

Lewis & Clark Discovery Trunk

FIELD GUIDE & INTERPRETIVE NOTES

These selected documents were provided to the Rockbridge Historical Society by John Fisher (retired educator, historian, scientist, craftsman) who built the replica expedition trunk – granted to RHS by the Lewis and Clark National Trust in 2013 – and stocked it with specimens, tools, trade goods, foods, etc.

Numbered in this pdf are various lists, catalogues, and cues linking items to the journals and encounters on the expedition itself. More specific pages are available in the full binder at RHS headquarters, prepared by Fisher, including rich sections on Geology, Botany, Indian Cultures. *[Note: the binder does not contain dedicated sections centered on weaponry, transportation, climate].*

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THIS REPRODUCTION of a trunk carried by the Lewis and Clark explorers features all types of instruments, medicine and specimens that would have been found in the original trunks. The "Discovery Trunk" can be seen at the Rockbridge Historical Society's booth at this Saturday's Rockbridge Community Festival.

RHS Receives 'Discovery Trunk'

Trunk Includes Items That Would Have Been Carried By Lewis And Clark

Last fall, the Rockbridge Historical Society partnered with other local and regional organizations to formally join Rockbridge County to the Lewis and Clark National Historic Trail. In recognition of its leadership, RHS was recently selected by the Lewis and Clark Trust as one of only a dozen national organizations to receive a historically authentic "Discovery Trunk."

The 3-by-2-foot trunk is modeled after those carried

by the Corps of Discovery during their landmark expeditions to the Pacific, and then back through Virginia to report to Jefferson at Monticello and Washington, D.C.

Handcrafted by John Fisher, a historian, scientist and educator based in Idaho, the chest faithfully reproduces to original specifications of the cedar trunk with leather and brass strappings. Fisher has also filled it to the brim with period tools, instruments, medicines, and gifts exchanged with native tribes. It is also stocked with the kinds of flora, fauna and mineral specimens carried home by Lewis and Clark, all annotated with extensive interpretive notes and educational

exercises for hands-on discovery.

Support from a group of RHS donors has helped to add the trunk and its treasures to its permanent collections, enabling visitors to see it at Campbell House. No less valuable, this portable, interactive resource will allow these "tools of memory" to be carried into local schools and to other Society events and programs, said Eric Wilson, executive director.

The RHS will "launch" the trunk at its booth at Saturday's Rockbridge Community Festival, in front of Grand Home Furnishings.

I have used these kinds of articles in the following ways during 30+ years of teaching:

1. "Show and Tell" in classrooms with elementary students and presentations to schools and public groups.
2. Students must identify the article and tell how it (was used on the expedition).
3. I lay the articles out around the room with (4X6) cards that explain the object. The students write the information down as notes.
4. I lay the articles out around the room with (4X6) cards with questions as in a "lab" or test. The questions must be answered on site (perhaps as a group project) or researched as homework.
5. A combination of #3 and #4 above.

Note:

6. I avoid simple yes or no answers, and try to ask higher order questions that require thoughtful analysis or research.
7. I try to vary the difficulty of questions as in an "achievement test" with some very easy questions and some that are very difficult in order to challenge the brightest students.
8. Writing good questions is very labor intensive and many will have to be rewritten as students misinterpret what you are asking.

Examples of challenging questions, 2 for each "trunk":

1. **Captains' Trunk:** Demonstrate/describe how a sextant is used? Why did they carry a hydrometer?
2. **Private Shannon's Trunk:** Describe the process to load and fire a flintlock musket. Describe the footwear of the expedition during the expedition.
3. **Private Shields/blacksmith Trunk:** What did they make for trade in the Mandan villages in 1804-05? What kind of fuel did it take to heat steel cherry red-hot?
4. **Sergeant Gass/carpenter Trunk:** Why didn't they carry handles with their tools? What tools were needed to construct a fort?
5. **Indian Presents Trunk:** Why were blue beads much more valuable to the Indians? What was the origin of the awarding of the medals?
6. **Indian Artifacts Trunk:** What kinds of tools were made of stone? Describe the advantages and disadvantages of the bow and arrow verses the flintlock musket.
7. **Animals of the Expedition Trunk:** What animals were eaten as food on the expedition? Which animals were most dangerous to the men of the expedition?
8. **Botanical Collection Trunk:** See the extensive notes in the handouts.
9. **Geological Specimens Trunk:** Use the specimens in the collection to construct a "Rock Cycle". What geography/geological formations caused the greatest barriers to the expedition?
10. **Food and Cooking on the Expedition Trunk:** Why was bear, buffalo and whale fat so important to the expedition? How did they make maple sugar (and salt)?
11. **Medical Chest:** Why were people bled and purged in the early 1800s? How were toothaches treated?

An example of a combination of #3 & #4 above:

1. **Object:** Elk raw hide **Factoid:** Above the Great Falls of the Missouri Lewis had a lightweight metal framed boat assembled and covered with raw elk and bison hides. Called "The Experiment", it was to carry tons of gear. **Question:** Why did it fail? What did they do to substitute for the boat?

CAMP GEAR OF THE LEWIS AND CLARK EXPEDITION: (BRIEF LIST)

(Updated June 2014)

This list is based on Lewis's lists found in Jackson's "Letters of the Lewis and Clark Expedition", entries in Moulton's "Journals", and the gear that would have been needed to maintain the camp. This list includes articles that might be fabricated at the forts and long term camps. The numbers purchased and cost are shown when known. (**) Indicates articles purchased at the "Public Store", military supply.

An (*) indicates one or several articles identical or similar to original expedition gear that is found in these trunks. (Guide for trunkees on what you can add by scrounging in your area or period merchants like Jas. Townsend and Crazy Crow)

CAMP GEAR:

\$\$cc

- | | | |
|------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| • 1 | Common tent (2 display tarps *) | ** |
| • 8 | Tents * | 119.39 |
| • 45 | Bags, oiled * | for oiling and sewing this and next 3 items. Materials from the Public Store |
| • 10 yd. | Country linnen, oiled * | |
| • 20 yd | Brown linnen, oiled * | |
| • 8 ps. | Cat Gut for Mosquito Curtains * | 15.50 |
| • 4 doz | Packg. Of Needles & large Awls * | 1.13 |
| • 1 | Packing Hogshead * | ** |
| • ? | Tent stakes * (expedition may have used metal like we do but wood stakes more likely) | |
| • 1 ¼ doz | Small Cord * | 1.79 |
| • ? | Hemp Rope * (please don't use sisal or Manila hemp) | |
| • ? | Shovels * | |
| • ? | Pick axes * | |
| • ? | Mattock/hoes * | |
| • 4 | Tin Horns * | 2.00 |
| • 2 | Tin Lanthorns * for candles | 2.00 |
| • 2 | Tin Lamps. for bear or whale oil | .50 (possibly bison grease) |
| • 1 | Tin Box sqr. Of small articles | 1.00 |
| • 125 | Large fishg Hooks | 4.45 |
| • ? | Fishing lines assorted | 18.09 |
| • 1 | Stand of fishing lines and hooks complete | 3.00 |
| • 1 | Flask, Sportsman's | 1.50 |
| • 120 lbs. | Candles, tallow or beeswax? * | |
| • 8 lbs. | Candle Wicks * | |
| • 50 lbs. | Soap, (Castile?) * | |

LONG TERM CAMPS: (Made on site)

- Few Tables: (We split 6' cedar logs with a shake frow into 2 " slabs and planed one side flat, used wood pins to attach to cross members and used auger to drill holes in 4 corners. Split cedar and shaped legs with a draw knife.
- Few Chairs: (Suggest simple straight back with rawhide laced seat)
- Few Stools: (We split a short 16" log, used auger to bore 3 (not 4 holes), carve legs with draw knife and insert in holes.)
- Bear, elk and bison rawhide tow ropes, see attached article for details.

COOKING GEAR: (BRIEF LIST)

(Updated June 2014)

This list is based on Lewis's lists found in Jackson's "Letters of the Lewis and Clark Expedition", entries in Moulton's "Journals", and the tools and gear that would have been needed to prepare meals. The numbers purchased and costs are shown when known.

An (*) indicates one or several articles identical or similar to original expedition gear that is found in my personal trunks. **Use this as a guide to enhance your collections from local sources. A few of these items are speculative but probable.**

COOKING GEAR:

\$\$cc

•	Sets	Fire Irons, tripod *	
•	Sets	Fire Pokers *	
•	Sets	Fire Grill	
•	Sets	"S" hooks *	
•	1	Copper or Brass Lidded Cooking Pot *	
•	6	Brass Kettles (copper nesting pots*)	15.18
•	?	Dutch Oven *	
•	1	Block Tin Sauce Pan *	1.50
•	?	Tea Kettle *	
•	?	Wooden Bowls *	
•	?	Portable Soup Containers *	
•	?	Ladles *	
•	?	Cooking Fire Forks *	
•	2 or 3	Corn Mills *	9.00
•	1 doz	Pint Tumblers *	4.20
•	2 doz	Table Spoons *	1.87
•	?	Wooden Spoons *	
•	?	Kitchen Knives *	
•	?	Meat Axe *	
•	?	Dish scrubber *	
•	2	Pocket steel yards *	.47
•	1 set	Iron Weights (brass*)	.75
•	1	Bung Hole Borer *	
•	?	Wooden Spigots *	

Weights & Measures (ed. June 2014)

Weights & Measures: Barrel weights vary depending on whether intended for wet contents, (oak construction, thicker staves & metal hoops); or dry contents, (often softwood, thinner staves & wood hoops).

Container & Wt.	Gallons	Net Weight	Dimensions Exterior
*Small oak keg, metal hoops, 3 lbs?		with spun tobacco 2 lbs?	8”h x 8” middle
*Small oak keg, metal hoops, 6 lbs middle		15-25 lbs?	12.5” h x 11.5”
*Powder keg, soft wood, 4 lbs		20-30 lbs?	12.5”h x 10.5” middle
Exp. whiskey keg #555 gal.		30 lbs	16”h x 13” middle??? <small>(extrapolated from below)</small>
Bushel	9.3 gal	60lbs grain	2150cu. inches
Firkin 4 – 8* lbs Oak 12*-16 lbs	9 gal.	72 lbs liquid 50 flour/corn	18” h x 16.5” middle 1775 cu inches
Kilderkin 16-22 lbs Oak 30*	18 gal.	144 lbs liquid 100 flour/corn	24”h x 20” middle 3550 cu. inches
Barrel 21end 110-125 lbs	36 gal.	288 lbs liquid 200 flour/corn	29-36”h x 24”m, 7100 cu inches
Hogshead 125-145 lbs	54-63 gal.	432 lbs. liquid	35” h x 25.5 middle

3.3 Bushels = 1 barrel Butt keg = 108 gallons Tun keg = 216 gallons

* Indicates barrels acquired by Ft. Mandan.

Trunkees Note: L & C Museum displays often include large barrels that would have contained hundreds of lbs of provisions. The lard barrel may have been that size, but all other barrels were much smaller, none over Kilderkin size above since they would have been impossible to move easily or store/pack easily.

Trunkee Misc. Hardware Collection Notes & Advice

There are some very nice and expensive items in this collection. Ultimately I either had too many artifacts or they weren't old enough or not quite right in some manner for a first class display. Use the lists included to fill out your tool collection with help of an antique dealer. The items marked in red in your box I would feel comfortable showing in museum exhibit, they are period or identical to period items; blue are good representations of period items.

- ✓ **Tongs** In the case of black smith items I bought so many thinking I might try using some but it is a sophisticated skill. You might find a blacksmith who might advise or trade out for better tools. For a quality exhibit replace the hammer handles with a hand carved handle from ash, hickory, oak or similar hardwood using a spoke shave or draw knife. You should have plenty of volunteers for such a project.
- Some hammer heads given are cast steel, more accurate would be hand forged which some of you may have gotten.
- I included some horse shoes, but they need to be handmade, you might have a farrier in your area who makes from them from scratch. (1800 style a bit different) Shields made some for horses at Ft. Mandan who had to walk on ice drawing heavy sleds full of meat.
- ✓ You probably have antique cut/square nails in your area, but I threw some in anyway. They carried a lot but ran out before Idaho country and recycled when possible.
- Though they had some cast iron cookware, preferred was copper or brass. Spun brass/copper was used after the 1860's in trade and expedition cookware. To be period correct pots must be hand hammered. I have seen and used hand hammered more recently made from Latin America and China especially, which are a good substitute for rare & expensive period cookware.
- ✓ They carried raw iron blanks for trade and making knives, spears, arrowheads etc, but it was wrought. Get some rare genuine material from a blacksmith or pound on the sharp edges of the blank I gave you and let it rust to antique it.
- ✓ Files are essentially the same today as originally and when worn out were valuable trade items. Few period files survive today, they were almost always repurposed. If they exist today they are a rusty shape with edges gone, so I provided some used recent files.
- Knives are early mid 20th century but the exact style used by the men & traded on the expedition. I dressed them up with copper tacks as would have been done to any wooden shafted item by Indians or fur traders. Expedition men might have done the same.

- Awls are excellent reproductions and worthy of an exhibit, not kids hands. Extremely large ones are canoe awls which would/could have been used if L & C had found birch bark/trees for canoes, but those trees were not found as far south as they traveled.
- Hoop drivers for barrels are rare and valuable (in two boxes) but are for very large barrels not found on this expedition.
- They had rulers but yours are not old enough, period are very rare and valuable.
- The compasses would have been used in chart making though most of yours are more likely for carpenter use. Designs are period correct and some are quite old.
- More comments below for some of your items.

✓ draw knife

✓ hand vice

✓ compass

✓ auger wood bit

✓ soap

✓ spoke shave

✓ clay pipe

FOODS OF THE LEWIS & CLARK EXPEDITION: (BRIEF LIST) (trunkees this list from my personal collection)

(Updated June 2014)

This list is based on Lewis's lists found in Jackson's "Letters of the Lewis and Clark Expedition", and entries in Moulton's "Journals". Most of the foods listed below were purchased from the farmers and vendors during the winter-spring of 1804 in the St. Louis/Fort Dubois area. The quantities may not be exact because of incomplete records, and the Corps was consuming food as they were packing provisions. The expedition had not yet left "civilization", and more exacting journals were yet to come.

