maps or itineraries, that are designed to confuse and de-locate; these subversive cartographies use clues such as wrong directions and false markers in order to engage participants in exploring the nature of place and mobility through characteristics such as uncertainty, frustration and play. Notions of reality and the factualness of place are confronted, as are assumptions of maps as the conveyors of truth challenged and manipulated (Bulson 2007).

Over recent years these experiments have continued through designers playing with our familiarity with particular methods and styles of representation and form in map design (Crampton & Krygier 2006, p. 17). A particularly popular icon is the London Tube map, noted for its design and the way that it changed our understanding of the representation of place, distance and the relationship between things. This map is transformed to become a device for mapping relationships between non-place based things. An example of this is the

Great Bear Map of London - a map of people and professions lay out as the London Tube Map. When reading the Great Bear Map, we intuitively seek out the name of a place, which familiarity and experience lead us to think that we know. Based on standard design tools, we have expectations of what will be where through devices such as the colour of a line or a relative position within a composition; and instead of finding the name of the expected place, we find someone other name, placed. In this way something 'other' replaces the name that we seek; and we are left without our place, and confusion, anxiety or interest are aroused.

These creative interpretations of maps are designed to confront and challenge our sense of the 'norm'. They open our eyes to the map that we read; their distortions force us to see the site a new. In this way the strange or unfamiliar re-acquaints with the known. It is this practice of opening the eyes afresh to the features and the places that we are in, that has informed the practices of many art or social movements whose practice is based on walking. In the latter part of the 20th century, a body of artists evolved who have built upon the work of the Surrealists

and Situationists. The curator Julianna Engburg classifies these artists as ‘walkers’. These are artists (e.g. Richard Long) whose creative practice is embodied in walking (Engburg 2003). Walking is their creative act that may or may not be recorded, any marks or constructions or associated documentation directly relating to the walk is just that, documentation of an ephemeral act of experience. The documentation is a secondary construct and an interpretation, it is another aspect of the work, and it is not lesser nor is it the focus. The walk it is not a source of inspiration for the documentation, and the documentation is not secondary or an after thought; they are different aspects of the one and creations unto themselves. In this way like the Sunday driver or the bookshelf surfer, it is the being in the process of discovery that is the focus of the creative or generative act. It is possible that through these walks or meanderings, that maps will be created, and like the maps of the Flaneurs, these maps are records of paths traced rather than directions of paths to take.

Enter the labyrinth

In this proposition of the Art of Being Lost, I am interested in what happens when maps or plans are deliberately designed to create confusion, a sense of being lost, and then the possibility of discovery. In the past I have explored the 'labyrinth' and the 'labyrinthine' as methods for experiencing and articulating this. Many have turned to the labyrinth in their efforts to make meaning of the abstraction of experience. Reference to the labyrinth and the labyrinthine can be found in science, the humanities and the arts. Often the focus within these labyrinthine discussions is on the maze, with reference to the structure that imprisoned Theseus’s Minotaur, but this is not my only area of interest. The labyrinth of this proposition includes what some suggest is the pattern of Ariadne’s golden thread; this is the labyrinth as represented by a single circuitous path that leads towards a central space and considers the relationship between this and the multi-linear labyrinth, more commonly known as the maze.

Like many ancient Greek myths many have endeavoured to make sense of the meaning of the tale of Theseus and the Minotaur and its implications for our understanding of the human condition. At its heart this is a tale of love, lust, control, ambition, deceit and power. The maze is built to hold the outcome of illicit love/lust, the Minotaur. The consequence of an unnatural union the creature matures and ceases to be acceptable within society, it becomes violent and must be hidden or contained. Rather than just killing it outright a convoluted structure and process are put in place to bring the Minotaur to its demise. At this point youth, Theseus, with the requisite pride and valor enters the scene. Others have tried before and become lost in the meandering paths of the maze or been killed by the raging creature yet believing in his ability to conquer the maze and overpower of the Minotaur, despite this he takes on the challenge of entering the maze to destroy the Minotaur. At the same time Ariadne, the counter aspect of youth, the feminine and belief in love and integrity becomes part of the narrative. She fears for the safety of Theseus and

gives him a gift, a ball of yellow string, so that he can find his way out and not become lost in the ramblings of the maze. This thread will be the tie, the consistent line that will enable him (logic, youth and power) to overcome the potentially treacherous adventure that lies ahead. It is said that the pattern he created with this thread is what we now know as the unlinear Cretan labyrinth – a single meandering path that takes the user to the centre (a point of discovery) which they then trace their way back out from. His mission is successful and in this victory we can see that good overcomes evil, and logic overcomes passion.

Cretan 7-cycle labyrinth

Overtime both of these forms of the labyrinth have gone on to become part of social practices. Expanding beyond their mythological origins they have transformed and the maze has become a device for play, and perhaps torture; and the unilinear labyrinth a tool for discovery and meditation. In the past and in the present each of these forms of the labyrinth touches an aspect of the lost: whether it is to deliberately loose, to fear loss, to pretend to loose, or to seek and find. Lostness is central to the labyrinth, and as such the labyrinthine may be an effective means for being mis-placed, for enabling the Art of Being Lost.

Lostness and non-place

So far within this discussion I have focussed on the interpretation of lostness as a means to enable mis-placement. This connection between mis-placement and lostness embraces the potential of being somewhere else, somewhere outside of the norm or the expected; it embraces the possibility of not knowing. Mis-placement requires us to extend our interpretation of place and our sense of placement at a particular point in space and time. Many would argue that it is not possible for us to be mis-placed, for we are always somewhere and that where, is place. Misplacement is something that happens to a thing or something other than the self. ‘I misplaced my pen’ for example. We might misplace another being, but usually we would refer to this as lost; ‘I lost you in the crowd.’

It could be thought that this lost place is what Augé (2000) would refer to as a non-place, but this would be incorrect. Non-places are typically described as spaces between defined places of meaning. For example Augé describes the medium strip between two pieces of road, the gap within the two defined trajectories of a highway as non-places; these two expanses of road enable us to go somewhere, the medium strip holds them apart and can be the breathing space between. This non-place is still a known space, a located experience and no matter how we end up there, we are still there, and there for a reason. To inhabit a non-place is to be in a holding pattern between things. In this way we are neither lost nor mis-placed. To mis-place someone, including our selves, is to deliberately choose to loose control over our sense of a particular place. To be lost in a place is be disconnected from its placeness, it is to be located without existing personal meaning, whilst having the potential for meaning to be found. For the non-place this is not possible,

it is always a location to pass through. I do not think that this is the same as Debord's investigations using maps of other locations as we explore the one that we are in (Bulson 2007, p.121). For example using a map of Santiago Spain to find our way around Santiago Chile. A labyrinthine approach to being lost in place would be to embrace both the disorder and uncertainty of the maze, whilst following the trajectory of a single path tracing Ariadne's golden thread.

Finding our way by getting lost

We live in what is referred to as the Information Age, dealing in the Knowledge Economy. Managing this information and transferring it into knowledge that has meaning is the challenge of our times. The atlas is one of the systems we use to engage in geoplaced knowledge. Atlases are conventionally understood to be a collection of maps, traditionally bound into a book form, and they may also be in multimedia formats. As well as geographic features and boundaries, many often features geopolitical, social, religious and economic statistics (Noble Wilford 2002). In this proposition the atlas is conceived of as collection of parts, and these parts are the maps and other information that is contained or collected within it. Conventionally a map is understood to be a representation on a flat surface of the features of an area of the earth or a portion of the heavens, which are shown in their respective forms, sizes and relationships according to some convention. A map may also be a representation or reflection of anything, a drawing, a sketch or a function. As Noble Wilford states, 'anything that can be spatialised can be mapped' (2002, p. 411) and the content and form of such maps varies across cultures and throughout history. The objective of a map is to visualize and communicate information as simply and concisely as possible. It captures and conveys information at a point of time, and as Seager (2004) argues, maps privilege place over process. Maps lead to action, they record action and they are made through action, but of themselves they are static.

There are many ways to make a map. From the informal sketch on the back of an envelope explaining how to get somewhere or locating where something is, to the cartographically 'true' map that depicts features of a place based on scientific data. In either case the creator of the map is the holder of power, the author of truth, the recorder of what is. Maps that are designed with the intention of enabling mis-placement confront this norm (Harmon 2004). Not only do they challenge notions of truth and authority, they also focus on the potential of the process of use, and of transitioning from place to place and the human presence in this actions. Mis-placement and lostness are active states, finding our way through being lost opens up possibilities for both the making and the use of maps individually or as a collection.

Designing affective way-finding devices for being lost

Let us return to the understanding that atlases are things that hold, bind or collect maps. Maps are representations of things, natural, actual or imagined (usually

connected to places physical or ephemeral), and they are linked to actions and/or functions. In this way atlases are a means to hold representations of related 'data' created by someone for use in something. In this project this ‘use’ would be to disrupt the order of knowledge and our assumptions of ease and directness of access. A labyrinthine atlas, and the maps that it contains, would deliberately distort or challenge our access to information; it would take us on a circuitous journey, embracing the strange and the familiar in order to bring us to the potential of somewhere else. How this happens and how it is realised will vary depending on the form of the mapping device, particularly whether it is analogue or digital.

One of the challenges of designing a digital mapping device that allows the user to be mis- placed or to experience the possibility of lostness, is that it is almost impossible to design such an experience in its purest form. If we focus on the moves between things as we traverse from place to place, to be truly lost would be to not know where you are going and to have the possibility of going into the unknown. A digital environment relies on the links between things, unlike a book with a central bind and pages that I can flick through in any order (limited only by what is in the bind), the conventional navigational structure requires a more complex yet clear set of connections between things. As a user I may find myself on a path of the unknown but it is not an unknown path, it is a meandering that has been created by another. It has been devised by the builder(s) of the links who create the connections that make our path possible. I can wander only as far as someone else has planned for me. Although often described as a maze, the labyrinth of the web is more like Ariadne’s golden thread; the links pace and connect as I make my journey along this path of connections. In this way my lostness returns to the meanderings of the Flaneur within a specific site and context and the plane of the screen becomes like the plane of the street, a surface that I meander across or through and my lostness is in my approach, my intention, rather than the structure, and my discoveries and the potential of my lostness are in the unexpected things I find there.

Conclusion

There are a number of different ways for conceptualising of the practices of mapping (cartographic and not) through the Art of Being Lost. In this particular discussion the labyrinth and the labyrinthine have been of particular interest; the two forms (the maze and the labyrinth) have historically and contemporaneously been used to explore or highlight the potential of uncertainty and confusion in increasing our sense of place in the world. These are tools of fear and enlightenment, capture and freedom, all of which are themes that different art practices have utlised as means for understanding located experience.

In attempting to conceive of this proposition a series of questions were used to help frame such an approach to the experience of place. These questions aimed to open up our expectations of way-finding and contemplated why we would want to be mis-placed through the process. If we design maps or atlases that confuse or

break-up the known: maps that displace or misplace data during use or the like, then what would it mean to do this? How would such a device inform or influence a person? How would or could it be used?

To name something as ‘an Art’ is to accept that there is a level of mastery associated with its creation and use. To be artful is to have grace and expertise; it is to be able to do and to extend beyond. An Art of Being Lost in the practice of map making and cartography challenges the expectations of use, but not the integrity of form and manufacture. Like the Art of Writing, Motorcycle Maintenance or Cooking, the Art of Being Lost is something that is potentially accessible to all, yet normally isn’t. The way-finding device (map or atlas) of this ‘art’ embraces the potential of being lost and allows the user/reader to transition through the labyrinthine experience of being mis-placed.

Geology of the United States

John McPhee

Another inspiration to Gregory Hischak for Volcanic in Origin is the writer John McPhee. McPhee, the author of almost 30 books, is considered a pioneer of literary non-fiction. He is regular contributor to The New Yorker. I will post his relevant writings on online.

Biography
http://www.johnmcphee.com/johnmcphee.htm

John McPhee was born in Princeton, New Jersey, and was educated at Princeton University and Cambridge University. His writing career began at Time magazine and led to his long association with the New Yorker, where he has been a staff writer since 1965. The same year he published his first book, A Sense of Where You Are, with FSG, and soon followed with The Headmaster (1966), Oranges (1967), The Pine Barrens (1968), A Roomful of Hovings and Other Profiles (collection, 1968), Levels of the Game (1968), The Crofter and the Laird (1970), Encounters with the Archdruid (1971), The Deltoid Pumpkin Seed (1973), The Curve of Binding Energy (1974), Pieces of the Frame (collection, 1975), and The Survival of the Bark Canoe (1975). Both Encounters with the Archdruid and The Curve of Binding Energy were nominated for National Book Awards. Selections from these books make up The John McPhee Reader (1976).