An (*) indicates one or several articles identical or similar to original expedition foods, are contained in these trunks. (trunkees with this list you should be able to add items that you can scrounge locally)

FOODS PURCHASED IN THE MID WEST:

\$\$\$cc

- 3705 lbs. Keg Pork (Salt Pork); (50 kegs). *
- 1 keg Hogs Lard *
- ? lbs. Beef
- 600 lbs. Grease (Beef and/or Bison Tallow?) *
- 150 lbs. Portable Soup *
- ? barrels Bear Oil *
- 800 lbs. Parched Corn *
- 1200 lbs. Parch meal, (corn meal) *
- 1000 lbs. Hulled Corn *
- 3400 lbs. Flour in barrels and bags *
- 560 lbs. Biscuit, (hardtack biscuits) *
- 100 lbs. Beans *
- 100 lbs. Peas *
- 50 lbs. Coffee *
- 2 lbs. Tea *
- 750 lbs. Salt probably purchased from processors/vendors from Ohio or St. Louis area salt springs (going west)
- 2 bushels Sea Salt (going east) *
- 112 lbs. Cane Sugar (solid cone shaped, brown from molasses) * (if you receive, rewrap with brown paper)
- 50 lbs Maple Sugar (extracted and boiled down while at Camp DuBois) *

Other foods that were purchased and eaten at Camp Dubois included turnips, onions, vinegar, potatoes, milk and butter.

OTHER MAJOR FOODS PURCHASED OR TRADED WITH NATIVE AMERICANS: (See "Native American Foods Collection")

Mandan villages: Corn, Squash, Beans, Sunflowers and Pumpkins

Shoshone & Nez Perce Country: Bitterroots, Biscuitroots, Camas Roots, Horse Meat, Dog Meat, and Salmon, fresh, dried, smoked and pounded to a meal

Pacific Coast Villages: Wapato Roots, Salal Berries, Evergreen Blueberries, & Whale Oil

TOBACCO ON THE LEWIS & CLARK EXPEDITION

Journal entries suggest that most of the men of the expedition used tobacco either by chewing, or by smoking in pipes or pipe tomahawks. It was an addiction for the men of the Corps, but for the Indians it had a cultural/religious importance and was one of the most prized materials that expedition carried. For extensive references of use on the expedition use the internet site: "Search-journals of the Lewis and Clark Expedition" and do a "word search" There are too many to list all but a few here. Check also the index of Donald Jackson's "Letters of the Lewis and Clark expedition" which is the second most important reference after the Moulton Journals.

Inventory lists:

1. Before the expedition: (Jackson pg. 94): 130 rolls of pigtail, 63 lbs, \$14,25
2. Ft. Mandan inventory, winter 1804-5: Moulton Vol. 3, pg. 502: 130 pigtail at 63 lb. and 176 carrots, about 500 lbs. in 9 bales.
3. These items were for Indian gifts and trade, the expedition men would have been expected to purchase tobacco for their personal use, though later trade tobacco was given to the men (8 July, 1806) since they had run out.

Cigars/Stogies:

1. "Cigars" of rolled leaves were first observed and brought back to Europe on Columbus's trips. Although an industry later developed in Cuba for cigars the technology was developed in Pennsylvania in the early-mid 1800's. The term stogie referred to the cheap thin crudely wrapped cigars smoked by the Conestoga wagon teamsters that carried freight in the early west (western PA, VA etc.) The only reference relating to the expedition is found in a letter from tobacconist Thomas Leiper to Jefferson in 1807. Lieper may have received some of the Indian tobacco that Lewis brought back. He manufactured "Two Bundles of segars" but due to the smallness of the sample and age of the tobacco they had little flavor and unknown potential. (Jackson's "Letters of..." pg 239.)

Snuff:

2. Snuff was one of the most popular forms of tobacco to be used in Europe after its discovery in the Carribean. The finely powdered material was sniffed into the nose, usually followed by a sneeze and helped mask the offensive odors of the street. It was early noted to cause nasal cancers and was widely used by women as well as men. The only connection to the expedition is with Governor Lewis who was on his final trip to Washington to clear his name when he committed suicide in 1809. Though he certainly used tobacco in a pipe, Gilbert Russell's letter to Thomas Jefferson on 31 Jan. 1810 from Fort Pickering, Chickasaw Bluffs, indicates he also used snuff. "his untimely death may be attributed solely to the free use he made of liquor which he acknowledged verry candidly after he recovered (from a previous suicidal bout) & expressed a firm determination never to drink any more spirits or use snuff again both of which I deprived him of for several days..." (Thomas C. Danisi, "Uncovering the Truth about Meriwether Lewis", page 242.)

Plug:

3. This is tobacco leaves moistened with molasses or honey and then pressed into firm blocks usually about 5/8" thick and 2+ " X 12". Although the many various forms of plug tobacco existed prior to the expedition, it does not appear to have been used on the expedition. It became an important fur trade item a little later in the 1800's. Generally chewed it could also be smoked. A old tobacco box traded for a night with an Indian woman suggests the possibility of plug tobacco, but more likely broken leaves from twist, spun, or carrot tobacco. This is still available today in small squares to chew, though most tobacco chewed is in the form of loose leaf or under the gum "snoose".

Spun:

4. This is tobacco leaves twisted like a rope around a wood shaft. Often sweetened by honey or molasses, this could be smoked or chewed. Although not listed in the inventories there are two journal entries indicating its use on the expedition. On 7 March of 1805 Charbonneau recieved a gift of a "2 bracs of tobacco," (a brace is about 64". (Therefore he got a little over 10 of tobacco.) On 8 July 1806 when Clark's men arrived at the cache at Camp Fortunate in western Montana he gave two feet of tobacco to each man who used tobacco. He wrote: "most of the Party with me being Chewers of tobacco".

Pigtail:

5. These leaves of tobacco, also often sweetened with molasses or honey, are twisted around themselves in a great variety of sizes. Still available today through some vendors of re-enactor supplies. The expedition had at least 130 units of pigtail tobacco and at 63 lbs.; these twists at over 1/2 lb would have been larger than those typically seen today.

Carrots:

6. A carrot of tobacco is filled with tobacco leaves, wrapped in raw linen or hemp cloth and wrapped tightly with heavy twine the final shape being that of a spindle. This densely packed tobacco usually came in one, three, and five pound bundles. The 176 carrots listed under "Indian Presents" weighed about 500 lbs. so each weighed about 2.8 lbs. A carrot was often given to chiefs to distribute to their warriors or was given in trade for valuable items. There are many references to carrots in the journals, do a word search for more references. One particularly interesting entry is on 25 Dec. 1805 when the captains distributed half of the remaining (2 or 12???) carrots as presents to the men who used tobacco. (see Moulton Vol. 6, pg 137) Lewis sent back a carrot of Arikara tobacco from Ft. Mandan to Jefferson. (Jackson's "Letters..." page 235.)

Indian Foods & Artifacts

Monitor all foods for weevil and "moth" larvae damage in packets and displays. Most of these "Indian" foods were traded to the expedition and some were major expedition foods.

Foods:

1. Beans; Hidatsa Red
2. Beans; Hidatsa Shield
3. Beans; Arikara Yellow
4. Camas; pit cooked & dried
5. Chokecherries; dried
6. Corn; Red Nuetta, 5-6 specimens
7. Corn; Blue Flint, 5 specimens
8. Corn, ground, cooked, dried and coated with ash
9. Mandan Squash seeds
10. Edible Black Lichen
11. Kinni-Kinnick, Indian tobacco
12. Elderberries, dried
13. Hawthorn berries, dried
14. Rose hips, dried
15. Huckleberries, dried

Stone:

16. Knife River Flint used for points & tools
17. Obsidian from Oregon used for points and tools
18. Knife River/Fort Mandan pottery shard
19. Pestle or other major stone artifact. Purchased at yard sales, items previously collected over the past 100 years, possibly illegally from Snake River basin; Nez Perce Country.

Animal:

20. Buffalo teeth beads
21. Deer hoof rattles
22. Deer dew claw rattles
23. Brain tan deer hide swatch
24. Sinew, deer, leg or back
25. Pounded Salmon
26. Pemmican, (genuinely prepared from deer meat) (May have been packed with expedition foods, monitor for possible mold in packet and when displayed in humid environments)

Other:

27. Tule mini mat
28. Osage Orange fruit; (wood used for bows)
29. One extra bonus item may be added in Indian/Expedition foods where not enough for 12 trunks.

INDIAN FOODS ALONG THE ROUTE

LOWER & MIDDLE MISSOURI RIVER: Much of the information below is from "*Buffalo Bird Woman's Garden*" by Maxi'diwiac of the Hidatsa Tribe.

- **Beans, Red Hidatsa:** Beans were planted 3 or 4 to a group on the sides of hills on open ground or between corn rows. They were harvested in the fall when the pods were dried and threshed on an old tent cover by first trampling with feet and if necessary by beating with a stick. The beans could be eaten green with the pods, after boiling or after a longer boil with dried beans. Buffalo fat or bone grease was commonly added to the clay boiling pot. Pounded green shelled corn was often boiled with green beans. Other varieties of beans included black beans, spotted beans, shield-figured beans & white beans; and yellow Arikara beans.
- **Corn:** Corn was planted in May and continued for a month with the last seeds soaked in water before planting. It was planted 6 to 8 seeds per hill in rows about 4 feet apart in fields as large as 100 X 150 yards. Corn was in 9 row units and then separated by a row of squash. The corn was hoed for weeds when about 3 inches tall. Crows and Magpies damaged young plants and corn had to be replanted, and so scarecrows and later raised platforms were erected and young girls came to watch over the corn and sing. The fields were on bottom lands that were cleared of timber except for a cottonwood that would shade the watchers as they sang, and did embroidery. Boiled green corn and beans with fat was a common dish, as was roasted green ears. Green corn was also shelled and pounded, placed on corn husks and cooked deep in ashes and coals to make a cornbread. Green corn was also shelled, dried and stored. Mature corn was husked or braided into strings to dry thoroughly. Threshing was done in a booth with several women beating on the corn with sticks, and as the lighter empty cobs rose to the top they were cast off. The cobs were burned at night and the next morning the ash was gathered in balls and used for seasoning. There were many varieties of corn and, Mandan Bride, Mandan Blue Flint and Red Nuetta may be the varieties displayed.
- **Squash:** Squash seed was first sprouted in the lodge in a moist bundle of grass and sage leaves in a buffalo hide. After it was sprouted at least two women would work together with the first loosening the soil of last year's mounds, and the second planting two pairs of seeds on the sides

of the hill so the rain would not beat down the soil over the seedlings. Harvest was just before “green corn time” and involved at least six harvests about 4 days apart. The white or green squashes were eaten fresh or sliced and dried for winter. They were originally sliced side to side with a knife made of the thin part of a buffalo shoulder blade. And the hollow slices were spitted and dried overhead on a rack. Ends and small squash were dried on the ground and care was taken to avoid getting soaked. It was stored in a par fleche bag or in a cache pit. A clay pot was filled with fresh squash with a little water and covered with sunflower leaves as a lid. It was placed in the fire to steam cook and sometimes fat was added. Fresh blossoms were sometimes added near the end of cooking. Ripe seeds were often eaten boiled, parched or roasted.

- **Sunflower:** Sunflowers were planted a week after ice breakup on the Missouri, about the first week of April. The first crop to be planted, the seeds were placed 3 to a mound of dirt about 8 paces apart around the edges of a field. There were black, white, red and striped varieties but they were all treated alike in cooking. Last to be harvested, the large top flower head was cut when ripe and dried head down on the top of the lodges. After about 4 days the heads were threshed. The smaller lower heads hanging down were threshed after first frosts about the middle of October after corn harvest and threshing. The seeds were parched which cracked them and the kernels were pounded into a meal. One of the most popular dishes was a boiled combination of beans, squash, and pounded parched sunflower seed & corn. Balls of parched sunflower seed were carried by warriors as a rich travel ration.
- **Indian Breadroot or White Apple:** This root was dug up and the black outer layer was stripped off. It could be eaten fresh or boiled. Woven together and dried it could be stored for years in the lodges. The dried roots could be boiled whole with meat or pounded into flour which created a rich soup. Lewis collected an undated sample along the Missouri river and described the plant in detail on 8 May 1805.

INDIAN FOODS ALONG THE ROUTE

WESTERN MONTANA, IDAHO AND THE UPPER COLUMBIA RIVER BASIN:

Most of the information here is credited to the books of Wayne Phillips, Betty Derig & Margaret Fuller and a pamphlet by the National Park Service.

- **Arrowleaf Balsamroot, *Balsamorhiza sagittata*:** Widely spread across the west on dry hillsides and open meadows, this large yellowed perennial has arrowhead shaped leaves a foot long. Lewis collected two specimens one on 14 April 06, when he observed that the women and boys were collecting young stems which were eaten, and another on 7 July 06. The sticky pine-scented sap was used medicinally and the huge root could be pounded into flour when other foods were scarce. The Seed heads could also be threshed for seed to be pounded into flour.
- **Biscuitroot, *Lomatium cous*:** This small delicate lomatium plant blooms with a yellow flower early in the spring on rocky hillsides. The root eaten fresh has a mild starchy taste. It was cooked or could be ground into flour and made into small finger cakes or larger bricks. Clark first mentioned it on 1 Nov. 05 on the lower Columbia noting that the coastal Indians traded for “*Cha-pel-el*” with up river Indians. On 5 & 6 May 06 these roots and bread were one of the few foods traded or given to the expedition by the Nez Perce.
- **Bitterroot, *Lewisia redivia*:** It grows mostly in the dry foothills of Montana. It was dug in May while in flower, and the roots were then dried in the sun for storage. The bitter taste was supposed to be removed after boiling for 30 minutes, but Lewis thought them “*naucious to my palate*”. Some of the specimens that reached Philadelphia were still viable and were replanted; thus the scientific name.
- **Black Hawthorn berries, *Crataegus douglasii*:** Collected by Lewis on 29 April 1806, it was not described in detail. This thorny shrub grows up to 30 feet tall across the route in many closely related and hybridizing species. The flavor varies between sweet to bitter and the pulp is somewhat dry and granular. They were not a favored food and were used in time of famine. It was dried, ground into flour, with fat often added. It was added to meat and sometimes made into berry cakes by

the Nez Perce. The wood was very hard and sometimes used for digging sticks.