Since 1977, the year in which McPhee received the Award in Literature from the American Academy of Arts and Letters and the bestselling Coming into the Country appeared in print, Farrar, Straus and Giroux has published Giving Good Weight (collection, 1979), Basin and Range (1981), In Suspect Terrain (1983), La Place de la Concorde Suisse (1984), Table of Contents (collection, 1985), Rising from the Plains (1986), Heirs of General Practice (in a paperback edition, 1986), The Control of Nature (1989), Looking for a Ship (1990), Assembling California (1993), The Ransom of Russian Art (1994), The Second John McPhee Reader (1996), Irons in the Fire (1997), Annals of the Former World (1998). Annals of the Former World, McPhee's tetralogy on geology, was published in a single volume in 1998 and was awarded the Pulitzer Prize in 1999. The Founding Fish was published in 2002.

Excerpt from Annals of the Former World

From Book 1: Basin and Rage
By John McPhee
http://www.johnmcphee.com/annalsexec.htm

The poles of the earth have wandered. The equator has apparently moved. The continents, perched on their plates, are thought to have been carried so very far and to be going in so many directions that it seems an act of almost pure hubris to assert that some landmark of our world is fixed at 73 degrees 57 minutes and 53 seconds west longitude and 40 degrees 51 minutes and 14 seconds north latitude--a temporary description, at any rate, as if for a boat on the sea. Nevertheless, these coordinates will, for what is generally described as the foreseeable future, bring you with absolute precision to the west apron of the George Washington Bridge. Nine A.M. A weekday morning. The traffic is some gross demonstration in particle physics. It bursts from its confining source, aimed at Chicago, Cheyenne, Sacramento, through the high dark roadcuts of the Palisades Sill. A young woman, on foot, is being pressed up against the rockwall by the wind booms of the big semis--Con Weimar Bulk Transportation, Fruehauf Long Ranger. Her face is Nordic, her eyes dark brown and Latin--the bequests of grandparents from the extremes of Europe. She wears mountain boots, blue jeans. She carries a single-jack sledgehammer. What the truckers seem to notice, though, is her youth, her long bright Norwegian hair; and they flirt by air horn, driving needles into her ears. Her name is Karen Kleinspehn. She is a geologist, a graduate student nearing her Ph.D., and there is little doubt in her mind that she and the road and the rock before her, and the big bridge and its awesome city--in fact, nearly the whole of the continental United States and Canada and Mexico to boot--are in stately manner moving in the direction of the trucks. She has not come here, however, to ponder global tectonics, although goodness knows she could, the sill being, in theory, a signature of the events that created the Atlantic. In the Triassic, when New Jersey and Mauretania were of a piece, the region is said to have begun literally to pull itself apart, straining to spread out, to break into great crustal blocks. Valleys in effect competed. One of them would open deep enough to admit ocean water, and so for some years would resemble the present Red Sea. The mantle below the crust--exciting and excited by these events--would send up fillings of fluid rock, and with such pressure behind them that they could intrude between horizontal layers of, say, shale and sandstone and lift the country a thousand feet. The intrusion could spread laterally through hundreds of square miles, becoming a broad new layer--a sill--within the country rock.

This particular sill came into the earth about two miles below the surface, Kleinspehn remarks, and she smacks it with the sledge. An air horn blasts. The passing tires, in their numbers, sound like heavy surf. She has to shout to be heard. She pounds again. The rock is competent. The wall of the cut is sheer. She hits it again and again--until a chunk of some poundage falls free. Its fresh surface is

asparkle with crystals--free-form, asymmetrical, improvisational plagioclase crystals, bestrewn against a field of dark pyroxene. The rock as a whole is called diabase. It is salt-and-peppery charcoal-tweed savings-bank rock. It came to be that way by cooling slowly, at depth, and forming these beautiful crystals.

"It pays to put your nose on the outcrop," she says, turning the sample in her hand. With a smaller hammer, she tidies it up, like a butcher trimming a roast. With a felt-tip pen, she marks it "I." Moving along the cut, she points out xenoliths--blobs of the country rock that fell into the magma and became encased there like raisins in bread. She points to flow patterns, to swirls in the diabase where solidifying segments were rolled over, to layers of coarse-grained crystals that settled, like sediments, in beds. The Palisades Sill--in its chemistry and its texture--is a standard example of homogeneous magma resulting in multiple expressions of rock. It tilts westward. The sill came into a crustal block whose western extremity-known in New Jersey as the Border Fault--is thirty miles away. As the block's western end went down, it formed the Newark Basin. The high eastern end gradually eroded, shedding sediments into the basin, and the sill was ultimately revealed--a process assisted by the creation and development of the Hudson, which eventually cut out the cliffside panorama of New Jersey as seen across the river from Manhattan: the broad sill, which had cracked, while cooling, into slender columns so upright and uniform that inevitably they would be likened to palisades.

In the many fractures of these big roadcuts, there is some suggestion of columns, but actually the cracks running through the cuts are too various to be explained by columnar jointing, let alone by the impudence of dynamite. The sill may have been stressed pretty severely by the tilting of the fault block, Kleinspehn says, or it may have cracked in response to the release of weight as the load above it was eroded away. Solid-earth tides could break it up, too. The sea is not all that responds to the moon. Twice a day the solid earth bobs up and down, as much as a foot. That kind of force and that kind of distance are more than enough to break hard rock. Wells will flow faster during lunar high tides.

For that matter, geologists have done their share to bust up these roadcuts. "They've really been through here!" They have fungoed so much rock off the walls they may have set them back a foot. And everywhere, in profusion along this half mile of diabase, there are small, neatly cored holes, in no way resembling the shot holes and guide holes of the roadblasters, which are larger and vertical, but small horizontal borings that would be snug to a roll of coins. They were made by geologists taking paleomagnetic samples. As the magma crystallized and turned solid, certain iron minerals within it lined themselves up like compasses, pointing toward the magnetic pole. As it happened, the direction in those years was northerly. The earth's magnetic field has reversed itself a number of hundreds of times, switching from north to south, south to north, at intervals that have varied in length. Geologists have figured out just when the reversals occurred, and have thus

developed a distinct arrhythmic yardstick through time. There are many other chronological frames, of course, and if from other indicators, such as fossils, one knows the age of a rock unit within several million years, a look at the mineral compasses inside it can narrow the age toward precision. Paleomagnetic insights have contributed greatly to the study of the travels of the continents, helping to show where they may have been with respect to one another. In the argot of geology, paleomagnetic specialists are sometimes called paleomagicians. Enough paleomagicians have been up and down the big roadcuts of the Palisades Sill to prepare what appears to be a Hilton for wrens and purple martins. Birds have shown no interest.

Near the end of the highway's groove in the sill, there opens a broad, forgettable view of the valley of the Hackensack. The road is descending toward the river. At an even greater angle, the sill--tilting westward--dives into the earth. Accordingly, as Karen Kleinspehn continues to move downhill she is going "upsection" through the diabase toward the top of the tilting sill. The texture of the rock becomes smoother, the crystals smaller, and soon she finds the contact where the magma--at 2000 degrees Fahrenheit--touched the country rock. The country rock was a shale, which had earlier been the deep muck of some Triassic lake, where the labyrinthodont amphibians lived, and paleoniscid fish. The diabase below the contact now is a smooth and uniform hard dark rock, no tweed--its crystals too small to be discernible, having had so little time to grow in the chill zone. The contact is a straight, clear line. She rests her hand across it. The heat of the magma penetrated about a hundred feet into the shale, enough to cook it, to metamorphose it, to turn it into spotted slate. Sampling the slate with her sledgehammer, she has to pound with even more persistence than before. "Some weird, wild minerals turn up in this stuff," she comments between swings. "The metamorphic aureole of this formation is about the hardest rock in New Jersey." She moves a few hundred feet farther on, near the end of the series of cuts. Pin oaks, sycamores, aspens, cottonwoods have come in on the wind with milkweed and wisteria to seize living space between the rock and the road, although the environment appears to be less welcoming than the center of Carson Sink. There are fossil burrows in the slate--long stringers where Triassic animals travelled through the quiet mud, not far below the surface of the shallow lake.

There is a huge rubber sandal by the road, a crate of broken eggs, three golf balls. Two are very cheap but one is an Acushnet Titleist. A soda can comes clinking down the interstate, moving ten miles an hour before the easterly winds of the traffic. The screen of trees damps the truck noise. Karen sits down to rest, to talk, with her back against a cottonwood. "Roadcuts can be a godsend. There's a series of roadcuts near Pikeville, Kentucky--very big ones--where you can see distributary channels in a river-delta system, with natural levees, and with splay deposits going out from the levees into overbank deposits of shales and coal. It's a face-on view of the fingers of a delta, coming at you--the Pocahontas delta system, shed off the

Appalachians in Mississippian-Pennsylvanian time. You see river channels that migrated back and forth across a valley and were superposed vertically on one another through time. You see it all there in one series of exposures, instead of having to fit together many smaller pieces of the puzzle."

Geologists on the whole are inconsistent drivers. When a roadcut presents itself, they tend to lurch and weave. To them, the roadcut is a portal, a fragment of a regional story, a proscenium arch that leads their imaginations into the earth and through the surrounding terrain. In the rock itself are the essential clues to the scenes in which the rock began to form--a lake in Wyoming, about as large as Huron; a shallow ocean reaching westward from Washington Crossing; big rivers that rose in Nevada and fell through California to the sea. Unfortunately, highway departments tend to obscure such scenes. They scatter seed wherever they think it will grow. They "hair everything over"--as geologists around the country will typically complain.

"We think rocks are beautiful. Highway departments think rocks are obscene."
"In the North it's vetch."
"In the South it's the god-damned kudzu. You need a howitzer to blast through it. It covers the mountainsides, too."
"Almost all our stops on field trips are at roadcuts. In areas where structure is not well exposed, roadcuts are essential to do geology."
"Without some roadcuts, all you could do is drill a hole, or find natural streamcuts, which are few and far between."
"We as geologists are fortunate to live in a period of great road building."
"It's a way of sampling fresh rock. The road builders slice through indiscriminately, and no little rocks, no softer units are allowed to hide."
"A roadcut is to a geologist as a stethoscope is to a doctor."
"An X-ray to a dentist."
"The Rosetta Stone to an Egyptologist."
"A twenty-dollar bill to a hungry man."
"If I'm going to drive safely, I can't do geology."

In moist climates, where vegetation veils the earth, streamcuts are about the only natural places where geologists can see exposures of rock, and geologists have walked hundreds of thousands of miles in and beside streams. If roadcuts in the moist world are a kind of gift, they are equally so in other places. Rocks are not easy to read where natural outcrops are so deeply weathered that a hammer will virtually sink out of sight--for example, in piedmont Georgia. Make a fresh roadcut almost anywhere at all and geologists will close in swiftly, like missionaries racing anthropologists to a tribe just discovered up the Xingu.

"I studied roadcuts and outcrops as a kid, on long trips with my family," Karen says. "I was probably doomed to be a geologist from the beginning." She grew up in the

Genesee Valley, and most of the long trips were down through Pennsylvania and the Virginias to see her father's parents, in North Carolina. On such a journey, it would have been difficult not to notice all the sheets of rock that had been bent, tortured, folded, faulted, crumpled--and to wonder how that happened, since the sheets of rock would have started out as flat as a pad of paper. "I am mainly interested in sedimentology, in sedimentary structures. It allows me to do a lot of field work. I'm not too interested in theories of what happens x kilometers down in the earth at certain temperatures and pressures. You seldom do field work if you're interested in the mantle. There's a little bit of the humanities that creeps into geology, and that's why I am in it. You can't prove things as rigorously as physicists or chemists do. There are no white coats in a geology lab, although geology is going that way. Under the Newark Basin are worn-down remains of the Appalachians--below us here, and under that valley, and so on over to the Border Fault. In the West, for my thesis, I am working on a basin that also formed on top of a preexisting deformed belt. I can't say that the basin formed just like this one, but what absorbs me are the mechanics of these successor basins, superposed on mountain belts. The Great Valley in California is probably an example of a late-stage compressional basin--formed as plates came together. We think the Newark Basin is an extensional basin--formed as plates moved apart. In the geologic record, how do we recognize the differences between the two? I am trying to get the picture of the basin as a whole, and what is the history that you can read in these cuts. I can't synthesize all this in one morning on a field trip, but I can look at the rock here and then evaluate someone else's interpretation." She pauses. She looks back along the rockwall. "This interstate is like a knife wound all across the country," she remarks. "Sure--you could do this sort of thing from here to California. Anyone who wants to, though, had better hurry. Before long, to go all the way across by yourself will be a fossil experience. A person or two. One car. Coast to coast. People do it now without thinking much about it. Yet it's a most unusual kind of personal freedom--particular to this time span, the one we happen to be in. It's an amazing, temporary phenomenon that will end. We have the best highway system in the world. It lets us do what people in no other country can do. And it is also an ecological disaster."