- **Blue or Huckleberries, *Vaccinium membranaceum*:** This was one of the most important berry foods of the Nez Perce and they would spend much of September and early October in the mountains harvesting berries that would be eaten fresh, or dried for winter use. Teas and decoctions made of the roots, stems leaves and berries had a great variety of medicinal uses among northwest tribes.
- **Camas root, *Camassia quamash*:** This was one of the most important food plant of the northwest Indians, and especially the Nez Perce. Extensive fields of it grew across the moist mountain meadows and lower grasslands of the Clearwater River Basin. The flowers varied from a deep to a light blue color on onion like stalks and the bulbous roots were 3 to 5 inches underground. Eaten fresh the roots look like onions and have a bland slimy taste. Usually the roots were slow cooked in a pit in the ground over several days turning the complex sugar into a sweet digestible fructose. They turn a dark brown and taste very much like a smoky sweet potato. Some were eaten but most were dried and some of those were pounded into flour made into a dough for cakes that were again cooked and dried. Though very nutritious Lewis and the men found a diet of this (and salmon) caused severe intestinal conflicts of gas, diarrhea and vomiting. They were sick most of the time at Canoe Camp until they turned to a diet with more dog meat.
- **Choke Cherries, *Prunus virginiana*:** This small tree grows to about 25 feet and produces large quantities of reddish black berries. It is common along much of the expedition's route and a tea from the bark was used by Lewis as a stomach ache medicine. The cherries were sweeter after frost. Most were dried and many were pounded into a pulp and added to soups of pemmican. The roots, bark, leaves and pits contain hydrocyanic acid which can be toxic but was used for various medicines. The plant also produced various colored dyes, red, brown, and yellow, and the stems were used for arrow shafts. Two specimens of choke cherry were collected, one on 29 May 1806, when he wrote a detailed description of the plant.
- **Elderberries, *Sambucus cerulean*:** This shrub/small tree grows from low to mid elevation across much of the northwest. Though Lewis mentioned this plant several times there is no evidence that he collected or ate them. The Indians ate them fresh, pounded them into cakes, and

dried them for winter. The 1 year old stems with a large pith made good flutes, and the roots, stems and leaves were boiled into a potentially toxic medicine containing hydrocyanic acid.

- **Rose Hips, *Rosa nutkana*:** Lewis commented on the unusually large size of the fruits of this plant as he described the plant on 10 June 1806. Sometimes used as famine food the Indians had a variety of medicinal uses for the tea, petals and bark.
- **Smooth Sumac, *Rhus glabra*:** This short prolific shrub grows on the dry plains and foothills of the west. The bright green shiny leaves turn magenta in fall and was an indicator that the sockeye were spawning. The fuzzy red clusters of berries were eaten fresh or dried for later use and made a pleasant lemonade flavored beverage when soaked in water. The roots and milky latex from the stems were used medicinally.
- **Tree Lichen, *Aleectoria jubata*:** This dark brownish lichen hangs from the limbs of older trees and was gathered, cleaned and washed. After being cooked overnight in a pit with camas it became gelatinous. Next it was ground into a meal and dried. The meal was boiled into a mush and fat, camas and berries were added to make a dish called "ho'pop".
- **Salmon sp, Dried and Pounded:** Hundreds of thousands of salmon were caught across the Columbia River Basin and since it was not a year around resource, thousands of tons were dried and pounded and stored or traded with other Indians. If kept dry it could last for more than a year like this sample which is almost 10 years old. The expedition men's stomachs could not handle a heavy diet of fish and supplemented it with dog instead.

INDIAN FOODS ALONG THE ROUTE

LOWER COLUMBIA & PACIFIC COAST:

- **Cranberries, *Vaccinium sp.*** This small woody shrub produces bright red tart berries in the wet forests and bogs of the west coast. They were an important food of the Indians and were often stored in oil and served with the grease of the tiny eulachon fish. On 9 Dec. 05 near Seaside Oregon, Clark was given Cranberries and Sackacomey berries in bowls to eat.
- **Evergreen Blue/huckleberries, *Vaccinium ovatum*** : These evergreen shrubs grow to about 13 ft. and produce a deep purple-black sweet berry. The Indians picked them when ripe and dried them in the sun or sweating kilns. They also pounded them, then baked them in large 10 or 15 lb. loaves which kept for a season according to Lewis. He collected a sample on 27 Jan. 1806.
- **Kinni-kinnick, Bearberry, *Sacacommis*, *Arctostaphylos uva-ursi*:** This evergreen low growing shrub is found along much of the route from the prairies of Ft. Mandan to the forests of the west. The dried leaves of the plant were mixed with tobacco and a specimen was collected at Ft. Mandan. On 29 Oct. 05, at the Dalles, Clark wrote that they were given "*Sackacommis burries*", and on 9 Dec. 05 near Seaside Oregon they were given Cranberries and Sackacomey berries in bowls to eat.
- **Hazelnut, *Corylus californica*:** This plant is a multi-stemmed shrub up to about 12 ft in height which grows in the shade of moist west coast forests. The palatable nut and acorns from *Quercus garryana* were served or traded to the expedition raw or roasted. Lewis reported it on 22 Oct 1805.
- **Salal Berries, *Gaultheria shallon*:** This evergreen shrub grows up to four feet in height and is one of the most widespread ground cover plants on the west coast. The purplish berries were perhaps the most important berry food and was frequently served the expedition; Clark, 9 & 27 Dec. 1805. Lewis described it in detail on 8 Feb. 1806. Like cranberries above the berries were pounded and dried into cakes of up to 15 lbs, and when eaten later, were soaked in water and dipped in whale or seal oil. Dried berries were also mixed with the grease of the eulachon fish.

- **Snowberry, *Symphocarpus species*:** This shrub grows to 9 feet and produces small clusters of toxic white berries which last well into the winter. Lewis collected a sample on an unknown date, and described it in detail on 12 Aug 1805. Most tribes considered it poisonous, and some believed it had spirit power to keep ghosts away. The roots and stems were widely used as a medicine, and freshly sprouted straight stems were used for arrow shafts.
- **Wapato Roots, *Sagitaria latifolia*:** This plant grows in the swampy wetlands and shallow ponds along the northwest coast. The root about the size of a hen's egg was pried from the mud with the toes of the Indian women; Lewis 29 March 1806. It was very nutritious and highly prized by the Indians as well as the expedition members. The tubers were baked in the fire, boiled or roasted. They were then eaten whole or mashed. After cooking some were dried for winter use.

INDIAN PRESENTS: BRIEF LIST

(Updated June 06)

This list is based on Lewis's inventory lists found in Jackson's "Letters of the Lewis and Clark Expedition". Additional articles found in entries in Moulton's "Journals..." and in inventories such as recorded in "Fort Mandan Miscellany" will be marked with an "*". The numbers purchased and costs are shown when known. **Note that there are many new additions shown on the "Fort Mandan Miscellany" inventories and some totals are less than purchased, suggesting that some were traded prior to the inventories.**

HARDWARE:

		<u>\$\$.</u> cc
• 12	Pipe Tomahawks	18.00
• 24	Tomy Hawks *	
• 24	Squaw Axes *	
• 55	Fish Spears *	
• 5	Large Canoe Awls *	
• 11?	Large Flat Files *	
• 11?	Smaller Flat Files *	
• 12 doz	Fire Steels *	
• 11 doz	Knives	25.17
• 4 doz	Butcher Knives	5.33
• 35 doz	Knives of which 22 doz were Butchers Knives *	
• 8	Brass Kettles	10.67
• 2 bundles	Pieces of Brass & Iron * (see below)	
• 12 lbs	Brass Strips	6.80
• 6.5 lbs.	Sheet Iron	1.62
• 2	Corn Mills (see in food chests)	20.00
• 15 doz	Scissors (Large & Small)	18.97
• 12 lbs	Brass Wire (30 collars quill Sise & 16 collars Ear Wire)	7.80
• 34 Rolls	Snare wire *	
• 2800	Fish Hooks assd. (later 500 in Ft. Mandan inventory)	8.00
• 3 doz	Rasors *	
• 10 lbs	Brads (small tapered square finishing nail)	1.00
• 8 gro	Seat or Mockasin Awls	15.67
• 1	Trunk to Pack sundry Ind. Prests.	3.50
• 50 lbs	Gun Powder *	

EXPEDITION GEAR TRADED AWAY FOR GUIDENCE, FOOD & HORSES OR GIFTS:

• ?	2 Styles of Ft. Mandan Battle Axes * (made at Ft. Mandan and traded for corn etc.)	
• ?	Metal Hide Scrapers*	“
• ?	Metal Arrow (Spear?) Points	“

TRINKETS & Medals:

• 1 doz,	Combs, Ivory	3.33
• 1 gro.	Iron Combs	2.80
• 12 doz	Pocket ("Dutch paper"*) Looking Glasses	5.19
• 18 doz	Pewter Looking Glasses	3.99
• 8 doz	Burning Glasses	12.00
• 2 Cards	(a flat collection on stiff paper) Beads	3.80
• 3 lbs	Beads	2.01
• 73 Bunches	Beads assd. (which probably included some of the beads below)	41.00
• 120 maces	White Rd. Beads, (25 bunches*)	
• 17 bunches	Yellow Rd Beads, (10 bunches*) (this and white above cost).....	14.00
• 7 bunches	Sky blue Rd Beads *	
• 8 ½ lbs	Red Rd Beads, (4 bunches*)	25.50
• 1 bunch	Green Beads*	
• 20 bunches	White Seed Beads*	
• 112 maces	Yellow Seed Beads *	
• 6 bunches	Red Garnet (18 bunches at Ft Mandan*)	8.00
• 2 bunches	Brown Garnet	1.00
• 2 cards	Bead Necklaces * (20?)	
• 3 cards	Fine Necklaces *	
• 8	Wampum Shells *	
• 6 papers	Small Bells (6 gross)	4.02
• 1 box	Larger (Hawk) Bells (100)	2.25
• 2 3/4 doz	Locketts	3.56
• 2 doz	Earrings (26*)	1.00
• 500	Broaches (1500*)	62.07
• 72	Rings (silver)	6.00
• 3 gro	Curtain Rings	1.87
• 24	hair pipes *	
• 12	wrist bands, bracelets *	
• 12	Arm bands *	
• 8	Silver Moon *	
• 26	Silver ear Rings *	
• 48 pr	Glass Ear Bobs *	
• 8 pr	Glass Braclets*	
• 3	105mm Jefferson Peace Medal *	
• 13	75mm (second size), Jefferson Peace Medals *	
• 16	55mm (third size), Jefferson Peace Medals *	
• 55	45mm (fourth size), Washington Season Medals *	
• 2 or 4	(fifth size), probably "Liberty Bust" Silver Dollars, *	
• 8 lbs	Red Lead	.89
• 2 lbs	Vermilion (in papers)	3.34
• 10 (oz?)	Verdigrease *	
• 130	Pigtails of Tobacco wt 63 lbs	14.25
• 176	Carrots Tobacco * (500 lb in 9 bales)	
• 4 doz.	Jews harps *	

CLOTH & RELATED MATERIALS:

(There may be some redundancy because of a change in nomenclature in the various lists.)

• 14 Ps.	Hanckercheifs assd. (Cotton (bandano?*) & Silk (fancy?*) & Romall??)	59.83
• 1 Ps,	Red Flannel 47 ½ yds (24 fathoms in 12 pieces), (wool not cotton)	14.94
• 1 Ps	Scarlet Cloth 22 yds	58.50
• ½	Catty Inda. S. Silk	3.75
• 21 lbs.	T(h)read assd. (In 40 Skaines, silk?)	23.17
• 5 ½ doz	Fancy 1 Floss (embroidery thread)	18.87
• 6 Gro.	Binding	11.79
• 2 doz	Nonesopretty	2.94
• 2 doz	Red strip'd tapes	2.80
• 72 ps.	Strip'd Silk Ribbon	39.60
• 12 rolls	Gartering. *	
• 12 rolls	Narrow Ribbon	
• 8	Small Bundle tape *	
• 2 doz	Dutch Tape *	
• 1 doz	Needle Cases	.30
• 14 lbs	Knitting Pins (18 Bunches)	3.89
• 4600	Needles assd.	9.73
• 48	Collar Needles *	
• 2 gro	Thimbles assd (9 1/3 doz Steel & 6 doz Brass)	3.21
• 1 Groce	Seat or Mockasin Awls	
• 5 ¾ gro	Awls*	
• 48	Callico Ruffled Shirts	71.04
• 18	White Shirts *	
• 6	Chief's Coats*	
• 9	Artillery coats*	
• 11	Hats & 6 Circle Feathers, & 5 Soldier plumes	
• 3.5 doz	Tinsel Hat Bands assd	3.75
• 20 pr	Leggins *	
• 20 pr	Scarlet Leggins *	
• 2	Blue Leggins *	
• 45	Britch clouts, (Blue) * (at least 2 of which were red)	
• 12	Blue blankets *	
• 3	Scarlet blanket *	
• 2	Flags of 1 st size	
• 4	Flags of 2 nd size *	
• 4	Flags of 3 rd size *	

INDIAN PRESENTS & TRADE GOODS: I

HARDWARE

(Updated June 06; printed for Eastern Legacy 2014)

This list is based on Lewis's inventory lists found in Jackson's "*Letters of the Lewis and Clark Expedition*". Additional articles found in inventories such as recorded in "Fort Mandan Miscellany" and other entries in Moulton's "*Journals...*" will be marked with an " * ". The numbers purchased and costs are shown when known. **Note that there are many new additions shown on the "Fort Mandan Miscellany" inventories and some totals are less than purchased, suggesting that some were traded prior to the inventories.**

- **Pipe Tomahawks, 12 for \$18:** (replica) On 11 April 06, Clark traded his brass bowl pipe tomahawk for a fine pipe tomahawk owned by a much respected chief from along the Columbia. A small medal was also given and a sailor's biscuit from an unknown trader was exchanged also. This same tomahawk was traded with a horse for a better horse from a Nez Perce on 8 June 06 at Kamiah. It seems that most of these were carried by key members of the expedition and were used in ceremonies and occasional trade.
- **Tomy Hawks, 24*:** (replica) On 22 April 06, Charbonneau purchased a horse with a tomahawk and other items along the Columbia near John Day River. A couple of days later one was given to an Indian to recover a lost horse. On 2 May Ordway noted another given as a gift to an Indian who returned a lost horse. It appears that some of these were included in early trade bundles to major tribes and apparently 12, (Mandan Miscellany) were held for selective trading for important supplies later in the expedition.
- **Squaw Axes, 24*:** (replica) Ordway included some undated notes that listed the desired trade items of Pacific coast Indians which included "Squaw axes tomahawks...". These were listed in the Mandan inventories, but there seems to be no mention of distribution.
- **Fish Spears/Gigs, 55*:** (replica) They had 55 listed for trade and 27 in the expedition stores in their Ft. Mandan inventory, the first mention in the journals. They were first used on the ends of the poles as they pushed there way up to Three Forks, since most of the poles had lost their original iron tips, 23 July 05. They did the same at Canoe Camp, 6 Oct. 05, (Ordway); and it appears that they lost most of the gigs the same way because there is no mention of more than two or three at a time during the rest of the expedition. They were used for gigging trout on 13 Aug 05, (Whitehouse); salmon on 1 Sept. 05 on the North fork of the Salmon River; salmon on the Columbia on 26 Oct 05; and were mentioned several times on the west coast. On the return in Nez Perce country the expedition men were using wooden gigs like the Indians; bayonets fixed on wooden poles along with two metal gigs, 20 June 06 & other dates. The only time they were mentioned in trade was on 7 June 06 at Long Camp when they were used to trade for rope, string and bags for lashing the loads to pack saddles for the expedition over the Bitterroots.
- **Large Canoe Awls, 5*:** (replica) Apparently intended for birch bark canoes that were more common farther to the north. One bark canoe loaded with trading supplies left Camp Dubois area for Mackinaw on 6 April 04. The expedition also carried 5 which they might have had to use to build canoes in the "Shining Mountains" like explorers in Canada. They were not mentioned else where in the journals and were probably traded off like the other awls.
- **Files, Flat, large and smaller & half round, 22*:** (replica) These were distributed in the various bundles prepared for each of the major tribes. They were prized by the west coast tribes because they already had metal tools and they needed files to sharpen them; 20 Dec. 05. On the 23rd Clark traded a worn out file for some supplies; but the good files left were too valuable for the expedition to trade; 24 Dec. 05. Three files were mentioned in an apparent inventory of trade goods written about 6 Jan. 06. Clark gave a file to an Indian for guiding the party to the site of the beached whale; 7 Jan. 06. On 1 Feb. 06, Lewis and Clark note that the coastal Indians carve out canoes using a sharpened old file blade in a wooden adze to carve out their canoes.
- **Saw Band:** (replica) At Ft. Mandan a visiting chief received a handkerchief, paint and a saw band, possibly a worn out buck saw blade; 25 Nov 04.
- **Fire Steels, 12 dozen*:** (replica) These were spread among 14 bundles of Indian presents for major tribes and a box of sundry presents. Lewis gave one to an Indian guide on 7 May 06, but otherwise these valuable items were unmentioned in the journals.

- **Knives, 35 dozen*:** (replicas) Once again the inventories don't agree. The Mandan inventories list 35 dozen of which 22 dozen were butcher knives probably of Sheffield design and manufacture with wood handles, 70 knives with bone handles and 40 knives with stag handles each of unknown design. Extrapolating the costs of the listed purchased knives; butcher knives cost about 11 cents, and the other knives averaged about 19 cents. On 16 Aug. 05, Lewis promised a Shone a knife and some beads if he would accompany Drouillard down river to meet Clark coming up the Beaverhead. Four were later traded with other items for horses to transport expedition gear; 18 Aug. 05 and on the 24th trade continued. Knives were distributed to the Nez Perce as gifts on 23 Sept. 05; but because iron tools were so common on the west coast they were valued less when the expedition tried to purchase otter skins.
- **Tin Canisters*:** (vintage) On 23 Sept. 05 the men trade some old tin (portable soup) canisters for dressed elk skins to make shirts.
- **Brass Kettles, 8 for \$10.67:** (vintage & replicas) Though these were purchased as "Indian Presents" I can find no record of trade in the various inventories or journal accounts except one that was given to Mr. Durion on 28 Aug. 04. Kettles were mentioned as popular European trade items at Ft. Mandan (Miscellany). A few were observed among the Shoshone; 23 Aug 05. They were apparently common on the lower Columbia; 28 Oct 05 and were observed as funerary objects along the Columbia; 31 Oct. 05. The expedition used their 5 largest kettles to boil seawater for salt; 28 Dec. 05. On 18 April Lewis traded a large expedition kettle for a horse which was soon lost but replaced by the same Indian for a very good horse. On the 20th 2 horses were offered for 2 kettles but they could spare no more.
- **Brass Strips, 12 lbs. at \$6.80; & 6.5 lbs. of sheet iron at \$1.62. (2 bundles of pieces of Brass & Iron*):** (replicas) Most of this was apparently distributed among the 14 bundles listed in the "Mandan Miscellany". Brass was a good choice because it was frequently observed in ornaments of the Nez Perce; 20 Sept. 05 and other dates. It was also popular with coastal tribes and was among several items given to the son of a chief; 27 Dec. 05. On 14 Jan. 06 Clarks notes the popularity of plates and strips of sheet copper and brass with the coastal tribes. The expedition traded two arm bands of brass for "train" (whale) oil; 19 Jan 06. On 28 April 06, Lewis traded strips of tin, iron and brass and other articles for 4 dogs, fire wood and "*chap-pe-lell*".
- **Corn Mills, 2 weighed @ 53 lbs; \$20:** (circa 1880 see food display) On 10 Oct. 04, Lewis recorded that one was set up to show the Indians and on the 11th Ordway reports that it was given to them. On the 29th Clark reports that they gave the Mandans a corn mill which they were pleased with. (Were these the same or different mills?) Alexander Henry (Thwaites) reported that one had been dismantled for arrow points and pounding bones. The expedition's corn mill was reported cached at the Marias by Whitehouse on 11 June 05.
- **Scissors, Large and Small, 15 doz. At \$18.97:** (replicas) Though 12 ½ dozen were apportioned in bundles for presents mentioned in the Mandan inventories; scissors were never mentioned elsewhere in the journals.
- **Brass Wire, 12 lbs, \$7.80; (30 collars Brass Wire, quill Sise & 16 collars Ear Wire*):** (replicas) Some was traded with other items for 40 dogs at the Confluence of the Snake River and Columbia on 18 Oct 05. On 29 Dec. 05 the expedition purchased 1 ½ bushels of Wapato for a few red beads, pieces of brass wire and an (old checked shirt?) On 28 April 06, Lewis traded some twisted wire (brass?) and other articles for 4 dogs, fire wood and "*chap-pe-lell*".
- **Snare wire, 34 rolls*:** Distributed in the 14 bundles; besides snares, this may also have been the "bailing wire" of the day, with many repair or decorative uses. One possible reference to this wire might have been the "twisted wire" on 23 April 06.
- **Fish Hooks, asssd, 2800, \$8.00; (500 in the Ft. Mandan inventories*):** (replicas) Besides as contents in the Indian gift bundles, these were a popular gift and trade item and were first mentioned on 15 Oct. 04 when they were traded with beads to the Arikaras for meat. Black Cat, one of the most respected chiefs presented Lewis with a bow and received small shot, 6 fishing hooks and 2 yards of ribbon on 8 Feb 05. These were likely an important trade item with the Nez Perce who traded with them for fish and pack saddles; 28 Aug. 05. There were over 30 reports of fishhooks being traded along the Columbia River system and along the Pacific coast. A hat was received in trade for some fishing hooks; 19 Jan 06.
- **Rasors, 3 doz. *:** (vintage) Included in the 14 gift bundles, few mentions are made of razors. On 29 Dec 05 Clark gave a visiting chief a razor, probably a worn out personal razor, but could spare no more of their other scarce trade items. On 29 May Ordway reported that Frazer traded with an Indian woman, an old razor for 2 Spanish mill dollars. (See the Artifact collection for examples) and note a private's wages were 5 dollars a month, a great deal on his part, and no doubt she thought so also. Gass reported one of the men purchased a waterproof hat of cedar and bear-grass for an old razor; 20 Nov. 05.

- **Brads, (small tapered square finishing nail), 10 lbs., \$1:** (replicas) Included in the 14 bundles these inexpensive gifts were probably the most useful and valuable articles for their cost, especially to the Indian women who could have quickly fashioned them into awls. They may have also been fashioned into arrow points.
- **Trunk to Pack sundry Ind. Presents, \$3.50:** (replica) Lewis bought or had made over 30 boxes/trunks for expedition gear in Philadelphia. At \$3.50 it was not as finely made as the walnut medicine chest, (\$4.50); but it was the 2nd most expensive trunk. It was possibly a 6 board trunk similar to those shown in these displays, and probably carried over 100 lbs of articles.
- **Arms, Gunpowder, Balls and Shot:** (replicas) Lewis and Clark were reluctant to trade their weapons, and they did not have a lot of extras. It was only when they were desperate for horses, care of them and guidance that they parted with them. Of all the articles carried on the expedition only powder and lead were in excess, and it is said that there was enough left over for another expedition. There were at least 4 grades of powder, but there is no indication whether that traded/given to the Indians was inferior to what the expedition was using. Most of the trades occurred at the time when the expedition had the least amount of trade goods, and to the tribes, (Upper Columbia, Snake and Clearwater) who had the fewest arms.
- On 29 Aug. 05, Clark traded with a Shoshone, a pistol, 100 balls & powder, and a knife for a horse. On 28 April 06, Chief Yellept gave Clark and elegant white horse for which he got in return a sword, a 100 balls & powder, and some other articles. Lewis gave one of his Nez Perce guides some powder and balls on 1 May 06. On May 12th at a ceremony near Long Camp/Kamiah, Lewis and Clark get 2 fine horses from two young men. They in turn present to each of the chiefs a flag, a pound of powder & 50 balls; and powder and balls to the young men. Later in the ceremony Twisted Hair was given a gun, 100 balls & two pounds of powder for taking care of the horses. They promised the same when the balance of the horses was returned. Again at another ceremony on the 14th, the expedition received two horses from the tribe and an elegant grey gelding for which the chief was presented with a handkerchief with 200 balls & 4 lbs of powder. On 1 July 06, they give a sawed off gun to one of the Indians who guided them over the Bitterroot Mountains and the next day another goes to the second guide, with each getting powder & ball.

ARTICLES MADE AT FT. MANDAN

- **Arrow points*:** On 18 Aug. 06, Whitehouse reported that Lewis traded the Shoshone a few arrow points along with other articles for horses.
- **“Nez Perce” Knife:** This is a somewhat oversize replica of a knife reputed to have been traded from the expedition by the Nez Perce. The original is said to be on display a Fort Clatsop.
- **Awls:** Desperate for trade goods on their return to Nez Perce country they made awls from the links of one of their steel traps; 24 May 06.
- **Hatchets/Axes, Mandan:** (replicas) The smiths were also kept busy making the popular hatchets and axes desired by the warriors; 5 Feb. 05. Lewis thought they were “*inconvenient*” in design but they were popular and widely traded. Some of these battle axes were retained by the expedition and offered to the Shoshone to trade for horses on 24 Aug. 05. On 6 May 06, at the camp at Potlatch Creek, (Colter’s Creek), Ordway reported that the Indians were gambling over two or more axes that the blacksmiths had produced 16 months earlier at Fort Mandan.

INDIAN PRESENTS & TRADE GOODS: II

TRINKETS & MEDALS

(Updated June 06, printed for Eastern Legacy 2014)

This list with amounts and costs is based on Lewis's inventory lists found in Jackson's "Letters of the Lewis and Clark Expedition". Additional articles found in inventories such as recorded in "Fort Mandan Miscellany" and other entries in Moulton's "*Journals...*" will be marked with an " * ". **Note that there are many new additions possibly purchased in St. Louis and are later shown on the "Fort Mandan Miscellany" inventories. Some totals are less than purchased, suggesting that some were traded prior to the later inventories. Note also that articles without comment were not found in journal entries. Thanks to Gary Anderson for some of this information!**

- **Combs, 1 doz. Ivory at \$3.33; and 1 gross Iron at \$2.80:** (circa 1800 horn comb) The only mention of combs as gift, is by Clark on 26 Oct. 05. Ordway mentions them as a desirable trade good in his notes on the final 2 pages of his journal.
- **Looking glasses, ("Dutch paper"*) , 12 doz. at \$5.19 and Looking glasses, Pewter, 18 doz. at \$3.99:** (replicas) On 22 Dec 04, Ordway reported that Indians visited them with corn to trade for beads, button and looking glasses. Lewis received a pair of moccasins from Black Cat's wife and gave in return a small looking glass and a couple of needles; 8 Feb. 05. When Lewis first sighted a Shoshone on 11 Aug 05, he prepared a few trinkets which included some beads and a looking glass to show his good intentions. The Indian was scared off and Lewis took breakfast and left awls, beads, paint and a looking glass on a pole near his campfire. He hoped that the Indians might discover them and then know their good intentions. Later on the 13th the expedition discovers three women who prepare to die but are instead given beads, awls and pewter looking glasses. On the 17th they distribute many more gifts to the tribe which again include "*lookingglasses*". At what would become the Ft. Clatsop site, Clark reports looking glasses in the trade inventory; 7 Dec 05.
- **Burning Glasses, 8 doz. at \$12:** (replicas) On 19 Aug. 04, one of the chiefs asked for a Sun glass at a council with Clark. On 12 Oct. 04 Clark reports giving Arikara chiefs salt, sugar and a Sun Glass to each. On 2 April 06, Clark paid a "*Cashhook*" a burning glass to guide him to the entrance of the Multnomah River. On 1 May 06, Ordway wrote that two young men from the Walla Walla tribe returned a lost trap and were rewarded with a knife, a Sun glass and a little venison.
- **BEADS:** It has been impossible to determine the exact number, size and color of all the beads that the expedition carried. The list below is the best that this author can determine from the records. The selections shown in the displays are for the most part from the time period, and these beads were traded world wide. The word "mace" may be referring to small unit of weight of 2.4 grams, originally used in the East Indian trade, or possibly a strand of beads the value of a silver coin of that weight. Perhaps it may also have referred to a "brace", a length of about 6 feet, commonly used to measure cloth length and used once as a measure a length of yellow beads; 20 April 06.
- **2 Cards Beads, a flat collection on stiff paper, at \$3.80:**
- **Beads, 3 lbs. at \$2.01:**
- **Beads, assd., 73 bunches at \$41.** (This probably included some of the various colored beads below.): On 7 Dec. 05 Clark's limited trade goods inventory reports some "*beeds*". On 6 Jan. 06, Lewis reported that the coastal Indians would prostitute their wives and daughters for a fishing hook or a strand of beads. On 24 April 06, Lewis reported that after threatening to chop up a canoe they were able to sell two canoes, each for several strands of beads. On 2 June 06, two strands of beads, a handkerchief and two horses donated by Nez Perce chiefs were given in trade for Sgt. Floyd's personal tomahawk that had previously been stolen from the expedition. Possibly the last of the trade beads were found in Clark's waistcoat pocket, and Whitehouse was sent to trade them for some fish; 22 June 06.