In June, every year, students and professors from eastern colleges--with their hydrochloric-acid phials and their hammers and their Brunton compasses--head west. To be sure, there is plenty of absorbing geology under the shag of eastern America, galvanic conundrums in Appalachian structure and intricate puzzles in history and stratigraphy. In no manner would one wish to mitigate the importance of the eastern scene. Undeniably, though, the West is where the rocks are--the vastnesses of exposed rock--and of eastern geologists who do any kind of summer field work about seventy-five per cent go west. They carry state geological maps and the regional geological highway maps that are published by the American Association of Petroleum Geologists--maps as prodigally colored as drip paintings and equally formless in their worm-trail-and-paramecium depictions of the country's

uppermost rock. The maps give two dimensions but more than suggest the third. They tell the general age and story of the banks of the asphalt stream. Kleinspehn has been doing this for some years, getting into her Minibago, old and overloaded, a two-door Ford, heavy-duty springs, with odd pieces of the Rockies under the front seat and a mountain tent in the gear behind, to cross the Triassic lowlands and the Border Fault and to rise into the Ridge and Valley Province, the folded-and-faulted, deformed Appalachians--the beginnings of a journey that above all else is physiographic, a journey that tends to mock the idea of a nation, of a political state, as an unnatural subdivision of the globe, as a metaphor of the human ego sketched on paper and framed in straight lines and in riparian boundaries between unalterable coasts. The United States: really a quartering of a continent, a drawer in North America. Pull it out and prairie dogs would spill off one side, alligators off the other--a terrain crisscrossed with geological boundaries, mammalian boundaries, amphibian boundaries: the limits of the world of the river frog, the extent of the Nugget formation, the range of the mountain cougar. The range of the cougar is the cougar's natural state, overlying segments of tens of thousands of other states, a few of them proclaimed a nation. The United States of America, with its capital city on the Atlantic Coastal Plain. The change is generally dramatic as one province gives way to another; and halfway across Pennsylvania, as you leave the quartzite ridges and carbonate valleys of the folded-and-faulted mountains, you drop for a moment into Cambrian rock near the base of a long climb, a ten-mile gradient upsection in time from the Cambrian into the Ordovician into the Silurian into the Devonian into the Mississippian (generally through the same chapters of the earth represented in the walls of the Grand Canyon) and finally out onto the Pennsylvanian itself, the upper deck, the capstone rock, of the Allegheny Plateau. Now even the Exxon map shows a new geology, roads running every which way like shatter lines in glass, following the crazed geometries of this deeply dissected country, whereas, before, the roads had no choice but to run northeast-southwest among the long ropy trends of the deformed mountains, following the endless ridges. On these transcontinental trips, Karen has driven as much as a thousand miles in a day at speeds that she has come to regard as dangerous and no less emphatically immoral. She has almost never slept under a roof, nor can she imagine why anyone on such a journey would want or need to; she "scopes out" her campsites in the late-failing light with strong affection for national forests and less for the three-dollar campgrounds where you roll out your Ensolite between two trailers, where gregarious trains honk like Buicks, and Harleys on instruments climb escarpments in the night. The physiographic boundary is indistinct where you shade off the Allegheny Plateau and onto the stable craton, the continent's enduring core, its heartland, immemorially unstrained, the steady, predictable hedreocraton--the Stable Interior Craton. There are old mountains to the east, maturing mountains to the west, adolescent mountains beyond. The craton has participated on its edges in the violent creation of the mountains. But it remains intact within, and half a nation wide--the lasting, stolid craton, slowly, slowly downwasting. It has lost five centimetres since the birth of Christ. In much of

Canada and parts of Minnesota and Wisconsin, the surface of the craton is Precambrian--earthbasement rock, the continental shield. Ohio, Indiana, Illinois, and so forth--the greater part of the Midwest--is shield rock covered with a sedimentary veneer that has never been metamorphosed, never been ground into tectonic hash--sandstones, siltstones, limestones, dolomites, flatter than the ground above them, the silent floors of departed oceans, of epicratonic seas. Iowa. Nebraska. Now with each westward township the country thickens, rises--a thousand, two thousand, five thousand feet--on crumbs shed off the Rockies and generously served to the craton. At last the Front Range comes to view--the chevroned mural of the mountains, sparkling white on gray, and on its outfanning sediments you are lifted into the Rockies and you plunge through a canyon to the Laramie Plains. "You go from one major geologic province to another and--whoa!--You really know you're doing it." There are mountains now behind you, mountains before you, mountains that are set on top of mountains, a complex score of underthrust, upthrust, overthrust mountains, at the conclusion of which, through another canyon, you come into the Basin and Range. Brigham Young, when he came through a neighboring canyon and saw rivers flowing out on alluvial fans from the wall of the Wasatch to the flats beyond, made a quick decision and said, "This is the place." The scene suggested settling for it. The alternative was to press on beside a saline sea and then across salt barrens so vast and flat that when microwave relays would be set there they would not require towers. There are mountains, to be sure--off to one side and the other: the Oquirrhs, the Stansburys, the Promontories, the Silver Island Mountains. And with Nevada these high, discrete, austere new ranges begin to come in waves, range after range after north-south range, consistently in rhythm with wide flat valleys: basin, range; basin, range; a mile of height between basin and range. Beside the Humboldt you wind around the noses of the mountains, the Humboldt, framed in cottonwood--a sound, substantial, year-round-flowing river, among the largest in the world that fail to reach the sea. It sinks, it disappears, in an evaporite plain, near the bottom of a series of fault blocks that have broken out to form a kind of stairway that you climb to go out of the Basin and Range. On one step is Reno, and at the top is Donner Summit of the uplifting Sierra Nevada, which has gone above fourteen thousand feet but seems by no means to have finished its invasion of the sky. The Sierra is rising on its east side and is hinged on the west, so the slope is long to the Sacramento Valley--the physiographic province of the Great Valley--flat and sea-level and utterly incongruous within its flanking mountains. It was not eroded out in the normal way of valleys. Mountains came up around it. Across the fertile flatland, beyond the avocados, stand the Coast Ranges, the ultimate province of the present, the berm of the ocean--the Coast Ranges, with their dry and straw-brown Spanish demeanor, their shadows of the live oaks on the ground.

If you were to make that trip in the Triassic--New York to San Francisco, Interstate 80, say roughly at the end of Triassic time--you would move west from the nonexistent Hudson River with the Palisades Sill ten thousand feet down. The

motions that will open the Atlantic are well under way (as things appear in present theory), but the brine has not yet come in. Behind you, in fact, where the ocean will be, are several thousand miles of land--a contiguous landmass, fragments of which will be Africa, Antarctica, India, Australia. You cross the Newark Basin. It is for the most part filled with red mud. In the mud are tracks that seem to have been made by a two-ton newt. You come to a long, low, north-south-trending, black, steaming hill. It is a flow of lava that has come out over the mud and has cooled quickly in the air to form the dense smooth textures of basalt. Someday, towns and landmarks of this extruded hill will in one way or another take from it their names: Montclair, Mountainside, Great Notch, Glen Ridge. You top the rise, and now you can see across the rest of the basin to the Border Fault, and--where Whippany and Parsippany will be, some thirty miles west of New York--there is a mountain front perhaps seven thousand feet high. You climb this range and see more and more mountains beyond, and they are the folded-and-faulted Appalachians, but middle-aged and a little rough still at the edges, not caterpillar furry and worn-down smooth. Numbers do not seem to work well with regard to deep time. Any number above a couple of thousand years--fifty thousand, fifty million--will with nearly equal effect awe the imagination to the point of paralysis. This Triassic journey, anyway, is happening two hundred and ten million years ago, or five per cent back into the existence of the earth. From the subalpine peaks of New Jersey, the descent is long and gradual to the lowlands of western Pennsylvania, where flat-lying sedimentary rocks begin to reach out across the craton--coals and sandstones, shales and limestones, slowly downwasting, Ohio, Indiana, Illinois, Iowa, erosionally losing an inch every thousand years. Where the Missouri will flow, past Council Bluffs, you come into a world of ruddy hills, Permian red, that continue to the far end of Nebraska, where you descend to the Wyoming flats. Sandy in places, silty, muddy, they run on and on, near sea level, all the way across Wyoming and into Utah. They are as red as brick. They will become the red cliffs and red canyons of Wyoming, the walls of Flaming Gorge. Triassic rock is not exclusively red, but much of it is red all over the world--red in the shales of New Jersey, red in the sandstones of Yunan, red in the banks of the Volga, red by the Solway Firth. Triassic red beds, as they are called, are in the dry valleys of Antarctica, the red marks of Worcestershire, the hills of Alsace-Lorraine. The Petrified Forest. The Painted Desert. The South African red beds of the Great Karroo. Triassic red rock is red through and through, and not merely weathered red on the surface, like the great Redwall limestone of the Grand Canyon, which is actually gray. There may have been a superabundance of oxygen in the atmosphere from late Pennsylvanian through Permian and Triassic time. As sea level changed and changed again all through the Pennsylvanian, tremendous quantities of vegetation grew and then were drowned and buried, grew and then were drowned and buried--to become, eventually, seam upon seam of coal interlayered with sandstones and shales. Living plants take in carbon dioxide, keep the carbon in their carbohydrates, and give up the oxygen to the atmosphere. Animals, from bacteria upward, then eat the plants and reoxidize the carbon. This cycle would go awry if a great many plants were

buried. Their carbon would be buried with them--isolated in rock--and so the amount of oxygen in the atmosphere would build up. All over the world, so much carbon was buried in Pennsylvanian time that the oxygen pressure in the atmosphere quite possibly doubled. There is more speculation than hypothesis in this, but what could the oxygen do? Where could it go? After carbon, the one other thing it could oxidize in great quantity was iron--abundant, pale-green ferrous iron, which exists everywhere, in fully five per cent of crustal rock; and when ferrous iron takes on oxygen, it turns a ferric red. That may have been what happened--in time that followed the Pennsylvanian. Permian rock is generally red. Red beds on an epic scale are the signs of the Triassic, when the earth in its rutilance may have outdone Mars.

As you come off the red flats to cross western Utah, two hundred and ten million years before the present, you travel in the dark, there being not one grain of evidence to suggest its Triassic appearance, no paleoenvironmental clue. Ahead, though, in eastern Nevada, is a line of mountains that are much of an age with the peaks of New Jersey--a little rounded, beginning to show age--and after you climb them and go down off their western slopes you discern before you the white summits of alpine fresh terrain, of new rough mountains rammed into thin air, with snow banners flying off the matterhorns, ridges, crests, and spurs. You are in central Nevada, about four hundred miles east of San Francisco, and after you have climbed these mountains you look out upon (as it appears in present theory) open sea. You drop swiftly to the coast, and then move on across moderately profound water full of pelagic squid, water that is quietly accumulating the sediments which--ages in the future--will become the roof rock of the rising Sierra. Tall volcanoes are standing in the sea. Then, at roughly the point where the Sierran foothills will end and the Great Valley will begin--at Auburn, California--you move beyond the shelf and over deep ocean. There are probably some islands out there somewhere, but fundamentally you are crossing above ocean crustal floor that reaches to the China Sea. Below you there is no hint of North America, no hint of the valley or the hills where Sacramento and San Francisco will be.

Plate Tectonics

http://science.nationalgeographic.com/science/earth/the-dynamic-earth/plate-tectonics-article/

There are a few handfuls of major plates and dozens of smaller, or minor, plates. Six of the majors are named for the continents embedded within them, such as the North American, African, and Antarctic plates. Though smaller in size, the minors are no less important when it comes to shaping the Earth. The tiny Juan de Fuca plate is largely responsible for the volcanoes that dot the Pacific Northwest of the United States.

The plates make up Earth's outer shell, called the lithosphere. (This includes the crust and uppermost part of the mantle.) Churning currents in the molten rocks below propel them along like a jumble of conveyor belts in disrepair. Most geologic activity stems from the interplay where the plates meet or divide.
The movement of the plates creates three types of tectonic boundaries: convergent, where plates move into one another; divergent, where plates move apart; and transform, where plates move sideways in relation to each other.

Convergent Boundaries
Where plates serving landmasses collide, the crust crumples and buckles into mountain ranges. India and Asia crashed about 55 million years ago, slowly giving rise to the Himalaya, the highest mountain system on Earth. As the mash-up continues, the mountains get higher. Mount Everest, the highest point on Earth, may be a tiny bit taller tomorrow than it is today.

These convergent boundaries also occur where a plate of ocean dives, in a process called subduction, under a landmass. As the overlying plate lifts up, it also forms mountain ranges. In addition, the diving plate melts and is often spewed out in volcanic eruptions such as those that formed some of the mountains in the Andes of South America.

At ocean-ocean convergences, one plate usually dives beneath the other, forming deep trenches like the Mariana Trench in the North Pacific Ocean, the deepest point on Earth. These types of collisions can also lead to underwater volcanoes that eventually build up into island arcs like Japan.

Divergent Boundaries
At divergent boundaries in the oceans, magma from deep in the Earth's mantle rises toward the surface and pushes apart two or more plates. Mountains and volcanoes rise along the seam. The process renews the ocean floor and widens the giant basins. A single mid-ocean ridge system connects the world's oceans, making the ridge the longest mountain range in the world.