- **Yellow Rd. Beads, 17 bunches, (10 bunches*); these and the white below cost \$14:** (circa 1800) Six braces (6 ft. ~ 1 brace) were offered with a lot of other trade goods for horses by Clark on 20 April 06.
- **White Rd. Beads, 120 maces; (25 bunches*):** (circa 1800) On 1 Nov. 05, Clark reported that the Indians are particularly fond of blue and white beads and again on 6 Jan. 06, he said "*blue & white large beed only*". On 20 April 06, Ordway wrote that they sold old robes and elk skins for white beads.
- **Sky Blue Rd. Beads, 7 bunches*:** (circa 1800) In the Fort Mandan Miscellany Clark reports that all nations in that area are fond of blue beads. Ordway noted that the Nez Perce liked any kind of merchandise, "*but the blue beeds they want mostly.*"; 23 Sept. 05. On the same date Whitehouse said "*large blue beeds*". On 8 Oct. 05, Whitehouse reported buying salmon for "*a fiew green or blue or red beeds, and tin &c.*" On 1 Nov. 05, Clark reported that the Indians are particularly fond of blue and white beads which they get in trade with down stream Indians for pounded fish, bear grass and roots. On the 20th of Nov. 05, Lewis tried to trade a chief for a robe of 2 sea otter skins but the only thing he would accept was a belt of blue beads that belonged to Sacagawea. For her loss Lewis gave her a coat of blue cloth. On the 24th Clark reported that they traded some Chinooks some blue beads for a small sea otter skin. Again on 12 Dec. 05, Clark again reported the very high value of blue beads and white, while other colors have little value, and again on the 20th. On the 4th of Jan. 06 Clark reported that after turning down a more generous offer which included a watch, a knife, a US dollar, and a handful of (blue?) beads, a Clatsop Indian returned the next day and accepted a few strands of the same beads he had rejected the day before. By 17 Jan. 06, Lewis reports that they had only 6 fathoms left of blue beads, 4 less than an Indian wanted for a (cloak?) of 3 otter skins. Two days later Lewis reported that they gave the remainder of their blue beads, and equal number of small white beads and a knife for an otter skin. In Nez Perce country on 13 May 06, Lewis observed that the Indians preferred utilitarian trade objects except for blue beads which all tribes value like gold and silver in "*civilized nations*".
- **Discussion of Clatsops, Chinooks & Beads by Lewis on 6 Jan 06:** "*The natives are extravagantly fond of the most common cheap blue and white beads, of moderate size, or such that from 50 to 70 will weigh one pennyweight. the blue is usually pefered to the white; these beads constitute the principal circulating medium with all the Indian tribes on this river; for these beads they will dispose of any article they possess.- the beads are strung on strans of a fathom in length and in that manner sold by the bredth or yard.-*"
- **Red Rd Beads, 8 ½ lbs. at \$25.50; (4 bunches*):** (circa 1800) On 8 Oct. 05, Whitehouse reported buying salmon for "*a fiew green or blue or red beeds, and tin &c.*" On the 22nd of Nov. 05 Clark offered a watch, handkerchief, a US dollar and a bunch of red beads for 2 sea otter skins, but the Indian wanted Chief beads and blue beads. Clark offered red beads for a small sea otter skin, and later for roots and berry bread, but only some small fish hooks were accepted for the food; 10 Dec. 05. On 29 Dec. 05 the expedition purchased 1 ½ bushels of Wapato for a few red beads, pieces of brass wire and an (old checked shirt?).
- **Green Beads, 1 bunch*:** (whitehearts circa 1800) On 8 Oct. 05, Whitehouse reported buying salmon for "*a fiew green or blue or red beeds, and tin &c.*"
- **White Seed Beads, 20 bunches*:** (replica) On 19 Jan. 06, Lewis reported that they gave the remainder of their blue beads, and equal number of small white beads and a knife for an otter skin.
- **Yellow Seed Beads, 112 maces*:** (replica)
- **Red Garnet, 6 bunches at \$8; (18 bunches or 80 maces*):** (whitehearts, circa 1800)
- **Brown Garnet, 2 bunches at \$1:** (circa 1800)
- **Bead Necklaces, 2 cards or (20?)*:**
- **Fine Necklaces, 3 cards*:**
- **Wampum (moons), 12*:** Apparently this was a piece of shell cut in the shape of a crescent moon or gorget. The only mention of this was on 20 April 06, when it was one of many articles offered for horses.
- **Wampum, beads, *:** (replicas) Presents of wampum "beads" were never mentioned in the inventories and were only mentioned in the journal entries that follow. The color was only mentioned in the last two entries. On 7 Aug. 04, Clark reported that a carrot of tobacco and a string of wampum was sent to the

chief of the Omahas and Otos in an attempt to have them meet for peace talks. Later on the 30th of Aug wampum was among presents given to the Sioux chiefs. On 29 Oct. 04, a string of wampum was sent to an Arikara chief. Wampum was among the gifts to two Minatare chiefs on 22 March 05. On 7 April 05, a string of wampum was again among the gifts to an Arikara chief. More strings of wampum were given to chiefs and principal men on 18 and 19 Oct. 05, along the Columbia River. On 23 Dec. 05, a string of wampum was given to a chief. Lewis wrote that on the coast, the best wampum was of less value than the most inferior beads; 17 Jan. 06. On 1 April Lewis offered 6 fathoms, (36 ft.) of wampum for a canoe, the deal was struck but then turned down. 12 May 06, was the first time that the color of the wampum was mentioned, when blue wampum, ribbon and vermilion was given to the Nez Perce for the delivery of some of the horses. Later on the 6th of June, white wampum and blue ribbon was used to decorate a Nez Perce pipe that was given to Clark.

- **Chiefs Beads*:** (circa 1800) Lewis described the favorite bead of the coastal Indians as being "*Chiefs beads*", coarse blue beads called by them "*tia Commashuck*"; 17 Jan. 06, and also mentioned earlier on 22 Nov. 05. It is not apparent that the expedition carried these, though they may have.
- **Hair Pipes, 24*:** (replicas) There was no mention in the journals except in the Ft. Mandan Miscellany.
- **Bells, Small, 6 papers/gross at \$4.02. Larger (Hawk) Bells, 1 box of 100 at \$2.25:** (replicas) Some bells of unknown size were traded with other items for 40 dogs at the Confluence of the Snake River and Columbia on 18 Oct 05. Bells were still shown on the trade inventory on 7 Dec. 06.
- **Locket, 2 ¾ doz. at \$3.56:** Locketts were never mentioned in the bundles of Indian Presents or in the journals.
- **Earrings, 2 doz. at \$1; (26*):** (replicas) No mention in the journals except the Ft. Mandan Miscellany.
- **Glass Ear Bobs, 48*:** Anderson describes these as silver earrings with a colored glass bead attached to the ear wire. Capt. Lewis gave the son of a chief a pair of ear bobs on 27 Dec. 05.
- **Broaches, 500 at \$62.07; (1500*):** (replicas) Besides being divided among the 14 bundles, they served as gifts to the Nez Perce on 2 Oct. 05.
- **Rings of Silver, 72 at \$6:** Besides being divided among the 14 bundles, they apparently served as gifts to the Nez Perce on 2 Oct. 05.
- **Curtain Rings, 3 gro. at \$1.87; (3 gro.) *:** (replicas) On 13 Dec 04, some members of Ordway's mess went to a Mandan village to buy "*some corn and beans with a little paint and a few rings & C.*"
- **Wrist Bands/Bracelets, 12*:** (replicas) No mention in the journals except the Ft. Mandan Miscellany.
- **Arm Bands, 12*:** (replicas) On 28 Nov. 04, Black Cat, a Mandan chief and other chiefs were given handkerchiefs, arm bands, paint and tobacco. On 26 Oct. 05, gifts to chiefs included arm bands. The expedition traded two brass arm bands for "train" (whale) oil; 19 Jan 06.
- **Gorget*:** On 26 Oct. 05, the son of a chief received a tin gorget on a piece of ribbon.
- **Silver Moons, 8*:** Anderson describes these as the Artillery Officers Gargetts worn around the neck. They may have had an eagle attached by wires. (see "*Taylor Made and Trail Worn*") There was no mention in the journals except the Ft. Mandan Miscellany.
- **Glass Bracelets, 8 pr.*:** Anderson describes this as a bracelet with a colored glass setting in the center, but there was no mention in the journals except the Ft. Mandan Miscellany.
- **Jews Harps, 4 doz.*:** (replica) Beside the Ft. Mandan Miscellany, the only mention was by Whitehouse of dancing Sioux with "*juze harps*".
- **Red Lead, 8 lbs. at \$.89:** (lead oxide) (The references below may have been Red Lead or Vermillion). At Ft. Mandan a visiting chief received a handkerchief, paint and a saw band on 25 Nov 04. On 28 Nov. 04, Black Cat, a Mandan chief and other chiefs were given handkerchiefs, arm bands, paint and tobacco. On 13 Dec 04, some of Ordway's mess went to the Mandans to buy "*some corn and beans with a little paint and a few rings & C.*" In the Fort Mandan Miscellany, Clark reports that all nations are fond of red paint. Paint and a few "*trinkets*" were placed by an abandoned fire so that the Shoshones might discover their peaceful intentions; 11 Aug. 05. Later on the 17th he distributed more, and on the 24th, paint was part of the purchase price of horses. On 26 Oct. 05, gifts to chiefs included "*a pin (piece) of Paint*". Paint was also included in the 7 Jan. 06 inventory. On 20 April 06, "*5 parcels of paint*" were among many items Clark offered, but he was turned down for horses. On 26 May 06, a little paint and a

few other items were divided among the men for trade to the Nez Perce for food for the Bitterroot Mountains crossing. Later on the 1st of June some articles including paint were lost while crossing the Kooskooski (Clearwater) River to trade with the Nez Perce for food.

- **Vermillion, 2 lbs. in papers at \$3.34:** (mercury oxide) Lewis distributed blue beads and vermilion among the 60 Shoshone warrior he first met on 13 Aug. 05. On 12 May 06, blue wampum, ribbon and vermilion was given to the Nez Perce for the delivery of some of their horses.
- **“Verdigrease”, (10 oz. or possibly lbs.?)***: (copper acetate, but copper oxide is substituted here) There was no mention in the journals except in the Ft. Mandan Miscellany.
- **Pigtails & Twists of Tobacco, 130 at 63 lbs. for \$14.25:** (replicas) A leaf was spun like a rope and twisted into the shapes shown in the replicas. Two twists were sent with a quantity of corn to a feast on 29 Aug. 04. On 23 Sept. 04, gifts of two twists/carrots were sent to chiefs and warriors to smoke with a request to meet in council the next day. On the 29th, one and a half twists were sent to placate more Sioux along the shore of the river. On 12 Oct. 04, Clark noted that the Indians had a “twist” of their own tobacco. Black Cat visited the expedition with other chiefs on 28 Nov. 04, and they received some presents which included a twist of tobacco. On 21 Dec. 05, apparently running short of tobacco, two men were sent to collect Sackocome “*which has an agreeable flavor.*” to mix with their tobacco. After being without tobacco for months, when the men returned to the cache at Camp Fortunate, they rushed to open it and each man received 2 feet of a roll. Clark took 1/3 of the balance for his expedition to the Yellowstone, and the remaining 2/3 went down river with the canoes; 8 July 06.
- **Carrots of Tobacco, 176 at 500 lbs. in 9 Bales***: A “carrot” of tobacco was a one, three, or five pound bundle of leaves tightly bound in cloth and cord. Carrots of tobacco were given to chiefs and larger groups of Indians such as the one given to the chiefs of the Omaha and Sioux on 7 Aug. 04, and later eight at the big council of chiefs on 19 Aug. 04. Again on the 30th each Sioux chief received a carrot at another council. On 28 Sept. 04, in a confrontation with the Sioux, a carrot of tobacco was finally enough to release a boat cable. On the 30th the expedition met friendlier Sioux but could not delay to visit so they sent carrots of tobacco to each chief. The expedition sent three carrots of tobacco to several Mandan villages with an invitation to council the next day; 27 Oct. 04. Clark met with Black Cat and the chief of the Assiniboin and gave the latter a gold cord and a carrot (also noted as a twist) of tobacco on 13 Nov. 04. On 7 March Clark reported that Charbonneau received some articles from the N. W. Trading company which included “*2 brac Tobacco*” (brick?). At Ft. Clatsop Clark notes that the Indians take deep draughts of smoke and swallow it as well as large amounts into their lungs which he suspects is more intoxicating; 10 Jan 06. On 13 Feb. 06 Ordway reported that one of the men purchased an otter skin for less than a carrot of tobacco.

PEACE MEDALS:

The following information has been taken from “*Indian Peace Medals in American History*” by Francis Paul Prucha; ISBN 0-8061-3218-3, the most definitive material written on Peace Medals; and cross checked with Moulton’s Journals. These medals were all of silver and the presentations followed a long historic tradition carried from Europe and perpetuated on the North American frontiers by all nations. There are over a hundred journal entries and most are mentioned below.

- **Jefferson Peace Medals, 105mm, 3:** (replica of pewter) These were to go the head chief of the Omahas, Arikaras and Mandans. On 3 Aug. of 04 one was sent to Little Thief the top chief of the Missouri. Another was given to Big Horse the head chief of the Otos; 19 Aug. 04. The disposition of the third is not confirmed by entries.
- **Jefferson Peace Medals, 75mm, (second size), 13:** (replica of silver) These were designated for the first chiefs of the other tribes, and second chiefs of the Omahas, Arikaras and Mandans. On 3 Aug. 04, two were awarded to secondary chiefs of the Otos and Missouri. More were awarded to Sioux in Sept. In the Mandan villages on 29 Oct. 04 second or third size medals were awarded to chiefs. At the Mouth of the Snake River the expedition gave a large medal to the principal chief; 16 Oct. 05.

- **Jefferson Peace Medals, 55mm, (third size), 16:** (replica of pewter) These were designated for 2nd and 3rd chiefs and for 1st chiefs of "foreign nations". On 3 Aug. 04 the first four of these were awarded to "inferior" chiefs of the Otos and Missouris, and later on the 19th another was awarded to another Missouri Chief. More were awarded to Sioux in Sept. In the Mandan villages on 29 Oct. 04 second or third size medals were awarded to chiefs. On 17 Aug. 05, Cameahwait received one from Lewis. On 5 May 06, Cut Nose received a small Jefferson Medal which was apparently buried with him, because in 1899 as a railroad bed was being built at about the same site, a grave was dug up which contained a small Peace Medal. Later on the 10th Lewis reported that they gave out the last of the peace medals to Tinnachemootoolt, (Broken Arm).
- **Washington Season Medals, 45mm, (fourth size), 55:** These were from Wahington's administration and were of three designs; domestic animals, women weaving and sewing and a man sowing grain. On 29 Oct. 04 medals of weaving & domestic animals were given to Mandan 2nd chiefs, and a man sowing wheat was given to 3rd chiefs. On 17 Aug 05, four season medals were given to two Shoshone chiefs and two respected men. On 5 Sept. 05 four medals were given out to Flathead chiefs, probably these medals. On 20 Sept. 05 Clark gave Twisted Hair a medal, probably a season medal. At the Mouth of the Snake River the expedition gave small medals to two lesser chiefs; 16 Oct. 05. On the 19th they gave Chief Yelleppit a small medal probably a season medal. Farther down the Columbia a number of chiefs were given small medals, again probably Season Medals, and more were given to chiefs of coastal tribes during the winter. On 29 April 06, 2 medals were given to lesser chiefs of the Walla Wallas. On 10 May 06 a Sewing Medal was given to the Nez Perce chief Hohastillpilp and the next day one medal of small size was given to the One Eyed Chief, "*Yoom-park-kar-tim*". When Lewis met some young Indians in (Northwest Montana) he gave one a medal and the others presents. When they tried to steal the expedition's guns and horses the Indian who had received the medal was killed and Lewis left the medal on his body, "*that they might be informed who we were.*" On 21 Aug. 06 Clark presented a Chyenne Chief with a medal which he rejected, being afraid of whiteman's medicine. He was finally convinced to accept it.
- **Liberty Bust Silver Dollars, (fifth size, 2 or 4?):** (1797 replica, and 1803, period coin) On 29 Oct. 04 Clark gave an American dollar to an old chief of the Gros Ventres. On 10 Jan. 06 one of these dollars may have been given to a chief in an exchange of gifts.