On land, giant troughs such as the Great Rift Valley in Africa form where plates are tugged apart. If the plates there continue to diverge, millions of years from now eastern Africa will split from the continent to form a new landmass. A mid-ocean ridge would then mark the boundary between the plates.

Transform Boundaries
The San Andreas Fault in California is an example of a transform boundary, where two plates grind past each other along what are called strike-slip faults. These boundaries don't produce spectacular features like mountains or oceans, but the halting motion often triggers large earthquakes, such as the 1906 one that devastated San Francisco.

Rising Oceans

Report: Rising Sea Levels, Temperature Inevitable In California, State Must Prepare

http://www.huffingtonpost.com/2009/08/03/report-rising-sea-levels-_n_250469.html

SACRAMENTO, Calif. — Even if the world is successful in cutting carbon emissions in the future, California needs to start preparing for rising sea levels, hotter weather and other effects of climate change, a new state report recommends.
It encourages local communities to rethink future development in low-lying coastal areas, reinforce levees that protect flood-prone areas and conserve already strapped water supplies.

"We still have to adapt, no matter what we do, because of the nature of the greenhouse gases," said Tony Brunello, deputy secretary for climate change and energy at the California Natural Resources Agency, who helped prepare the report. "Those gases are still going to be in the atmosphere for the next 100 years."

The draft report to be released Monday by the California Natural Resources Agency provides the state's first comprehensive plan to work with local governments, universities and residents to deal with a changing climate. A final plan is expected to be released in the fall after the public weighs in.

The report was compiled after Gov. Arnold Schwarzenegger directed agencies in November to devise a state climate strategy. It comes three years after the Republican governor signed California's landmark global warming law requiring the state to slash greenhouse gas emissions by 2020.

Most countries have focused on cutting greenhouse gases in the future, but researchers say those efforts will take decades to have an effect while the planet continues to warm. States have only recently begun to look at what steps they must take to minimize the damage expected from sea level rise, storm surges, droughts and water shortages because of the climate changes.

Over the last century in California, the sea level has risen by 7 inches, average temperatures have increased, spring snowmelt occurs earlier in the year, and there are hotter days and fewer cold nights.

The report warns that rising temperatures over the next few decades will lead to more heat waves, wildfires, droughts and floods.

"We have to deal with those unavoidable impacts," said Suzanne Moser, a research associate at the Institute of Marine Sciences at the University of California Santa

Cruz. "We can't pretend they are not going to happen and we have to prepare for that."

To minimize the potential damage from climate change, the report recommends that cities and counties offer incentives to encourage property owners in high-risk areas to relocate and limit future development in places that might be affected by flooding, coastal erosion and sea level rise. State agencies also should not plan, permit, develop or build any structure that might require protection in the future.

The report suggests the state partner with local governments and private landowners to create large reserves that protect wildlife threatened by warmer weather. Similarly, wetlands and fish corridors should be established to protect salmon and other fragile fish.

The report says farmers should be encouraged to be more efficient when watering their crops, and investments should be made to improve crop resistance to hotter temperatures.

Genesis 1

King James Bible
http://www.bartleby.com/108/01/1.html#S1

The Creation
1 In the beginning God created the heaven and the earth.
2 And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.
3 And God said, Let there be light: and there was light.
4 And God saw the light, that it was good: and God divided the light from the darkness.
5 And God called the light Day, and the darkness he called Night. And the evening and the morning were the first day.
6 And God said, Let there be a firmament in the midst of the waters, and let it divide the waters from the waters.
7 And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament: and it was so.
8 And God called the firmament Heaven. And the evening and the morning were the second day.
9 And God said, Let the waters under the heaven be gathered together unto one place, and let the dry land appear: and it was so.
10 And God called the dry land Earth; and the gathering together of the waters called he Seas: and God saw that it was good.
11 And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so.
12 And the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind: and God saw that it was good.
13 And the evening and the morning were the third day.
14 And God said, Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years:
15 and let them be for lights in the firmament of the heaven to give light upon the earth: and it was so.
16 And God made two great lights; the greater light to rule the day, and the lesser light to rule the night: he made the stars also.
17 And God set them in the firmament of the heaven to give light upon the earth,
18 and to rule over the day and over the night, and to divide the light from the darkness: and God saw that it was good.
19 And the evening and the morning were the fourth day.
20 And God said, Let the waters bring forth abundantly the moving creature that

hath life, and fowl that may fly above the earth in the open firmament of heaven.
21 And God created great whales, and every living creature that moveth, which the waters brought forth abundantly, after their kind, and every winged fowl after his kind: and God saw that it was good.
22 And God blessed them, saying, Be fruitful, and multiply, and fill the waters in the seas, and let fowl multiply in the earth.
23 And the evening and the morning were the fifth day.
24 And God said, Let the earth bring forth the living creature after his kind, cattle, and creeping thing, and beast of the earth after his kind: and it was so.
25 And God made the beast of the earth after his kind, and cattle after their kind, and every thing that creepeth upon the earth after his kind: and God saw that it was good.
26 And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth.
27 So God created man in his own image, in the image of God created he him; male and female created he them.
28 And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.
29 And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed; to you it shall be for meat.
30 And to every beast of the earth, and to every fowl of the air, and to every thing that creepeth upon the earth, wherein there is life, I have given every green herb for meat: and it was so.
31 And God saw every thing that he had made, and, behold, it was very good. And the evening and the morning were the sixth day.

Genesis 2

King James Bible
http://www.bartleby.com/108/01/2.html

1 Thus the heavens and the earth were finished, and all the host of them.
2 And on the seventh day God ended his work which he had made; and he rested on the seventh day from all his work which he had made. Heb. 4.4, 10
3 And God blessed the seventh day, and sanctified it: Ex. 20.11 because that in it he had rested from all his work which God created and made.

Man in the Garden of Eden
4 These are the generations of the heavens and of the earth when they were created, in the day that the LORD God made the earth and the heavens,

5 and every plant of the field before it was in the earth, and every herb of the field before it grew: for the LORD God had not caused it to rain upon the earth, and there was not a man to till the ground.
6 But there went up a mist from the earth, and watered the whole face of the ground.
7 And the LORD God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.
8 And the LORD God planted a garden eastward in Eden; and there he put the man whom he had formed.
9 And out of the ground made the LORD God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of knowledge of good and evil.
10 And a river went out of Eden to water the garden; and from thence it was parted, and became into four heads.
11 The name of the first is Pison: that is it which compasseth the whole land of Hav'ilah, where there is gold;
12 and the gold of that land is good: there is bdellium and the onyx stone.
13 And the name of the second river is Gihon: the same is it that compasseth the whole land of Ethiopia.
14 And the name of the third river is Hid'dekel: that is it which goeth toward the east of Assyria. And the fourth river is Euphra'tes.
15 And the LORD God took the man, and put him into the garden of Eden to dress it and to keep it.
16 And the LORD God commanded the man, saying, Of every tree of the garden thou mayest freely eat:
17 but of the tree of the knowledge of good and evil, thou shalt not eat of it: for in the day that thou eatest thereof thou shalt surely die.
18 And the LORD God said, It is not good that the man should be alone; I will make him a help meet for him.
19 And out of the ground the LORD God formed every beast of the field, and every fowl of the air; and brought them unto Adam to see what he would call them: and whatsoever Adam called every living creature, that was the name thereof.
20 And Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field; but for Adam there was not found a help meet for him.
21 And the LORD God caused a deep sleep to fall upon Adam, and he slept; and he took one of his ribs, and closed up the flesh instead thereof.
22 And the rib, which the LORD God had taken from man, made he a woman, and brought her unto the man.
23 And Adam said, This is now bone of my bones, and flesh of my flesh: she shall be called Woman, because she was taken out of Man.
24 Therefore shall a man leave his father and his mother, and shall cleave unto his wife: and they shall be one flesh.
25 And they were both naked, the man and his wife, and were not ashamed.

Genesis 6

King James Bible
http://www.bartleby.com/108/01/6.html

Noah Makes the Ark
9 These are the generations of Noah: Noah was a just man and perfect in his generations, and Noah walked with God.
10 And Noah begat three sons, Shem, Ham, and Japheth.
11 The earth also was corrupt before God; and the earth was filled with violence.
12 And God looked upon the earth, and, behold, it was corrupt; for all flesh had corrupted his way upon the earth.
13 And God said unto Noah, The end of all flesh is come before me; for the earth is filled with violence through them; and, behold, I will destroy them with the earth.
14 Make thee an ark of gopher wood; rooms shalt thou make in the ark, and shalt pitch it within and without with pitch.
15 And this is the fashion which thou shalt make it of: The length of the ark shall be three hundred cubits, the breadth of it fifty cubits, and the height of it thirty cubits.
16 A window shalt thou make to the ark, and in a cubit shalt thou finish it above; and the door of the ark shalt thou set in the side thereof; with lower, second, and third stories shalt thou make it.
17 And, behold, I, even I, do bring a flood of waters upon the earth, to destroy all flesh, wherein is the breath of life, from under heaven; and every thing that is in the earth shall die.
18 But with thee will I establish my covenant; and thou shalt come into the ark, thou, and thy sons, and thy wife, and thy sons' wives with thee.
19 And of every living thing of all flesh, two of every sort shalt thou bring into the ark, to keep them alive with thee; they shall be male and female.
20 Of fowls after their kind, and of cattle after their kind, of every creeping thing of the earth after his kind; two of every sort shall come unto thee, to keep them alive.
21 And take thou unto thee of all food that is eaten, and thou shalt gather it to thee; and it shall be for food for thee, and for them.
22 Thus did Noah according to all that God commanded him, so did he.

Genesis 7

King James Bible
http://www.bartleby.com/108/01/7.html

The Flood
1 And the LORD said unto Noah, Come thou and all thy house into the ark; for thee have I seen righteous before me in this generation.
2 Of every clean beast thou shalt take to thee by sevens, the male and his female: and of beasts that are not clean by two, the male and his female.
3 Of fowls also of the air by sevens, the male and the female; to keep seed alive

upon the face of all the earth.
4 For yet seven days, and I will cause it to rain upon the earth forty days and forty nights; and every living substance that I have made will I destroy from off the face of the earth.
5 And Noah did according unto all that the LORD commanded him.
6 And Noah was six hundred years old when the flood of waters was upon the earth.
7 And Noah went in, and his sons, and his wife, and his sons' wives with him, into the ark, because of the waters of the flood.
8 Of clean beasts, and of beasts that are not clean, and of fowls, and of every thing that creepeth upon the earth,
9 there went in two and two unto Noah into the ark, the male and the female, as God had commanded Noah.
10 And it came to pass after seven days, that the waters of the flood were upon the earth.
11 In the six hundredth year of Noah's life, in the second month, the seventeenth day of the month, the same day were all the fountains of the great deep broken up, and the windows of heaven were opened.
12 And the rain was upon the earth forty days and forty nights.
13 In the selfsame day entered Noah, and Shem, and Ham, and Japheth, the sons of Noah, and Noah's wife, and the three wives of his sons with them, into the ark;
14 they, and every beast after his kind, and all the cattle after their kind, and every creeping thing that creepeth upon the earth after his kind, and every fowl after his kind, every bird of every sort.
15 And they went in unto Noah into the ark, two and two of all flesh, wherein is the breath of life.
16 And they that went in, went in male and female of all flesh, as God had commanded him: and the LORD shut him in.
17 And the flood was forty days upon the earth; and the waters increased, and bare up the ark, and it was lifted up above the earth.
18 And the waters prevailed, and were increased greatly upon the earth; and the ark went upon the face of the waters.
19 And the waters prevailed exceedingly upon the earth; and all the high hills, that were under the whole heaven, were covered.
20 Fifteen cubits upward did the waters prevail; and the mountains were covered.
21 And all flesh died that moved upon the earth, both of fowl, and of cattle, and of beast, and of every creeping thing that creepeth upon the earth, and every man:
22 all in whose nostrils was the breath of life, of all that was in the dry land, died.
23 And every living substance was destroyed which was upon the face of the ground, both man, and cattle, and the creeping things, and the fowl of the heaven; and they were destroyed from the earth: and Noah only remained alive, and they that were with him in the ark.
24 And the waters prevailed upon the earth a hundred and fifty days.