INDIAN PRESENTS & TRADE GOODS: III

CLOTH & RELATED MATERIALS

(Updated June 06: printed for Eastern Legacy April 2014)

This list with amounts and costs is based on Lewis's inventory lists found in Jackson's "Letters of the Lewis and Clark Expedition". Additional articles found in inventories such as recorded in "Fort Mandan Miscellany" and other entries in Moulton's "*Journals...*" will be marked with an "*". **Note that there are many new additions possibly purchased in St. Louis and are later shown on the "Fort Mandan Miscellany" inventories. Some totals are less than purchased, suggesting that some were traded prior to the later inventories. Most of the articles below were distributed evenly among 14 bundles designated for major Indian nations and an extra bundle for general trade. Thanks to Gary Anderson, interpreter at Ft. Mandan for help in defining some of these cloth items.**

CLOTH

Notes: There may be some redundancy because of a change in nomenclature in the various expedition lists. A brace of (cloth) is 2 arms width or about 64 inches, a fathom is 6 feet.

- **Handkerchiefs assd. [Cotton (bandano?*) & Silk (fancy?*) & (Romall?*)], 11 Ps. At \$59.83:** (replicas) "Ps." here must mean bulk cloth which was cut to size. Below are some examples as presents and trade items across the country. They were first noted as gifts on 25 & 28 Nov. 04, and 4 Jan. 05 among the Mandans. On 17 & 18 Aug. 05, handkerchiefs, uniform coats and red leggings were among the gifts & trade articles with the Shoshone, and later on the 24th for horses and mules. A couple of handkerchiefs were given to the First Nez Perce met on 20, 21 & 23 Sept 05, and later on 2 Oct. for purchase of roots. Handkerchiefs were given with medals to chiefs along the Snake, 16 Oct. which included a silk one on the Columbia, 26 Oct. 05. Handkerchiefs were among the items offered unsuccessfully for otter skins on 22 Nov. 05, but more successfully with an elk skin on 25 March 06. Joseph Fields was rewarded with a handkerchief for producing wooden writing slabs for the Captains, 24 Dec 05. On 20 April 06, many cloth articles were offered unsuccessfully for horses; handkerchief, blue robe, blue blanket, Calico shirt and 6 braces of ribbon. Handkerchiefs were part of a gift exchange for horses for both Clark and Lewis, 5 & 14 May 06, and later on the 2nd of June for the return of Sgt. Floyd's tomahawk.
- **Red Flannel, 1 ps. 47.5 yds. At \$14.94; (24 fathoms in 12 ps.*):** (replica) Flannel during this era was wool, not cotton. The only time flannel is mentioned is in the application of volatile liniment for rheumatism on 9 March 06, and later on April 29th when a woman was wrapped in it as part of a treatment for a cold.
- **Scarlet Cloth, 1 ps. 22yds. at \$58.50:** (replica) On 7 Mar. 05, Charbonneau received gifts from the N. W. Company some of which included 3 brace of cloth, 1 brace of scarlet, a pair of corduroy overalls/coats, 1 vest, 1 brace of blue cloth, and one brace red or scarlet with 3 bars. This was probably for his own use, and may well have been used in trade as on 22 April 06, when he purchased a horse for a red "*rappet*", shirt, plom & other items. On 31 Dec 05, Clark traded a small piece of blue cloth, (blanket or uniform?) for a peck of Wapato. On 13 April 06, Lewis took some cloth/2 robes and hides to successfully trade for canoes.
- **Inda. S. Silk, ½ catty (@ ½ lb.) at \$3.75:** (replica) Is this cloth or thread? Not specifically mentioned in the journals.
- **T(h)read assd. (In 40 Skaines, silk?), 2lbs. at \$23.17:** (replica) Running very low on trade goods Lewis divided the remainder among the men and each received among other things a few "*scanes of thread*". From the limited number above these skeins were most likely sewing thread of linen.

- **Fancy 1 Floss, (embroidery thread), 5 ½ doz. at \$18.87:** (replica) Thread was one of the items listed on the 6 Jan. 06 inventory. On 10 & 17 of Jan. 06 “thread” was traded for use in making “*skimming nets*”, though it was more likely heavy linen or hemp thread.
- **Gold & Silver Cord*:** On 13 Nov. 04 Clark records giving the chief of the Ossiniboin tobacco and a gold cord. On first meeting the Nez Perce, a silver cord, handkerchief and tobacco were offered, 21 Sept. 05.
- **Binding, 6 gro. at \$11.79:** (replicas) A narrow fabric or tape that is used to finish, decorate or strengthen the edges of fabric. It was probably brightly colored, but it was not mentioned in the Journals.
- **Gartering, 12 rolls*:** (replicas) Thanks to Gary for the following: “One to two inch woven wool in various colors or strips. The gartering was worn tied just below the knee to hold up long stockings or short leggings. It could also be used as binding on shirts, blankets or dressing up the edging on bags.” It was not mentioned in the Journals.
- **Dutch Tape, 2 doz.*:** Possibly similar to the binding above.
- **Small Bundle Tape, 8*:** (replicas) Anderson suggests that this is similar to the various colored bias tapes and was either wool or silk.
- **Nonesopretty, 2 doz. at \$2.94:** Webster & Oxford dictionaries define this as a decorative braid or tape used in the late 18th century for trimming garments in the American Colonies, but it was not mentioned in the Journals.
- **Red Strip’d Tapes, 2 doz. at \$2.80:** See the definition for “Binding” above. Not mentioned in the Journals.
- **Ribbon, Strip’d Silk, 72 ps. at \$39.60 and (12 rolls of Narrow Ribbon in the Ft. Mandan inventories):** (replicas) Black Cat, one of the most respected chiefs presented Lewis with a bow and received small shot, 6 fishing hooks and 2 yards of ribbon, on 8 Feb. 05. At Travelers Rest on 10 Sept some ribbon and a few trinkets were given to some passing Indians. Some pieces of ribbon were the first gifts to Nez Perce boys on 20 Sept 05, and later was among the gifts on 2 Oct. On the 17th small pieces of ribbon were rewards to Indians who showed Clark the Yakima River. On 26 Oct. 05, the son of a chief received a tin gorget on a piece of ribbon. Immediately after discussing the prevalence of venereal diseases among the Indians at the mouth of the Columbia, Clark divided ribbon among the men “*to bestow on their favorite Lasses, this plan to Save the knives and more valuable articles*”, 21 Nov. 05. On 27 Dec. 05, Clark gave a piece of ribbon among other small articles to the son of a chief. **Red ribbon** was tied around the top of a double cone Indian hat on 29 Dec 05. Ribbon was listed on the 6 Jan. 06 inventory. Lewis’s inventory on 16 March 06, lists some old clothes trimmed with ribbon which may well have been “**Binding**” mentioned above. On 20 April 06, many cloth articles were offered unsuccessfully for horses; 6 braces of ribbon, a calico shirt, blue robe, blue blanket and handkerchief. Ribbon was included among gifts for two horses on 12 May 06 among the Nez Perce, and on 20 May when the final trade goods were divided for food acquisition. Some was still left when while in Broken Arm’s camp, Clark decorated the stem of a pipe of peace which was to be sent to the Shoshone tied with **blue ribbon** and white wampum; 6 June 06. On the 1 July 06, Clark reports that they tied **blue ribbon** in the hair of their Indian guides before they left. Clark gave the Mandan chief Big White some ribbon to suspend his medal; 21 Aug. 06. On 1 Sept. 06 they tied some ribbon in the Hair of Yankton Indians.
- **Leather Shirts*:** (replica) Just before departure from Long Camp one of the men traded an old leather shirt and an indifferent horse for a good horse, 9 June 06. On 6 Sept. 06, anxious to wear cloth again several of the men including Ordway traded leather shirts and beaver skins for linen shirts with traders moving upstream.
- **White Shirts, 18*:** (replica) On 30 Aug. 05, Ordway reported that the captains gave the Sioux grand chief “*a red laced coat & a fine cocked hat & red feather & an american flag & a white shirt*”. Old shirts were one of the trade items for food at Ft. Mandan, 22 Dec 04. On 18 Aug. 05 Whitehouse reported that 2 of the men joined and bought a good pack horse for their baggage, “*and gave only one brich cloath one old or poor shirt & one knife,*”. On 22 April 06, Charbonneau purchased a horse for

a “*red rapper, shirt, plom & Tomahawk &c.*” Ordway reported that Clark received a horse for medical treatment and gave in return a white shirt, 30 April 06. On 12 May 06, Clark exchanged a linen shirt for Broken Arm’s leather shirt. Lewis gave one of his old shirts, and a handkerchief to two Indians on 3 July 06, that (guided?) them over the Bitterroot Mountains. Clark gave one of his two remaining shirts, leather leggings and 3 pair of moccasins to one of the naked men who would travel overland by horse with Sgt. Pryor.

- **Callico Ruffled Shirts, 48 at \$71.04:** (replica) Ordway reported that on 22 March 05, the captains gave a Gros Ventre chief a shirt, artillery coat and a medal. On 17 Aug. 05 Ordway reported that the captains gave Cameahwait a uniform coat, shirt and armbands, and on the 18th he reported the trade of a checked shirt and old red leggings for a pack horse, and again on the 24th, a shirt was part of the trade for a mule. On 5 Sept. 05 Whitehouse reported that the captains gave 4 medals, 4 shirts and 2 flags to Salish/Flathead Indians. A shirt, knife, Handkerchief & tobacco was given to Twisted Hair on 23 Sept. 05. along with On 29 Dec. 05 the expedition purchased 1 ½ bushels of Wapato for a few red beads, pieces of brass wire and an (old checked shirt?). On 20 April 06, many cloth articles were offered unsuccessfully for horses; a calico shirt, blue robe, blue blanket, handkerchief, and 6 braces of ribbon.
- **Chief’s Coats, 6*:** On 30 Aug. 04, Ordway reported that the captains gave the Sioux grand chief “*a red laced coat & a fine cocked hat & red feather & an american flag & a white shirt*”.
- **Artillery Coats, 9* and other uniform coats:** Ordway reported that on 22 March 05, the captains gave a Gros Ventre chief a shirt, artillery coat and a medal. On 17 & 18 Aug. 05, uniform coats, handkerchiefs and red leggings were among the gifts & trade articles with the Shoshone. On 20 Nov. 05, Lewis unsuccessfully offered a coat (his?) and other items for two otter skins. On 24 Feb. 06 he was finally successful offering an old coat and vest for one sea otter skin, but later on the 14 March he was unsuccessful offering his laces uniform coat for a much needed canoe. On the 16 March 06 an inventory of remaining trading stock consists of “*two handkerchiefs would now contain all the small articles...(and) 6 blue robes one scarlet do. One uniform artillerist’s coat and hat, five robes made of our large flag, and a few old cloaths trimed biith ribbon.*” On 17th Drouillard finally was able to trade Lewis’s little worn uniform coat for a canoe. On 18 April 06, men arrived in Clark’s camp with two of his coats and 4 robes of the party to use in trade for horses, but on the 20th he was unsuccessful even adding his sword & plume with his coat and a blue blanket.
- **Hats, 11; Circle Feathers, 6; Soldier Plumes, 5; & Other Hats:** On 30 Aug. 04, Ordway reported that the captains gave the Sioux grand chief “*a red laced coat & a fine cocked hat & red feather & an american flag & a white shirt*”. Again on 25 Sept 04, Ordway reports that Lewis gave a red coat and a cocked hat & feather along with other items to Black Buffalo the head of a Sioux tribe. Later on Oct. 29th he reported that Lewis gave the heads of 3 nations various goods including a suit of clothes, cocked hats and feathers. On 27 Dec 05, Lewis gave a chief a chief a small piece of sheep skin to wear on his head. They traded a hat and several other items for “*train*” (whale) oil; 19 Jan 06. A hat was one of the few items left to trade reported on 16 March 06. On 20 April Clark reported a plume and other articles were offered unsuccessfully for horses. Charbonneau was more successful when on the 22nd he purchased a horse for a “*red rapper, shirt, plom & Tomahawk &c.*”
- **Tinsel Hat Bands, 3.5 doz. assd. At \$3.75:** Not mentioned in the journals.
- **Leggins, 20 pr. & 20 pr. Scarlet & 2 blue*:** (replicas) On 17 & 18 Aug. 05, Lewis reported red leggings, handkerchiefs and uniform coats were among the gifts & trade articles with the Shoshone, and later one pair was part of the trade for a mule. On the same date Ordway reported that some of the men traded old red leggings, a checked shirt and a knife for a pack horse.
- **Flags, at least 2 of 1st size, 4+ of 2nd size & 4+ of 3rd size:** (replicas) Flags were important to establish sovereignty among the tribes on the new purchase and to establish a U. S. presence on lands to the west of the Louisiana Purchase which were still in contention among several nations. On 4 Dec. 03 Lewis seems to have drawn \$33 for “*flagg stuff*”, which would seem to have paid for a lot more flags than are listed on the “*Ft. Mandan Miscellany*”. Journal accounts often report several flags to a tribe which would suggest well over 20 were carried and distributed. The first flag noted in

the journals were given to the Otos on 22 July 04. On 13 Aug 04 Ordway was sent to the Omahas with a flag and tobacco. On 30 Aug. 04 some wampum and a flag were sent to the Grand chief of the Sioux. Clothes and flags were given to 3 Arikara chiefs on 10 Oct. 04. Coats hats and flags were distributed to chiefs at the Mandan villages on 29 Oct. 04 and another flag was given to a lower village later on the 2nd of Dec.