Genesis 8

King James Bible
http://www.bartleby.com/108/01/8.html

1 And God remembered Noah, and every living thing, and all the cattle that was with him in the ark: and God made a wind to pass over the earth, and the waters assuaged.
2 The fountains also of the deep and the windows of heaven were stopped, and the rain from heaven was restrained.
3 And the waters returned from off the earth continually: and after the end of the hundred and fifty days the waters were abated.
4 And the ark rested in the seventh month, on the seventeenth day of the month, upon the mountains of Ar'arat.
5 And the waters decreased continually until the tenth month: in the tenth month, on the first day of the month, were the tops of the mountains seen.
6 And it came to pass at the end of forty days, that Noah opened the window of the ark which he had made:
7 and he sent forth a raven, which went forth to and fro, until the waters were dried up from off the earth.
8 Also he sent forth a dove from him, to see if the waters were abated from off the face of the ground.
9 But the dove found no rest for the sole of her foot, and she returned unto him into the ark; for the waters were on the face of the whole earth. Then he put forth his hand, and took her, and pulled her in unto him into the ark.
10 And he stayed yet other seven days; and again he sent forth the dove out of the ark.
11 And the dove came in to him in the evening, and, lo, in her mouth was an olive leaf plucked off: so Noah knew that the waters were abated from off the earth.
12 And he stayed yet other seven days, and sent forth the dove, which returned not again unto him any more.
13 And it came to pass in the six hundredth and first year, in the first month, the first day of the month, the waters were dried up from off the earth: and Noah removed the covering of the ark, and looked, and, behold, the face of the ground was dry.
14 And in the second month, on the seven and twentieth day of the month, was the earth dried.
15 And God spake unto Noah, saying,
16 Go forth of the ark, thou, and thy wife, and thy sons, and thy sons' wives with thee.
17 Bring forth with thee every living thing that is with thee, of all flesh, both of fowl, and of cattle, and of every creeping thing that creepeth upon the earth; that they may breed abundantly in the earth, and be fruitful, and multiply upon the earth.
18 And Noah went forth, and his sons, and his wife, and his sons' wives with him:
19 every beast, every creeping thing, and every fowl, and whatsoever creepeth

upon the earth, after their kinds, went forth out of the ark.
20 And Noah builded an altar unto the LORD; and took of every clean beast, and of every clean fowl, and offered burnt offerings on the altar.
21 And the LORD smelled a sweet savor; and the LORD said in his heart, I will not again curse the ground any more for man's sake; for the imagination of man's heart is evil from his youth: neither will I again smite any more every thing living, as I have done.
22 While the earth remaineth, seedtime and harvest, and cold and heat, and summer and winter, and day and night shall not cease.

I Am Waiting

By Lawrence Ferlinghetti
http://www.poetryfoundation.org/poem/171598

I am waiting for my case to come up
and I am waiting
for a rebirth of wonder
and I am waiting for someone
to really discover America
and wail
and I am waiting
for the discovery
of a new symbolic western frontier

and I am waiting
for the American Eagle
to really spread its wings
and straighten up and fly right
and I am waiting
for the Age of Anxiety
to drop dead
and I am waiting
for the war to be fought
which will make the world safe
for anarchy
and I am waiting
for the final withering away
of all governments
and I am perpetually awaiting
a rebirth of wonder

I am waiting for the Second Coming
and I am waiting

for a religious revival
to sweep thru the state of Arizona
and I am waiting
for the Grapes of Wrath to be stored
and I am waiting
for them to prove
that God is really American
and I am waiting
to see God on television
piped onto church altars
if only they can find
the right channel
to tune in on
and I am waiting
for the Last Supper to be served again
with a strange new appetizer
and I am perpetually awaiting
a rebirth of wonder

I am waiting for my number to be called
and I am waiting
for the Salvation Army to take over
and I am waiting
for the meek to be blessed
and inherit the earth
without taxes
and I am waiting
for forests and animals
to reclaim the earth as theirs
and I am waiting
for a way to be devised
to destroy all nationalisms
without killing anybody
and I am waiting
for linnets and planets to fall like rain
and I am waiting for lovers and weepers
to lie down together again
in a new rebirth of wonder

I am waiting for the Great Divide to be crossed
and I am anxiously waiting
for the secret of eternal life to be discovered
by an obscure general practitioner
and I am waiting

for the storms of life
to be over
and I am waiting
to set sail for happiness
and I am waiting
for a reconstructed Mayflower
to reach America
with its picture story and tv rights
sold in advance to the natives
and I am waiting
for the lost music to sound again
in the Lost Continent
in a new rebirth of wonder

I am waiting for the day
that maketh all things clear
and I am awaiting retribution
for what America did
to Tom Sawyer
and I am waiting
for Alice in Wonderland
to retransmit to me
her total dream of innocence
and I am waiting
for Childe Roland to come
to the final darkest tower
and I am waiting
for Aphrodite
to grow live arms
at a final disarmament conference
in a new rebirth of wonder

I am waiting
to get some intimations
of immortality
by recollecting my early childhood
and I am waiting
for the green mornings to come again
youth's dumb green fields come back again
and I am waiting
for some strains of unpremeditated art
to shake my typewriter
and I am waiting to write
the great indelible poem

and I am waiting
for the last long careless rapture
and I am perpetually waiting
for the fleeing lovers on the Grecian Urn
to catch each other up at last
and embrace
and I am awaiting
perpetually and forever
a renaissance of wonder

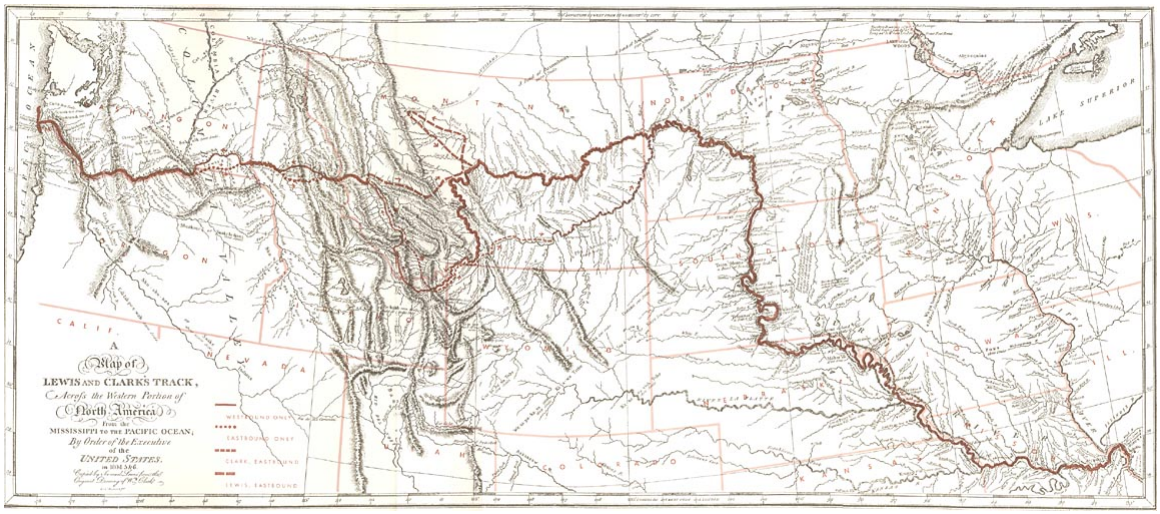
Further Resources

PBS Lewis and Clark Web Site:
http://www.pbs.org/lewisandclark/

National Geographic – Lewis & Clark:
http://www.nationalgeographic.com/lewisandclark/

Lewis & Clark Trail Watch
One anthropologist's blog about her research into "museum and historic site interpretation of the Lewis & Clark expedition"
http://lewisandclarktrailwatch.blogspot.com/

The Journey Continues – Bicentennial Commemoration at Lewis and Clark University
http://www.thejourneycontinues.org/



Scene 1 p.2
"The Rockies"
http://www.worldatlas.com/webimage/countrys/nalnd.htm

The important thing to note about the Rockies is that that mountain range is so much higher and larger than anything in the Eastern United States. Lewis and Clark were not prepared for their size. See below for a comparison.

Appalachian Mountains:
The Appalachians, about 1,500 miles in length, extend from central Alabama in the U.S. up through the New England states and the Canadian provinces of New Brunswick, Newfoundland and Quebec.

Significant Appalachian ranges include:

- The Cumberland Mts. in Tennessee
- The Blue Ridge Mts. in Virginia
- The Alleghenies in Pennsylvania
- The Catskills Mts. in New York
- The Green Mts. in Vermont
- The White Mts. of New Hampshire

The highest point is Mt. Mitchell in North Carolina at 6,684 ft (2,037 m).

Rocky Mountains:
The Rocky Mountains, about 3,000 miles in length, extend from the U.S State of New Mexico up through the western United States and on into the northernmost reaches of Canada's British Columbia. Major mountain ranges include...

- Absaroka
- Bear River
- Beaverhead
- Big Belt
- Big Horn
- Bitterroots
- Canadian
- Clearwater
- Columbia
- Front
- Guadalupe
- Laramie
- Lemhi
- Lewis
- Lost River
- Medicine Bow
- Monashee
- Owyhee
- Purcell
- Sacramento
- Salmon River
- San Andres
- Sangre de Cristo
- Sawatch
- Shoshone
- Steens
- Stillwater
- Swan
- Tetons
- Unita
- Wallowa
- Wasatch
- Wind River
- Wyoming
- Zuni

The highest point in the Rockies is Mt. Elbert, located 10 miles southwest of Leadville, Colorado. It stands at 14,433 ft (4,399 meters).

“The Big Horn”
http://www.fs.usda.gov/wps/portal/fsinternet/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwtDDw9_AI8zPwhQoY6BdkOyoCAPkATlA!/?ss=110202&navtype=BROWSEBYSUBJECT&cid=FSE_003853&navid=091000000000000&pnavid=null&position=BROWSEBYSUBJECT&ttype=main&pname=Bighorn%20National%20Forest-%20Home

Located in north-central Wyoming, the Bighorn Mountains are a sister range of the Rocky Mountains.

“The Absoroka”
http://greater-yellowstone.com/Absaroka-Mountains.html

The Absaroka Mountain Range is a sub-range on the eastern side of the Rocky Mountains stretching for about 150 miles across the Montana-Wyoming border. A complex range, it takes significant effort to learn all the various groups, sections, and drainages. More specifically a member of the Central Rocky Mountain Chain stretching from Livingston (Montana) to a point east of Dubois Wyoming, it forms the core of the Yellowstone region of the Central Rockies. Some 165 miles in length and 75 miles wide at its widest. It is, depending on how one measures, the largest individual range in the 1200-mile-long Rocky Mountain Chain. The Continental Divide passes through the southwestern corner of the range but not near the crest. The range wraps around the eastern and northern boundary of Yellowstone National Park.

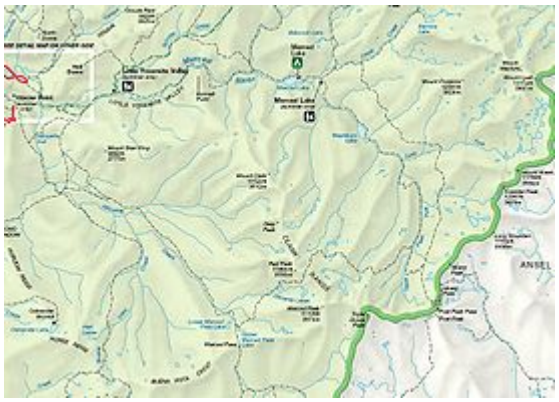
“The Winona”

I have not found any evidence that this is a name given to any landform by Lewis & Clark. There is a town in Minnesota called Winona.

“The Monas”

I have not found any evidence that this is a name given to any landform by Lewis & Clark.

“The Clarks”
http://en.wikipedia.org/wiki/Clark_Range_%28California%29



The Clark Range is a sub-range of California's Sierra Nevada in Yosemite National Park. Metamorphic rock composes most of the Clark Range, with the granite of Mount Clark's summit being the main exception.

“Great Falls”
http://www.greatfallsmt.net/about_gf/history.php

In the heart of Montana, the Big Sky Country, Great Falls is surrounded by spectacular natural wonders and scenery. It is nestled between rich, productive farm land only miles away from the majestic Rocky Mountains to its west and Little Belt Mountains to the east.

The city was settled around the mighty Missouri River, one of nature's most magnificent waterways. The Missouri River provides Great Falls with its name. As the Missouri cuts through the city it

drops over 500 feet in a series of rapids and five breathtaking waterfalls -- the great falls of the Missouri.

Great Falls is an exciting community of over 55,000 people with various recreational opportunities for citizens and visitors alike.
Known as "The Electric City", Great Falls has a long tradition of history which began with the famous expedition of Lewis and Clark in 1805. They explored the newly purchased Louisiana Territory filled with herds of buffalo roaming the prairies. The Great Falls area had long been inhabited by tribes of native American Indians, mainly the Blackfeet.

Lewis and Clark were the first known white explorers to catch sight of the "great falls" of the Missouri River…they heard the roaring of the falls more than seven miles away.

Their expedition took nearly a month to portage around the falls. Before the party left in mid July of 1805, they celebrated the Fourth of July in the new territory at White Bear Island.

The stage was set for the creation of Great Falls. It was ready for a man named Paris Gibson.

Gibson came west in May of 1882. He made plans for a city, then laid them out before James Hill, a man of great importance in the railroad industry. Hill gave his financial backing to Gibson, knowing that a city in such an area would make a valuable connection for the railroads.

Unlike many other western cities, Great Falls was planned by a practical and extremely thoughtful man. While organizing the town, Gibson made sure the streets were laid out in a precise, arrow- straight pattern, plus he set aside 886 acres for city parks. Gibson believed beauty was important in a city and personally made sure that elm, ash, and fir trees were planted on every street and boulevard.
Modern culture has grown out of the history of Great Falls, mainly in the life and works of western artist Charles M. Russell, the legendary cowboy who made Great Falls his home.

Great Falls invites you to experience the best of both worlds: city excitement or mountain solitude. In Montana, one has the freedom to enjoy it all. Return to what America was years ago, fresh and innocent, while steeped in perpetual discovery.

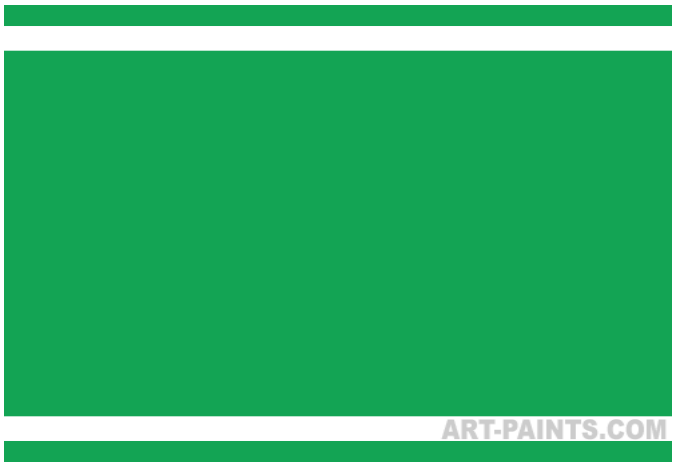
“Burnt Umber”
http://www.realcolorwheel.com/rcwbtumber.htm

Burnt Umber is a natural pigment, opaque in it's mass state and translucent as an under-tone. Burnt Umber is in fact a dark Yellow hue. Mix Burnt Umber with it's opposite color Ultramarine Blue and make a true dark neutral color that will tint to shades of neutral gray and black.

“Alizarin Green”

The pronunciation of Alizarin can be found here:
http://www.gstatic.com/dictionary/static/sounds/de/0/alizarin.mp3

The most information I could find, beside pronunciation, is a paint sample:



“Ponderosa Pines”
http://www.conifers.org/pi/pin/ponderosa.htm

Common names
Ponderosa pine, yellow pine, pino real, pinabete; western yellow, bull, black Jack, western red, western pitch, big, heavy, Sierra brownbark, western longleaf or ponderosa white pine; pin à bois lourd.

Taxonomic notes
Discovered by David Douglas in 1826 near what is now Spokane, Washington and described by Lawson in 1836.

Remarks
This is the most widely distributed and common pine in North America. Quail, squirrels and many other kinds of wildlife consume the seeds, and nutcrackers and chipmunks cache them, thereby helping to bring forth new pines. Although it is currently the most abundant pine in the west, Ponderosa may have been virtually absent from the west during the glacial and pluvial climates that characterized most of the Pleistocene epoch. In these periods, which account for 80 to 90 percent of the last two million years, ponderosa has only been found to occur along the Mogollon Rim in central Arizona. However, the morphological and genetic diversity of the species suggests that other Pleistocene refugia are likely to have occurred in California and probably elsewhere. Ponderosa pine (Pinus ponderosa) is the state tree of Montana.

“Cerulean Blue”
http://www.webexhibits.org/pigments/indiv/overview/ceruleanblue.html

Cerulean, also spelled caerulean, may be applied to a range of colors from bright blue or azure color through greenish blue colors.

The first recorded use of cerulean as a color name in English was in 1590. The word is probably derived from the Latin word caeruleus, "dark blue, blue or blue-green", which in turn probably derives from caelulum, diminutive of caelum, "heaven, sky".

“The Missouri”
http://en.wikipedia.org/wiki/Missouri_River

Wikipedia actually has a nicely detailed and well-cited article on the Missouri River. Snippets of the article are below.

The Missouri River is a major river of central North America, and is a tributary of the Mississippi River. It is the longest river on the continent at over 2,341 miles (3,767 km) and the second largest tributary of the Mississippi by discharge, after the Ohio River. The watershed of the Missouri River drains nearly 530,000 square miles (1,400,000 km^2) of the eastern Rocky Mountains and the Great Plains, spanning parts of ten U.S. states and two Canadian provinces. Approximately 10 million people live in the drainage area, many concentrated in urban centers along the main stem such as St. Louis, Missouri; Kansas City, Missouri; Omaha, Nebraska; and Great Falls, Montana. Measured from its hydrologic source in the Centennial Mountains of southern Montana to the Mississippi's mouth at the Gulf of Mexico, it forms part of the fourth-longest river system in the world.

As early as 12,000 years ago, Paleo-Indians settled in the plains of the Missouri River basin. Prominent Native American tribes that lived on the river prior to the arrival of Europeans included the Mandan, Sioux, Hidatsa, Osage, and Missouria – the latter for whom the river is named. French, Spanish and American explorers wandered the region in the 18th and 19th centuries, during the time that the Missouri basin became part of France's Louisiana territory. When France ceded Louisiana to the United States, the Lewis and Clark Expedition traveled the river in search of a water route to the Pacific coast of North America. Settlers' expansion into the Great Plains pushed most of the Native Americans out of their traditional lands, leading to multiple wars. The Missouri River served as an unofficial boundary for the American frontier in the 19th century, and many prominent pioneer trails such as the Oregon Trail had their starting points on the river.

Although it once was by far the longest river of North America, today its length is comparable with the Mississippi River because of channelization of its waters to eliminate meanders and facilitate boat travel. The lower Missouri valley has become a highly productive agricultural and industrial region. Barges shipping gravel, wheat, fertilizer, and other grown, mined or manufactured products provide much of the commerce on the river today. In response to the growing amount of water traffic, federal and state agencies including the U.S. Army Corps of Engineers (USACE) heavily dammed and channelized the river in the 20th century. Although this development has contributed to the economic growth of the region, it has taken a toll on the ecology and the water quality of the Missouri.

Geology

The Rocky Mountains of southwestern Montana at the headwaters of the Missouri River first rose in the Laramide Orogeny, a mountain-building episode that occurred from around 70 to 45 million years ago (the end of the Mesozoic through the early Cenozoic). This orogeny uplifted Cretaceous rocks along the western side of the Western Interior Seaway, a vast shallow sea that stretched from the Arctic Ocean to the Gulf of Mexico, and deposited the sediments that now underlie much of the drainage basin of the Missouri River. This Laramide uplift caused the sea to retreat and laid the framework for a vast drainage system of rivers flowing from the Rocky and Appalachian Mountains, the predecessor of the modern-day Mississippi watershed. The Laramide Orogeny is essential to modern Missouri River hydrology, as snow and ice melt from the Rockies provide the majority of the flow of the Missouri and its tributaries.

The Missouri and many of its tributaries cross the Great Plains, flowing over or cutting into the Ogallala Group and older mid-Cenozoic sedimentary rocks. The lowest major Cenozoic unit, the White River Formation, was deposited between approximately 35 and 29 million years ago and consists of claystone, sandstone, limestone, and conglomerate. Channel sandstones and finer-grained overbank deposits of the fluvial Arikaree Group were deposited between 29 and 19 Million years ago. The Miocene-age Ogallala and the slightly younger Pliocene-age Broadwater Formation deposited atop the Arikaree Group, and are formed from material eroded off of the Rocky Mountains during a time of increased generation of topographic relief; these formations stretch from the Rocky Mountains nearly to the Iowa border and give the Great Plains much of their gentle but persistent eastward tilt, and also constitute a major aquifer.

Immediately prior to the Quaternary Ice Age, the Missouri River was likely split into three segments: an upper portion that drained northwards into Hudson Bay, and middle and lower sections that flowed eastward down the regional slope. As the Earth plunged into the Ice Age, a pre-Illinoian (or possibly the Illinoian) glaciation diverted the Missouri River southeastwards towards its present confluence with the Mississippi and caused it to integrate into a single river system that cuts across the regional slope.

Nicknamed the “Big Muddy”, the Missouri certainly lives up to this name, carrying 20,000,000 to 25,000,000 short tons (18,000,000 to 23,000,000 t) of sediment per year. Before the construction of dams and levees, this load was 13-16 times higher, averaging 320,000,000 short tons (290,000,000 t) per year. Much of this sediment is derived from the river’s floodplain, also called the meander belt; every time the river changed course, it would erode tons of soil and rocks from its banks. However, channeling and diking the river has kept it from reaching its natural sediment sources along most of its course. Also, the creation of giant reservoirs has trapped millions of tons of sediment since the 1950s. Despite this, the river still

transports more than half the total silt that empties into the Gulf of Mexico; the Mississippi River Delta, formed by sediment deposits at the mouth of the Mississippi, constitutes a majority of sediments carried by the Missouri.

Lewis and Clark

On October 27, 1795, the United States and Spain signed Pinckney's Treaty, giving American merchants the "right of deposit" in New Orleans, meaning they could use the port to store goods for export. The treaty also recognized American rights to navigate the entire Mississippi River. In 1798, Spain revoked the treaty and on October 1, 1800, the Spanish secretly returned Louisiana to the French under Napoleon in the Third Treaty of San Ildefonso. The transfer was so secret that the Spanish continued to administer the territory. In 1801, they restored the United States rights to use the river and New Orleans.

President Thomas Jefferson, fearing the cutoffs could occur again, sought to negotiate with France to buy New Orleans for $10 million. Napoleon countered with an offer of $15 million for all of the Louisiana Territory including the Missouri River. The deal was signed on May 2, 1803. On June 20, 1803, Thomas Jefferson instructed Meriwether Lewis to explore the Missouri and look for a water route to the Pacific. Although the deal was signed, Spain still balked at an American takeover, citing that France had never formally taken over the Louisiana Territory. Spain was to formally tell Lewis not to take the journey and expressly forbade Lewis from seeing the McKay and Evans map which was the most detailed and accurate of its time. Lewis gained access to it surreptitiously. To avoid jurisdictional issues with Spain they wintered in 1803–1804 at Camp Dubois on the Illinois (United States) side of the Mississippi.

Meriwether Lewis and William Clark began their expedition on May 18, 1804, traveling up the Missouri River with a party of thirty-three people in three boats. They spent the following winter on the river in North Dakota and followed the Missouri all the way to its headwaters, upon where they crossed the Rocky Mountains and traveled to the Pacific Ocean. Their travels produced some of the first accurate maps of the northwestern United States and the Pacific Northwest, providing a foundation for future explorers and emigrants. They also negotiated relations with multiple Native American tribes and wrote extensive reports on the climate, ecology and geology of the region. Many present-day geographic names in the region originated from their expedition.

Scene 1 p.3
“The Nogahydes”

Correct spelling is Naugahyde It is a brand name of a type of artificial leather.

“The Bitteroots”
http://www.bozemannet.com/getting_here/bitterroot_mountains.php
http://www.nationalgeographic.com/lewisandclark/journey_leg_12.html

The Bitterroot Mountains are part of the Rocky Mountains and can be found along the westernmost edge of Montana and in the panhandle of Idaho. The entire mountains range encompasses nearly 5,000 square miles.

The mountains are bordered on the north by Lolo Creek, on the south by the Salmon River, on the east by the Bitterroot River and Valley, and on the west by the Selway and Lochsa Rivers.

Lewis & Clark – Deadly Crossing: The Bitterroots
August 25-October 07, 1805

Snow began to fall as the expedition set off for the Continental Divide. Game was scarce in the Rockies, and food supplies ran low. But finally the expedition reached the divide and passed over the other side, down into the Bitterroot Valley.

There the Americans met a band of Flathead Indians and bought more horses for the journey across the Bitterroot Mountains. Crossing this range of the Rockies fully tested the expedition's endurance.

After 11 days in the Bitterroots, the horses were near starvation, the men—who resorted to eating three of the colts—not much better. Emerging from the mountains, they made contact with the Nez Perce and procured from them dried fish and roots.

The captains then set up camp on the banks of the Clearwater River, a branch of the Snake River, itself a branch of the mighty Columbia. There they hollowed five dugouts. The Rockies were behind them, the Pacific in front.

On October 7 they broke camp and started down the Clearwater. At last the expedition had a river's current at its back.

Scene 1 p.5
"Niobrara"
http://www.nps.gov/niob/historyculture/people.htm

Before the Europeans
The earliest signs of human presence along the Niobrara are found 150 miles upstream of the scenic river. The Hudson-Meng Bison Kill Site contains the disjointed bones of over 600 extinct Bison Antiquus and a number of Alberta type spearpoints from a period 9000 to 9800 years ago. These points are characteristic of the Alberta Culture of the Paleo-Indian period.