- **Flags continued, 1805:** On 9 March 05, clothes and a flag were given to a chief of the Minitari. On 27 Aug. 05 at the Shoshone camp, the expedition hoisted their large flag and Lewis gave the 1st and 2nd chiefs flags. On 5 Sept. 05 Whitehouse reported that the captains gave 4 medals, 4 shirts and 2 flags to Salish/Flathead Indians. On 23 Sept. 05 Clark left 2 Flags with Nez Perce chief Twisted Hair and the Grand Chief, Broken Arm. On 17 Oct. 05, Ordway reported that the officers gave some medals and flags to the principal men of a tribe along the lower Snake River. On 20 Nov. 05, a medal and a flag were given to two Chinook chiefs.
- **Flags continued, 1806:** A red flag shows up on the 6 Jan. 06 inventory. On the 29th of March Ordway gave a medal, blanket and an old flag to a chief that he bought an otter robe from. Ordway reported that Lewis bought a horse for a sword, flag, and powder and balls on 28 April 06. Among the Nez Perce on 6 May 06, a small flag is given to the Chief We-ark'-koomt. On May 12th they gave a small flag, a pound of powder and 50 balls to each of the assembled chiefs of the Nez Perce. Lewis gave a medal, a flag and a handkerchief to several young Blackfeet who later tried to rob them on 26-27 July 06. The Medal was left on a dead Blackfeet but the flag was retaken. On 16 Aug. 06, at the Mandan Villages, Little Crow refused a flag offered by Clark thinking it bad medicine. On 21 Aug. 06, Clark reports meeting Grey Eyes of the Cheyenne who received a medal and flag given earlier to a lesser chief. He also tried to return it but was finally convinced to keep it.
- **Blankets, Blue, 12 & 1 Scarlet from the Public Store* & "Robes" apparently made from portions of blankets and cloth:** (replicas) On the west coast on 20 Nov 05 Lewis unsuccessfully offered an Indian a blanket, coat and other articles for a robe of 2 sea otter skins. The next day Sacagawea allowed her belt of blue beads to be given for the otter skin robe, for which she receives a coat of blue cloth. On 16 March 06, at Ft. Clatsop an inventory of trade goods lists a stock of 6 small blue robes or blankets, one of scarlet, Artillerist's coat and hat, and 5 robes made of their large flag. On 29 March 06, Ordway reported that Clark received a robe of two sea otter skins for a medal, a blue blanket edged with red and an old flag. On 20 April 06, many cloth articles were offered unsuccessfully for horses; blue robe, blue blanket, handkerchief, Calico shirt and 6 braces of ribbon. On 22 April 06, Charbonneau purchased a horse for a "*red rapper, shirt, ploom & Tomahawk &c.*" On 30 May 06, Lewis reported a swamped boat and the loss of 3 blankets, a blanket coat and some articles intended for trade with the Nez Perce for food for the Bitterroot Mt. crossing.
- **Brich Clouts, blue and 2 red, 45*:** On 7 Jan. 06 an inventory shows "*B. Clothe*". On 18 Aug. 06 Whitehouse reported that 2 of the men joined and bought a good pack horse for their baggage, "*and gave only one brich cloath one old or poor shirt & one knife,*".

RELATED MATERIALS

- **Awls, 5 ¾ gross*:** (replicas) These seem to have been allotted to the bundles reserved for tribes beyond Ft. Mandan. Another gross were listed in expedition stores for the men's use and incidental trade. Some of these may have been included in a gift of trinkets left by Lewis at a campfire to attract the Shoshones; 11 Aug 05. On the 13th they gave the same to some Shoshone women they happened on and asked to lead them to their village. As they ran short of trade goods in Nez Perce country they became more vital in trading for food for example on 20 April 06.
- **Buttons, Brass*:** (replicas) At the coast on 31 March 06, Lewis noted the natives' fondness for buttons, especially brass. At Long Camp on 20 May 06, Clark reported that the men had traded all their brass buttons for food. Later on the 2nd of June as they were stocking up with food for the Bitterroot crossing, McNeal and York were sent out with (brass) buttons that Lewis and Clark had cut off their coats.

- **Buttons, Pewter*:** (replicas) Whitehouse first mentioned buttons used in trade at Ft. Mandan on 22 Dec. 04. They traded various trifles such as old shirts, buttons, knives, and awls for corn, beans and moccasins. On 21 & 23 April 06, Clark mentioned trading buttons for wood and dogs.
- **Needles, Collar, 48*:** (replicas) These are heavy curved needles with sharp triangular points and used for leather/saddle work. They come in several shapes and sizes. Besides being used for trade they were probably useful in sewing heavy leather and making tack on the expedition.
- **Needle Cases, 1 doz. for \$.30:** (vintage) These were not mentioned in the journals.
- **Needles assd. 4600 at \$9.73:** (replica) On 26 Sept. 04. Cruzatte was given some awls and needles to give to Omaha women, recent captives of the Sioux. Lewis received a pair of moccasins from Black Cat's wife and gave in return a small looking glass and a couple of needles; 8 Feb. 05. On 3 & 5 July Lewis regretted using needles with sharp edges to sew up the skins on his leather boat, because as it dried out the (leather) thong cut the leather hides. There was no pitch to seal the boat so the project was abandoned. A few were give to Clatsops on 21 Feb 06. A chief of the Omahas gave the expedition some corn and in return Clark gave his wife some needles, 14 Aug 06.
- **Knitting Pins, 14 lbs. 18 bunches for \$3.89:** (vintage) Some were traded with other items for 40 dogs at the Confluence of the Snake River and Columbia on 18 Oct 05. On 21 May 06, Lewis divided the little remaining stock of trade goods, giving each man a handful of small items including one to trade for provisions for the Bitterroot mountain crossing.
- **Thimbles assd. 2 gro. (9 1/3 doz Steel & 6 doz Brass):** (replica) Some were traded with other items for 40 dogs at the Confluence of the Snake River and Columbia on 18 Oct 05. Thimbles were reported among the trade goods on Clark's Ft. Clatsop inventory on 7 Dec. 05.
- **Seat or Mockasin Awls, 8 gro. at \$15.67:** (replicas) On 22 Dec. 04, Gass reported that the natives were trading corn, beans and moccasins for sundry articles such as awls. In Shoshone country they were mentioned as gifts on 11, 13, and 17 Aug. 05. The Chief of the Clatsops gave them some roots and berries for which they gave in return a mockerson awl and thread, 17 Jan 06. With little left to trade, mockerson awls were among the items offered in vain for horses on 20 April 06. Later on the 23rd they were accepted for dogs, "Shapollell" and firewood. At Long Camp on 19 May 06, Charbonneau and a few of the men were sent with these and a few other items to trade for food. The next day one was issued to each man with other items to trade for food for the Bitterroot crossing. Desperate for trade goods on the 24th one of the blacksmiths made awls from the chain of one of the beaver traps. They returned from Broken Arm's camp with a good supply of roots and bread of cous, (biscuit root).

MEDICINES AND TREATMENTS OF THE LEWIS & CLARK EXPEDITION

(Updated Feb. 06)

This list was prepared from the lists found in Jackson's Letters of the Lewis and Clark Expedition, and Moulton's The Definitive Journals of Lewis & Clark, and using Volume 13, the Index. The background information was derived primarily from internet sources, and two period medical texts, Pharmacopoeia Chirurgica 1818 and The American New Dispensatory, 1810. Some additional information was derived from research done by Lewiston HS students, and the information was cross checked with Appendix II of David Peck's book "Or Perish in the Attempt", and Gary Lentz's article, Meriwether Lewis's Medicine Chests, WPO May 2000. Thanks to Alan Hartley for spelling corrections and Dr. Loge for access to his publications for some specific details.

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Confluence of Colter's Creek and the Kooskooskee River

- **An asterisk *** indicates a medicine or herb listed for purchase or purchased at Gillaspay & Strong in Philadelphia before the expedition.

MEDICAL EQUIPMENT INCIDENTS:

One of the reasons medicine listed as purchased is not mentioned later on in the expedition may be due to losses because of accidents. These losses may be one reason why so many herbs were gathered and used along the way. Another reason herbs were gathered, were as a result of Lewis's training by his mother, a well known herbal doctor on the frontier. Also the use of common remedies for simple problems may have not been worthy of note in the journals.

14 May 05: Medicines and gear were almost lost in swamped pirogue, and despite drying, several medicines were destroyed and many others injured.

6 Aug. 05 & 5 July 06: Medicines got wet and had to be dried.

13 July 06: Lewis opened a cache and found it had been partly flooded by high water and wrote; "the stoper had come out of a phial of laudinum and the contents had run into the drawer and destroyed a gret part of my medicine in such a manner that it was past recovery."

MEDICINES, INORGANIC:

Borax*; **Sodium Borate Hydrate:** 8 oz. was on Lewis's original list and it may have been used as a cathartic. Historically it was recommended for yeast infections, cold and venereal sores. Homeopaths still recommend it for those uses as well as travel sickness. Chronic exposure can cause dermatitis and ingestion can cause nausea, diarrhea, or death. It was also used by the blacksmiths as a flux when welding iron tools.

Calomel*; **Mercurous Chloride:** 4 oz was purchased by Lewis for 75 cents, but it was never mentioned in the Journals. It was commonly used as a purgative as it increased bile secretion, producing a dark and runny stool. Historically it was one of the most important treatments for venereal disease where it was the major component in oral formulae for both syphilis and gonorrhea. Several dozes a day were suggested, alternating with a period of no use to be repeated until no symptoms of the disease were evident.

Calimin, Unguent*; (**Calamine ointment**): 1 lb. was purchased by Lewis for 50 cents, and it would have been useful for the skin injuries during the summer of 04, but it was never mentioned in the journals. It would have been a mixture of zinc carbonate or oxide, ferric oxide, and an emollient such as olive oil, beeswax or glycerin. Historically it was used on abrasions, burns, and ulcers. Formulations today are similar, as are the uses which are to treat skin infections and itching, especially that of poison ivy.

Copperas*; **Green vitriol;** **Iron Sulphate:** 2 lbs. were purchased by Lewis for 10 cents, but it was never mentioned in the journals. Historically it was used as an antihelminthic, a purgative and it may have been used as a mordant for the ink. Today it is used as a mordant for dyes, a disinfectant, and medically as an iron supplement for anemia.

Cream of Tartar*; **Potassium Bitartrate;** **Potassium Hydrogen Tartrate:** 2 lbs. were purchased by Lewis for 67 cents. This milder cathartic was mentioned in the journals about 8 times as an additional treatment for infections and paralysis, helping to purge the body of bad humors. It is a diuretic at lower doses and at higher dosages it is a hydrogogue, producing watery stools. It was also used as a refrigerant, (fever reducer).

The chemical precipitates on to the walls and bottoms of kegs during the fermentation and aging of grape wine, where it is later collected. It is used mostly today as a component in baking powder.

Diachylon Simple*; **Emplast. Diach. S.:** 1 lb. was purchased by Lewis for 50 cents, but was never mentioned in the journals. Historically this was a plaster or salve which was made of oxide of lead and/or lead acetate, mixed with olive oil or glycerin. Opium, mercury nitrate and the juices of several plants may have also been added. It was used on ulcers, chancres and on lacerations where it likely had an antibacterial action. Lead compounds are rarely used today in medicine due to lead's toxicity.

Dr. Rush's Bilious Pills*; **"Rush's Thunderclappers or Thunderbolts":** 50 dozen pills were made up and sold to the expedition by Dr. Rush who Lewis studied under before the expedition. They were made from 10 grains of **Calomel**, Hg_2Cl_2 ; and 10 gr. from the root of **Jalap**, *Exogonium purga*. This was the most powerful purgative in the medical chest and was used frequently as a general treatment for intestinal conflicts and fevers. Mentioned 10 times in the journals, but probably used much more frequently, it was given to flush the "morbid" elements in the blood.

Rush was a great believer in bleeding and purging and used both components during the various epidemics that swept Philadelphia in the late 18th century. His pills were the most likely source of the traces of mercury that helped identify the latrine site at "Traveler's Rest", Lolo Montana in 2003. Calomel is not used today, (mercury toxicity), but Jalap is still widely used as a purgative in herbal medicines.

Dr. Scott's Pills: Suddenly mentioned at Fort Clatsop, these purgative pills were used several times to treat men who were "unwell" and one man who was suffering from lower back pain. The source may have been a Dr. Scott of Pittsburg, who Lewis might have met while he was waiting for the completion of the keelboat, but the contents of the pills are unknown.

Elixir of Vitriol*: ¼ lb. was purchased by Lewis for 25 cents. This was made by adding sulfuric acid to a solution of alcohol, usually with the addition of (some of) the following: extracts of rose petals, orange peels, ginger or cinnamon. 15 drops of "oil of vitriol" was prescribed to Sacagawea while she was sick at the Portage Site. "Oil of vitriol" is actually sulfuric acid so the journal entry is inconsistent with the purchase document.

The literature lists well over 20 historical uses of this medicine but most commonly it was used internally as a tonic, a gargle for sore throats, and for stomach ailments. It was also used on skin eruptions and syphilitic rash. There is little or no use of this as a medicine today.

Flowers of Sulphur*: 1(lb.?) was listed to be purchased, but it was not on the list from Gillaspy and Strong. It was prescribed at least 6 times in the journals, usually in the accompaniment with Cream of tartar, which is a laxative. As used, this innocuous medicine probably had no real effect. It has been used as a medicine for over 2000 years and is effective mixed with petrolatum on some skin disorders such as eczema, and against parasites such as scabies. Homeopaths claim many more uses.

Glauber's Salts*; Sodium Sulphate: 6 lbs. were purchased by Lewis for 60 cents. This was probably the medicine meant when a "doze of salts" was prescribed, as was mentioned almost a dozen times in the journals. This laxative was first prepared by a German chemist in the 17th century and was used for stomach and intestinal problems. In the 19th century when mixed with saltpeter and taken orally, was recommended for gonorrhea to speed healing in the urethra.

Gunpowder: On 4 July 1804, Lewis treats J. Fields snake bitten foot with a poultice of barks and gunpowder. (*"The Journals of the Expedition"* edited by Nicholas Biddle) Though not mentioned in the Moulton journals, gunpowder was a common treatment for snake bites on the frontier where it was commonly ignited. Neither would have been effective.

Lye; Sodium Hydroxide, Potassium Hydroxide, Potassium Carbonate singly or in combination: Dr. Rush recommended that meat be steeped in a lye solution when salt was not available. A dilute solution can be made by using water to dissolve the lye from hardwood ashes. No mention of this use is found in the journals.