During the Archaic period (2000 to 8000 years ago), American Indians used numerous sites in the Niobrara valley where they relied on a variety of small game and plant materials. The people of the Plains Woodland period (1000 to 2000 years ago) added the manufacture and use of pottery to their lifestyle. Through the Plains Village, Central Plains Tradition, and Coalescent Tradition periods (250 to 2500 years ago), these people began building semi-permanent earthlodges and supplementing their gathering with agriculture.

Contemporary Plains Tribes
From about 1750 to the present, numerous tribes used or occupied the Niobrara valley. The nomadic Lakota and Pawnee both hunted bison and other game in the area. The Plains Comanche were also present at this time. The Ponca built their earthlodges near the mouth of the Niobrara after separating from the Omaha in the early 1700s. Here they raised corn and launched hunting expeditions for big game. After settling differences with the Comanche in the mid-1700s, they continued to skirmish with the Lakota for another century. The Fort Laramie Treaty of 1851 divided the sandhills and Niobrara valley between the Lakota and Pawnee. In 1857, the Pawnee ceded 14 million acres for $200,000 in annuities. Fort Niobrara was established in 1880 as part of the series of forts to monitor the Lakota to the north in the Great Sioux Reservation.

Today, the Ponca are split into northern and southern tribes after a controversial 1878 relocation. Members of the northern tribe are scattered throughout the country with tribal offices in Niobrara, Nebraska. The Pawnee were also relocated to Oklahoma. Many members of the various Lakota tribes still occupy remnants of the 1868 reservation; others try to maintain traditional ties and customs while living in mainstream society.

Early explorers
James MacKay, a fur trader working for a Spanish company, visited the region in 1795 and 1796. He later described the sandhills as a "Grand Desert of moving sand where there are neither wood, nor soil, nor stone, nor water, nor animals, except some little tortoises of various colors."

Various army expeditions in the 1850s and 1860s explored possible wagon and rail routes, although no wagon trail was ever developed.

Homesteaders and ranchers

Cattlemen from south of the sandhills were the first Euro-Americans to spend any great length of time in the sandhills and to extensively exploit the central Niobrara River area.

In the 1870s, using Texas cattle, Mexican cattle-raising methods, and the free grass of the plains, a small number of men profited from the open range of the sandhills and the Niobrara River valley. They found a ready market at the military forts where the army purchased cattle to supply the Indian reservations.

The deep ravines and canyons along the Niobrara River provided ideal places to hide stolen cattle, and cattlemen's associations and vigilante groups were formed to curb the rustling.

Federal and local regulations began to restrict the free range, but it took the farmer to settle the sandhills, change ranching, and convert a frontier to a state. While the eastern third of the state was populated in the 1850s, it would be another thirty years before the central Niobrara Valley was settled.

Cherry County's first homesteader, Charles Sears, staked his claim ten miles east of Valentine and received his patent in 1886. Niels Nielsen, a Danish immigrant, estimated that a sod house cost about $50 to build, and a wood-frame house cost $250 to build in 1889. $272 in materials would build the two miles of barbed-wire fence to enclose a 160 acre quarter-section homestead. Promoters and developers made dubious claims regarding the productivity of the land and amount of rainfall, leading to a high failure rate among homesteaders who tried their hand at dry-land farming.

The 20th Century

One animal unit (cow and unweaned calf) requires from 10 to 30 acres of grazing in this rangeland, so a traditional 160 acre homestead could only support from 5 to 16 head of breeding stock – not a profitable number. In 1904, President Theodore Roosevelt signed the Kincaid Act, increasing the size of a western Nebraska homestead to 640 acres, a full square mile section. This acreage proved more practical for the type of prairie range present in the area, and made ranching a more attractive prospect than attempting to grow crops.

Between 1900 and 1935, the average sandhills ranch had doubled in size from 640 to 1280 acres. However, as ranches increased in size to over 4000 acres by the end of the 1900s, population steadily declined, with 1990 census counts lower than

those of 1890. In some respects, the area is returning to its frontier phase as sparsely populated rangeland.

"The White River"
http://www.fs.usda.gov/wps/portal/fsinternet/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwtDDw9_AI8zPwhQoY6BdkOyoCAPkATlA!/?ss=110215&navtype=BROWSEBYSUBJECT&cid=FSE_003853&navid=091000000000000&pnavid=null&position=BROWSEBYSUBJECT&ttype=main&pname=White%20River%20National%20Forest-%20Home

Nestled in the heart of the Rocky Mountains, the 2.3 million acre White River National Forest is the top recreation Forest in the nation. Home to world-renowned ski resorts and the birthplace of Wilderness, the White River has something to offer every outdoor enthusiast.

"The Cheyenne"

A tributary of the Missouri River; it runs through Wyoming and South Dakota.

"The Grand, the Heart, the Knife, the Powder, the Milk, the Clark-"

As far as I have found, these are made up.

"Mandan Village"
http://www.nationalgeographic.com/lewisandclark/journey_leg_5.html
http://www.pbs.org/lewisandclark/native/man.html

Winter Among the Mandan
December 21, 1804-April 06, 1805

The expedition members kept busy during the Fort Mandan winter, repairing equipment, trading with the Indians, and hunting for buffalo. Lewis and Clark learned much about the country to the west from the Mandan and their neighbors the Hidatsa.

Here, they hired as an interpreter Toussaint Charbonneau, a French-Canadian fur trapper living among the Hidatsa. Charbonneau, his Shoshone wife, Sacagawea, and their baby son, Jean Baptiste, would travel with the expedition when it left Fort Mandan.

Then the spring rains came. The ice on the Missouri—in the winter a solid block across which herds of buffalo trotted without danger—finally began to break up. It was time to move on.

Lewis and Clark had spent much of the winter writing a report about what they had seen so far. They dispatched it and about a dozen expedition members—plus 108 botanical specimens, 68 mineral specimens, and Clark's map of the United States—aboard the keelboat, which was bound for St. Louis and, eventually, President Jefferson.

Six dugout canoes and the two larger pirogues were loaded with supplies and equipment. The expedition was about to take a step into territory no American had ever entered.

Mandan Indians

With their Hidatsa friends and neighbors, the Mandan Indians lay at the center of trade along the Upper Missouri River, inhabiting what is now central North Dakota. At the time of Lewis and Clark's arrival, they lived in two villages, Matootonha and Rooptahee*. Matootonha was located on the western bank of the Missouri, while Rooptahee was directly north, on the river's eastern bank. The Corps of Discovery reached the Mandan villages in the fall of 1804 and stayed the winter in Fort Mandan, across the river from Matootonha.

In Mandan culture, the village was the focus of political, economic and ceremonial activity. It represented a collective of households, all striving together to better each family, clan and the village itself. A sacred cedar post stood at the center of the Mandan village, symbolizing the tribe's primary cultural hero. The post was surrounded by an open plaza, and at the north end of the plaza was the village's primary medicine lodge. Forty or fifty additional lodges populated the plaza. The more powerful a family was, or the more significant that family's ceremonial duties were, the closer its lodge would be to the center. On average, 10 people lived in each lodge. Throughout most of the year, the Mandans lived in these permanent lodges. But in the winter, to avoid brutal storms, they constructed temporary lodges in wooded, low-lying areas adjacent to the river.

In fields that surrounded the villages, the Mandans grew their harvests. Crops included corn, beans, squash and tobacco. When the fall came, a diversity of Indian tribes and Europeans descended on the Mandan villages, bringing a rich and varied assortment of goods. At the high point of trade, Crees, Cheyennes, Assiniboins, Crows and even enemy Teton Sioux could be counted among the attending delegations. Everything from meat products to horses to musical instruments was exchanged for Mandan corn.

When the Corps of Discovery entered their world in October 1804, the Mandans seemed receptive to the goals of the expedition. Lewis and Clark's hope for a Mandan peace with the Arikaras and plan to reside nearby for the winter months were accepted and agreed to by the Mandan leaders. Still, in spite of peace talks between the Arikaras and the Mandans that were orchestrated by the expedition, conflict broke out again between the two tribes as winter approached.

In contrast, relations between the Mandans and the Corps were friendly throughout the duration of the expedition's stay. The Mandans supplied the Americans with food throughout the winter at their newly constructed home, Fort Mandan, in exchange for a steady stream of trade goods. When food became scarce, members of the Corps accompanied the Mandans on a buffalo hunt. Sheheke and Black Cat, chiefs from Matootonha and Roohaptee, met often with Lewis and Clark, and the Corps participated in a host of Mandan ceremonial rituals. As other tribes unfamiliar with black people had been before, the Mandans were mesmerized by the color of York's skin, and attributed great spiritual power to him because of it.

Finally, when spring came, the Mandans bid the expedition farewell as the Americans continued on their way.

*Mispronounced by Lewis and Clark, these villages now are known respectively as Mitutanka and Nuptadi.

Scene 1 p.8-9
"If we let your left foot be the Missouri, Captain, the Niobrara can feed in at your heel; the White at your ankle—followed by the Cheyenne, the Moreau, and then the Grand, the Heart, the Clark, the Knife, the Clark—"
"You said the Clark twice."
"The Milk, the Powder, the Marias, the Yellowstone, the Madison, the Clark—"

The Moreau is a tributary of the Missouri, located in South Dakota.

The Marias is a tributary of the Missouri, located in Montana.

The Madison is a tributary of the Missouri, located in Wyoming and Montana.

Yellowstone:
http://www.nps.gov/yell/historyculture/index.htm

The human history of the Yellowstone region goes back more than 11,000 years. From about 11,000 years ago to the very recent past, many groups of Native Americans used the park as their homes, hunting grounds, and transportation routes. These traditional uses of Yellowstone lands continued until a little over 200

years ago when the first people of European descent found their way into the park. In 1872 a country that had not yet seen its first centennial established Yellowstone as the first national park in the world. A new concept was born and with it a new way for people to preserve and protect the best of what they had for the benefit and enjoyment of future generations.

Scene 1 p.9
“Voyage of Discovery”

A popular term for Lewis & Clark’s expedition.

Scene 2 p.13
“fumerals”

Steam vents, especially common on volcanoes.

Scene 2 p.16
“igneous/metamorphic”
http://www.fi.edu/fellows/fellow1/oct98/create/igneous.htm
http://www.fi.edu/fellows/fellow1/oct98/create/metamorph.htm

Igneous rocks are called fire rocks and are formed either underground or above ground. Underground, they are formed when the melted rock, called magma, deep within the earth becomes trapped in small pockets. As these pockets of magma cool slowly underground, the magma becomes igneous rocks.

Igneous rocks are also formed when volcanoes erupt, causing the magma to rise above the earth's surface. When magma appears above the earth, it is called lava. Igneous rocks are formed as the lava cools above ground.

Metamorphic rocks are rocks that have "morphed" into another kind of rock. These rocks were once igneous or sedimentary rocks. How do sedimentary and igneous rocks change? The rocks are under tons and tons of pressure, which fosters heat build up, and this causes them to change. If you exam metamorphic rock samples closely, you'll discover how flattened some of the grains in the rock are.

Scene 3 p.18
"National Parks"
http://www.nps.gov/aboutus/index.htm

Since 1916, the American people have entrusted the National Park Service with the care of their national parks. With the help of volunteers and park partners, we are proud to safeguard these nearly 400 places and to share their stories with more than 275 million visitors every year. But our work doesn't stop there.

We are proud that tribes, local governments, nonprofit organizations, businesses, and individual citizens ask for our help in revitalizing their communities, preserving local history, celebrating local heritage, and creating close to home opportunities for kids and families to get outside, be active, and have fun.

Taking care of the national parks and helping Americans take care of their communities is a job we love, and we need – and welcome – your help and support.

What We Do
National Park Service by the Numbers*

$48,000,000,000 incentivized in private historic preservation investment
11,700,000,000 visitors
$5,409,252,508 in preservation and outdoor recreation grants awarded
$2,750,000,000 annual budget
121,603,193 objects in museum collections
97,417,260 volunteer hours
84,000,000 acres of land
4,502,644 acres of oceans, lakes, reservoirs
2,482,104 volunteers
218,000 jobs supported in gateway communities
85,049 miles of perennial rivers and streams
68,561 archeological sites
43,162 miles of shoreline
28,000 employees
27,000 historic structures
2,461 national historic landmarks
582 national natural landmarks
400 endangered species
393 national parks
40 national heritage areas
1 mission: The National Park Service cares for special places saved by the American people so that all may experience our heritage.

*numbers are cumulative through the end of FY 2008

The National Park Service is a bureau of the U.S. Department of the Interior and is led by a Director nominated by the President and confirmed by the U.S. Senate.

The Director is supported by senior executives who manage national programs, policy, and budget in the Washington, DC, headquarters and seven regional directors responsible for national park management and program implementation. Collectively, these executives make up our National Leadership Council.

And, I kid you not, Ken Burns has a documentary on our National Parks:
http://www.pbs.org/nationalparks/

Scene 3 p.22
"lava dome"
http://www.britannica.com/EBchecked/topic/632037/volcanic-dome

volcanic dome, also called Lava Dome, any steep-sided mound that is formed when lava reaching the Earth's surface is so viscous that it cannot flow away readily and accumulates around the vent. Sometimes domes are produced by repeated outpourings of short flows from a summit vent, and, occasionally, extremely viscous lava is pushed up from the vent like a short protrusion of toothpaste from a slightly squeezed tube. More commonly, however, the initial small extruded mass is gradually expanded by new lava being forced up into its interior. Fractures forming in the solidified shell of the expanding dome may allow small flows to escape onto its flanks or around its base, but, for the most part, the growth is simply a slow swelling. As the dome grows, the expanding crust breaks up, and pieces of it roll down to form a heap of angular rock fragments (breccia) around its base. Continued crumbling of the shell of the dome may result in a heap of debris that nearly buries the solid portion of the dome.

Volcanic domes may develop in the summit craters of volcanoes or completely away from any crater. They may attain heights of several hundred metres and measure thousands of metres across. One of the largest known volcanic domes is that constituting the upper part of Lassen Peak in northern California. The Lassen dome rises more than 600 m (2,000 feet) and has a diameter of approximately 3.2 km (2 miles). The Chaos Crags, located just north of Lassen Peak, constitute a row of spectacular domes.

Scene 3 p.22
“spigot virus”

spigot virus is apparently a computer virus, but it is not a real human virus.

Scene 3 p.25
“pyroclastic flow”
http://www.geo.mtu.edu/volcanoes/hazards/primer/pyro.html

Pyroclastic flows are fluidized masses of rock fragments and gases that move rapidly in response to gravity. Pyroclastic flows can form in several different ways. They can form when an eruption column collapses, or as the result of gravitational collapse or explosion on a lava dome or lava flow (Francis, 1993 and Scott, 1989). These flows are more dense than pyroclastic surges and can contain as much as 80 % unconsolidated material. The flow is fluidized because it contains water and gas from the eruption, water vapor from melted snow and ice, and air from the flow overriding air as it moves downslope (Scott, 1989). The image on the right shows the formation of pyroclastic flows during a 1980 eruption of Mount St. Helens (photo courtesy of J.M. Vallance).

Ignimbrites and nuees ardentes are two types of pyroclastic flows. An ignimbite contains mostly vesiculated material whereas a nuee ardente contains denser material (Francis, 1993). Nuee ardente means glowing cloud and was named for the pyroclastic flows seen at Mount Pelee. These flows were often accompanied by a cloud of ash elutriated from the flow. When the incadescent ash particles are observed at night, the flow looks like a glowing cloud moving away from the volcano.

Pyroclastic flows can move very fast. Small pyroclastic flows can move as fast as 10 to 30 m/s while larger flows can move at rates of 200 m/s (Bryant, 1991). Nuees ardentes have been known to extend 50 kilometers from their source and Ignimbrites, because of the lighter weight material that they carry, can extend 200 km from their source (Bryant, 1991 and Scott, 1989). At Mount Pinatubo in the Philipines, pyroclastic flow deposits were 220 m thick in some valleys but averaged 30 to 50 m thick in others (Wolfe, 1992). Pyroclastic flows have been known to top ridges 1000 m high (Bryant, 1991). The image on the left shows a pyroclastic flow descending Fuego Volcano in Guatemala (photo by W.C. Buell IV, 1974).

Pyroclastic flows can be very hot. In fact, pyroclastic flows from Mount Pelee had temperatures as high as 1075 degrees C (Bryant, 1991)! Some Pyroclastic flows from Pinatubo had temperatures of 750 degrees C and pyroclastic flows from Mount St. Helens had temperatures of 350 degrees C (Bryant, 1991). Such high

temperature flows can burn manmade structures, vegetation, and, for those unlikely enough to be caught by then, human skin.

Pyroclastic flows and lahars are the greatest volcanic hazards. More people have died due to these hazards than any other volcanic hazard (Chester, 1993). Pyroclastic flows can incinerate, burn, and asphyxiate people. Gases within a pyroclastic flow can explode and cause ash to rain down on nearby areas. Pyroclastic flows travel long distances so their threat is far reaching. What is worse is they also can transform into lahars which travel even farther distances from the volcano and can produce even greater hazards.

Scientists recognize the hazards of pyroclastic flows, and so there is currently a lot of research going on in this area. Important research with regard to hazards prevention is the study of past pyroclastic flow deposits. Areas that have old pyroclastic flow deposits are likely to receive new pyroclastic flow deposits if the volcano erupts again. People living near the summit of an active volcano, especially those in valley areas, are most likely to be in danger from a pyroclastic flow. The best course of action for these people to take when a volcano erupts is to evacuate valley areas and head for higher ground away from the volcano. Of course, if the volcano gives ample warning that it is going to erupt, then the best thing to do is evacuate the area and get as far away from the volcano as possible.

Scene 4 p.26
"The Marco Polo Motel"
http://www.silk-road.com/artl/marcopolo.shtml

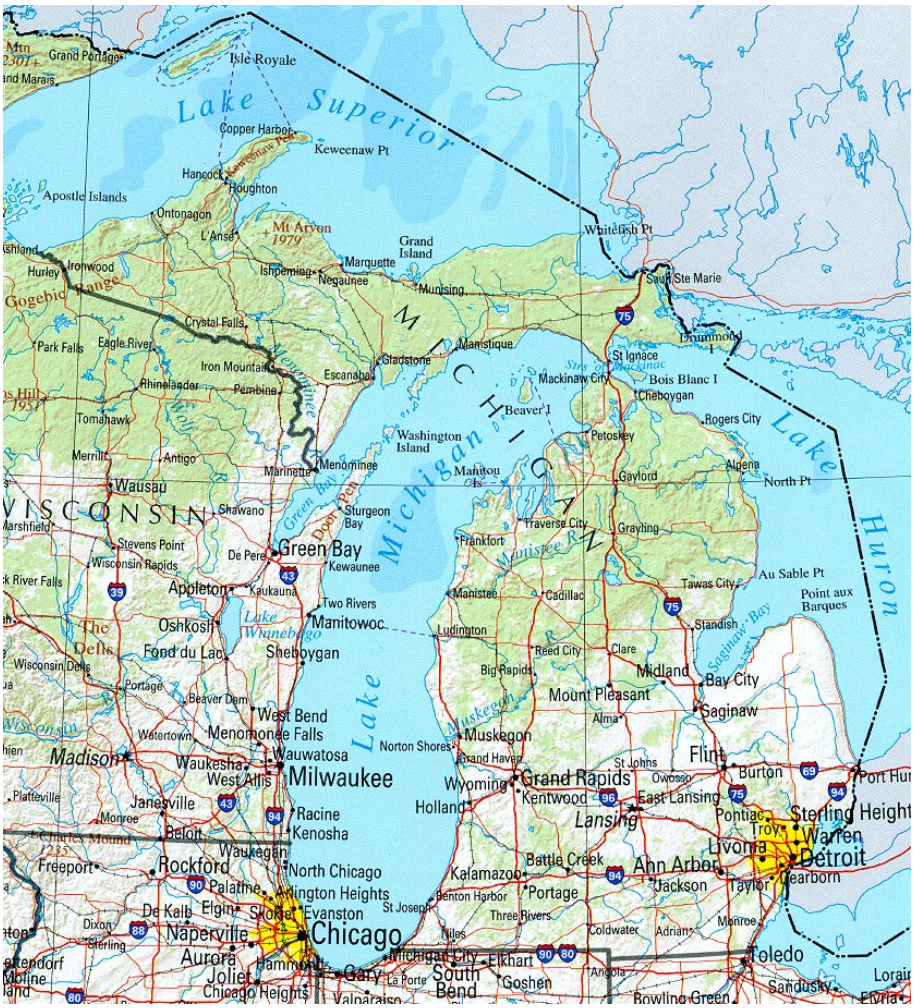
Marco Polo (1254-1324), is probably the most famous Westerner traveled on the Silk Road. He excelled all the other travelers in his determination, his writing, and his influence. His journey through Asia lasted 24 years. He reached further than any of his predecessors, beyond Mongolia to China. He became a confidant of Kublai Khan (1214-1294). He traveled the whole of China and returned to tell the tale, which became the greatest travelogue.

Scene 4 p.27
"Clarksville"

There are many Clarksvilles in the U.S. In fact, Lewis & Clark met in Clarksville, in the Indiana territory, to begin preparing for their expedition.

Scene 6
“Sterling Heights”
“Livonia”
“Ann Arbor”
“Kalamazoo”
“Allen Park”
“Warren”

These are all actual towns in Michigan, most of them near or around Detroit.



Scene 7 p.53
Rising Oceans
http://en.wikipedia.org/wiki/Sea_level#Changes_through_geologic_time
http://en.wikipedia.org/wiki/Current_sea_level_rise

Again, though it pains me to say it, Wikipedia has some nice detail about this topic, with good graphs for illustration. Follow the links to see those graphs.

Sea level has changed over geologic time. As the graph shows, sea level today is very near the lowest level ever attained (the lowest level occurred at the Permian-Triassic boundary about 250 million years ago).

During the most recent ice age (at its maximum about 20,000 years ago) the world's sea level was about 130 m lower than today, due to the large amount of sea water that had evaporated and been deposited as snow and ice, mostly in the Laurentide ice sheet. The majority of this had melted by about 10,000 years ago.

Hundreds of similar glacial cycles have occurred throughout the Earth's history. Geologists who study the positions of coastal sediment deposits through time have noted dozens of similar basinward shifts of shorelines associated with a later recovery. This results in sedimentary cycles which in some cases can be correlated around the world with great confidence. This relatively new branch of geological science linking eustatic sea level to sedimentary deposits is called sequence stratigraphy.

The most up-to-date chronology of sea level change during the Phanerozoic shows the following long term trends:

- Gradually rising sea level through the Cambrian
- Relatively stable sea level in the Ordovician, with a large drop associated with the end-Ordovician glaciation
- Relative stability at the lower level during the Silurian
- A gradual fall through the Devonian, continuing through the Mississippian to long-term low at the Mississippian/Pennsylvanian boundary
- A gradual rise until the start of the Permian, followed by a gentle decrease lasting until the Mesozoic.

For at least the last 100 years, sea level has been rising at an average rate of about 1.8 mm per year. The majority of this rise can be attributed to the increase in temperature of the sea and the resulting thermal expansion of sea water. Additional contributions come from water sources on land such as melting snow and glaciers (see global warming).

Scene 7 p.56
“Alders”
http://www.merriam-webster.com/dictionary/alders

Any of a genus (Alnus) of toothed-leaved trees or shrubs of the birch family that have catkins which become woody, that typically grow in cool moist ground, and that have wood used especially in turnery; also: its wood

Scene 7 p.56
“Burlington North”

Burlington North Sante Fe is a railway company.

Scene 7 p.56
“Cardinal”
http://animals.nationalgeographic.com/animals/birds/cardinal/

The northern cardinal is so well loved that it has been named the official bird of no fewer than seven U.S. states. Bright red cardinals are easily identified by even casual bird watchers, and are often seen frequenting backyards and bird feeders. When foraging elsewhere the birds eat insects, seeds, grain, fruit, and sap. Cardinals, also called "redbirds," do not migrate and have traditionally been more common in warmer climes such as the U.S. southeast. However, in recent decades they have expanded their common range north through the United States and even into Canada. This population growth may be due to an increase in winter birdfeeders and to the bird's ability to adapt to parks and suburban human habitats.

Only males sport the brilliant red plumage for which their species is known. The color is a key to mating success—the brighter the better. Females are an attractive tan/gray.

Cardinals are active songbirds and sing a variety of different melodies.

Males can be aggressive when defending their territory, and they frequently attack other males who intrude. This tendency sometimes leads cardinals to fly into glass windows, when they charge an "intruding bird" that is really their own reflection.

Cardinals are fairly social and join in flocks that may even include birds of other species. During mating season, however, groups dissolve into pairs. Male birds feed their monogamous partners as they incubate clutches of eggs—typically three per season.

Scene 7 p.56
“Titmouse (Tufted)”

The Tufted Titmouse is commonly found over most of eastern North America and parts of southern Canada, especially where deciduous and mixed woodland is

found. It is the largest of the Tits found in the western hemisphere, and is a popular and regular visitor to backyard feeders. Its call, a loud "Peter-Peter-Peter," is one of the earliest of the spring calls heard ringing through eastern woodlands as the winter days begin to get longer. The closely related Black-crested Titmouse is mostly restricted to the tree and shrub savanna and shrub step regions of Texas and eastern Mexico (Root 1988).

The Tufted Titmouse is grayish above and whitish below. Adult males and females are similar in appearance. Summer foods consist of insects, snails and spiders, shifting to fruits, seeds and nuts in the fall and winter. Titmice often establish food caches in their territory consisting of seeds stored under bark and in the ground.

The distribution and abundance of the Tufted Titmouse coincides with that of the Carolina Chickadee, except in the northern parts of its range where it overlaps with the Black-capped Chickadee.