Magnesia*; Magnesium Oxide! 2 oz. were purchased by Lewis for 20 cents, but no mention is made of its use in the journals. At lower doses it is an antacid and at higher doses a mild laxative; uses that haven't changed in 200 years.

Mercury Ointment*; Unguent Mercuriale: 1 lb. was purchased by Lewis for \$1.25. It seems likely that the ointment was used to treat syphilis at Ft. Mandan, Ft. Clatsop, and to retreat Goodrich and McNeal, (who were probably suffering from secondary syphilis), while they waited at the Portage site. There are many formulations; one has tiny mercury droplets entrained in a salve of calcium carbonate and lard, (which is found in Fisher's medical chests). This ointment, also known as "blue mass", was repeatedly applied to syphilitic lesions and other parts of the body such as arm pits where it could be absorbed over a period of 2-4 weeks. This treatment was continued until the gums discolored and "salivation" or drooling occurred, which was thought to indicate expulsion of the disease. Complicating the treatment is that the primary sores disappear after a short time causing the victim to think he has been cured. They were probably not cured; more likely the disease was dormant.

There is evidence that suggests that syphilis originated in either the Old or New World, a few suggest both places. While there were many herbal remedies used, topical mercury ointments and calomel ingested orally were the most effective from the 1500s to early 20th century when salvarsan and later penicillin were used. Mercury may have been a cure but the amount needed to kill the bacteria was also enough to damage the brain, liver or kidneys of the patient or even kill him. The long dormancy of the disease further complicated the studies by physicians and today experts still debate its efficacy.

Sacchar. Saturn. Opt.*; Sugar of lead; Lead Acetate: 6 oz. was purchased by Lewis for 37 cents. "Eye water" was mentioned about a dozen times in the journals and this was one of the 2 constituents along with Zinc Sulphate. Formulated at 1 grain to 2 grains dissolved in an ounce of water; Lewis and Clark each mixed it in opposite proportions. It was used to treat hundreds of Indians' "sore eyes" in the

Columbia River Drainage and was traded for needed food and horses. Though not mentioned, it may have been used in water solution to inject up the urethra for gonorrhoea.

Its astringent and antibacterial qualities provided relief to the expedition's men and the Native Americans who may have suffered from, UV damage, bacterial infections such as gonorrhoea or the effects from smoky lodges. Historically it was also used on skin inflammations and rashes, and on venereal ulcers. The sweet tasting crystal was once used to flavor wine and food in the Middle Ages, but the toxic metallic salt is not used today except in industry.

Sal Nitri*; Nitre; **Saltpeter;** **Potassium Nitrate:** 2 lbs. was purchased by Lewis for 67 cents. This diaphoretic and diuretic was used on the expedition to treat heat related problems, fevers and sore backs. Other uses of the period were for sore throat (tonsils) and as a refrigerant. When it was not available black powder was sometimes substituted. It is rarely taken internally today except indirectly as a meat preservative.

Tartar Emetic*; **Antimony Potassium Tartrate:** 1 oz. was purchased by Lewis for 10 cents. This emetic was given to York when he felt unwell, and later to the men with diarrhea and intestinal conflicts subsequent to eating camas roots and year old salmon at Canoe Camp in Sept 05. It was probably given in high enough doses to induce vomiting, thus its name. Historically, it was also used in higher doses to treat parasitic diseases and at lower doses as a diaphoretic and expectorant. Because of its toxicity is rarely used today except in reduced amounts in some alternative remedies.

Vitriol Albumen*; **White Vitriol;** **Zinc Sulphate:** 4 oz. were purchased by Lewis for 12 cents. See the notes above for **Sacchar. Saturn. Opt.** It has astringent and antibacterial properties which made it apparently effective. Other 18th century uses in a diluted solution, were as a lavage of the urethra for gonorrhoea, and in stronger doses as an emetic. It seems to have some antiviral effects and was used in the treatment of smallpox. Today its only major medical use is as a dietary "zinc" supplement.

MEDICINES, ORGANIC & HERBAL:

Assafoetid.*; **Asafoetida Gum:** 1 lb. was purchased by Lewis for \$1, but there was no documented use during the expedition. This strong smelling Asian spice smells like garlic, and was used to ward off colds by wearing a bag of it around the neck. *Ferula asafoetida* was also used, (and is used today), as a carminative to lessen abdominal gas and cramping, to treat for intestinal parasites, for spasmodic coughing and yeast infections; and as a spice in Asian food dishes.

Balsam Traumaticum*: 1/4lb. was purchased by Lewis for 50 cents. "**Turlington's Balsam**" a patent medicine containing benzoin, aloes, and balsam of tolu in an alcohol solution, was on Lewis's original list of requirements, but when the final lists of purchases were made "**Bals. Traumat.**" was shown. It would have been easier to carry as benzoin powder and make a tincture when needed, but no mention is made of any of these medicines in the journals. Balsam "*traumaticum*" means balsam for wounds or injuries.

Benzoic acid is the primary component of benzoin gum, a thickened sap from the Peruvian tree *Styrax benzoini* which is then dissolved in an alcohol solution to make the "balsams". Historically it was used in treating respiratory problems as an inhalant, and internally as an expectorant and carminative, and externally on skin problems such as ulcers and abrasions. It is still used today as an antiseptic.

Basilic Ointment*; **Unguent Basilic:** 2 lbs. were purchased by Lewis for \$1. It may have been used on 26 Jan 04, for pleurisy and 21 Dec 04, when Lewis administered medicine. It may also have been used as an emollient when the men had skin injuries and it was rubbed around an opened abscess where its (then unknown antibacterial) properties probably aided in healing, 5 May 06.

Clark apparently formulated some at Long Camp, using *Pinus ponderosa* resin, bee's wax and bear's oil; for the men to trade for food, 2 June 06. Clark also used the salve on Pomp's swollen neck, 5 June 06. Although the actual formulation may have varied with the ambient temperature; this ointment was generally made from (pine) resin 1/3, bee's wax 1/3, and lard 1/3. Similar to "Bag Balm" of today, this emollient with antibacterial terpenes from pine resin was likely effective in all its uses on the expedition.

Bear's Oil: Rendered from grizzly or black bear fat, this oil was carried in barrels for cooking and on 2 & 6 of June 06 was used to make up Basilic Ointment to trade for food and to treat Pomp's swollen neck. Black bear oil is liquid at temperatures above about 65 degrees F while the journals report that Grizzly oil solidifies like pork lard. It may have also been used as an emollient and a mosquito repellent. For millennia Native Americans have mixed in colorant for paints; while in the mid 19th century bear's oil was popular among Euro Americans as a hair restorer, used it in perfumed pomades, and used it in fancy soaps.

Bear Grease: On 18 June 04, Clark wrote that the Colter had killed a very fat bear and "*the party Drying meat & greasing themselves,*". Two thirds of the men had "*ulcers or Boils, Some with 8 or 10 of those Tumors Mesquetors verry bad*". I would assume that they used bear grease to protect against mosquitoes and perhaps on their skin sores.

Biscuitroot; Cous: *Lomatium* species This freshly collected and pounded root was used in a poultice applied to Potts' inflamed leg wound, 22 & 27 June 06. It was likely *L. cous*, the most palatable of the various species, but it probably had little beneficial effect. However if it was *L. dissectum* the treatment may have been beneficial. It is considered by Native Americans and modern herbalists to be effective against respiratory problems, and has been proven to have antibiotic properties.

Benzoin: See "Balsam Traumaticum".

Camphor Gum*: 2 oz. were purchased by Lewis for 67 cents. It was a constituent in "*volatile liniment*" (see below) and was applied to the temples and sore back of a chief's wife, 18 April 06.

It was an essential component in many formulations and often mixed with alcohol, oils, turpentine, opium and other medicines. Usually it was used externally as a counterirritant in liniments where it created a warmth, which eases aches and pains. It was also sprinkled on ulcerations and gangrene. Internally some of its uses were as an antispasmodic in hysteria, as a stimulant and carminative, and was even used to irrigate the urethra for gonorrhoea. This aromatically powerful resin from the Camphor tree, *Cinnamomum camphora*, provides the aroma and warmth in Vick's Vapor Rub.

Castile Soap*: 17.5 lbs. were purchased by Lewis for \$1.68. Made of olive oil and lye, this was not listed among medical supplies, but it was used for cleaning wounds, 5 May 06, and as a component in "*volatile liniment*", 7 March 06.

Castor Oil: St. Charles historical tradition has it that the expedition bought locally made castor oil from Drs. Millington who grew medicinal herbs locally. This was one of the most common laxatives of the times, but it was never mentioned like a number of other medicines in the journals.

Cinnamon*; "*Simimon*": 4oz. It was probably used to flavor bad tasting medicines and as a carminative, but the only specific mention was at Ft. Clatsop when it was sent by Clark to a sick Indian, 23 Dec 05; and when it was used to enhance beaver bait formulated at Ft. Clatsop.

TREATMENTS:

Bleeding: Dr. Rush, Lewis's instructor, believed that the blood was the site of all fevers and an irritant in the body and recommended bleeding in many medical situations. Fortunately Lewis was not so zealous and there were only about 7 reported incidents of bleeding. It is likely that Sgt. Floyd was bled. On 7 July 04, one man "*struck by the sun*" was bled. Sacagawea was bled on 10 and 11 of June 05, and later Whitehouse on 26 June 05. On 26, 27, & 31 Jan 05, men were bled for pleurisy; Droulliard and? Once again Droulliard is bled for a severe pain in his side, 17 March 06. In every case this would have had deleterious effects, and is rarely done today except for polycythemia, a condition where the body produces too many red blood cells.

Castration: Stallions caused the expedition behavior problems, and on 14 May 06 one of the Indians offered to castrate 2 horses. "*he cut them without tying the string of the stone as is usual, and assures us that they will do much better in that way; he takes care to scrape the string very clean and to separate it from all the adhering veigns before he cuts it.*" On 15 May 06, Lewis reports that the previously gelded horses by Drouillard are much swollen and despite medical treatment, one has to be put down later. Lewis reported that the Indian method was much superior.

Cleaning and Dressing of Wounds: This process was mentioned at least a dozen times but there were few details except for the application of a tourniquet, 18 June 06, for Potts' severely cut leg. Sgt. Ordway reports that Lewis "*Sowed up the wound and bound it up*". The introduction of a "*tent*" to aid in wound drainage was noted in treating Lewis's gunshot wound, 11 Aug 06.

Clyster: An enema was prescribed for baby Pomp, which "*operated*" very well, 25 & 26 May 06.

Heat Treatment: A hot rock wrapped in flannel was applied to Clark's neck for severe pain from rheumatism, 22 Oct. 04.

Plasters: Plasters were made of "*Volatile Liniment*", see above and one of basilic ointment was placed on baby Pomp's swollen neck by Clark, 5 June 06.

Poultices/Cataplasms: Generally made of crushed medicinal herbs this was a common treatment on the expedition. They were used on 4 July 04, 10 May & 16 June of 05 by Lewis. From 22 May to 5 June 06, wild onion poultices were applied to baby Pomp's neck swelling. Cous and wild ginger were applied to Potts' injured and inflamed leg, 22 & 27 June 06; and was sought later for Gibson's leg, 19 July 06.

Steam: Snow on hot rocks creating steam was a treatment for snow blindness in the Mandan villages, 15 Feb. 05. This may not have "healed" the eyes, but the physical effects of the steam would have been soothing to the rest of the body.

Sweat Baths: These were used extensively by Indians across the path of the expedition. First reported in the journals among the Mandan villages (Mandan Misc.); they used cold baths and sweats for health purposes. On 30 March 06, Lewis wrote that Capt. Vancouver reported that Northwest Indians were fond of cold and hot and vapor baths. Ordway described a sweating procedure by the Nez Perce, with hot steam followed by a cold bath and repeated, 22 May 06. Between the 24th of May and the 5th of June 06, repeated sweats and subsequent cold baths cure Bratton of his debilitating 6 month back injury, and apparently cure a chief who had suffered from paralysis for 5 years.

The two *Cinnamomum* species are native to China and India where they were probably one of the first spices used in history over 5000 years ago. Cinnamon was used in embalming in ancient Egypt, and was popular in medieval Europe as a spice. In the 17th century the Dutch controlled the spice trade in the East Indies where they cultivated the trees. Pruned near the ground, the young shoots are peeled of their bark, which when dried, are called “quills” of cinnamon. It is a mild carminative and is used to treat nausea, flatulence, and diarrhea. The essential oil contains phellandrene, cinnamic aldehyde, methyl eugenol and other aromatic chemicals.

Chocolate: Mr. McClellan met the returning expedition and gave the officers some chocolate. Clark feeling unwell drinks a pint or so (probably in a warm sweetened drink) and subsequently feels better; 13 Sept. 06.

Chocolate made from the seeds of the *Theobroma cacao* tree of Central America was brought to Europe in the 1500s and was a popular drink by the 18th century. The native Central Americans used it for the pain of child birth, fevers and respiratory problems. Theobromine is a stimulant like caffeine and is similar to some asthmatic medicines, which relieve congestion in colds. Also in chocolate are ethyl xanthines which have a diuretic effect and dilate the blood vessels.

Chokecherry Bark/Twigs: On 11 June 05, with no medicine at hand, Lewis was suffering with a violent pain in his intestines. He had a decoction made of *Prunus virginiana* twigs, and after several pints of this astringent his fever abated. The next day he walked 27 miles!

Lewis picked up a lot of his medical knowledge from his mother, a well known herbalist. Pioneers and Native Americans both used the bark for cough medicine and chest colds, which herbalists still use today. Some of the many other uses were for diarrhea and worms. The new stems and leaves contain up to 5% levels of prunasin, an organic chemical that breaks down during digestion into hydrocyanic acid, a poison in high doses but a smooth muscle relaxant in low doses, the chemical that may be have been responsible for its “medicinal” properties and Lewis’s cure. (Loge, WPO, May 02)

Cloves*: 2 oz. were purchased by Lewis for 31 cents. Although listed as a medicine, the only time this was mentioned in the journals, it was used to enhance beaver bait that was formulated at Ft. Clatsop. Cloves were probably used to flavor bad tasting medicines and as a pain killer for the 2 tooth aches that were mentioned in the journals.

Historically they were used in China and Egypt over 2000 years ago as a spice and medicine for digestive problems, skin sores, stimulants and perfumes. Cloves are the flower buds of *Eugenia carophyllata*, (now called *Syzygium aromaticum*); and the volatile eugenol oil which makes up about 10% of the dried weight, is the effective ingredient. Uses today are much the same, but most cloves grown today end up in “kretek” cigarettes in Indonesia.

Columbo Root*; **Rad Columbo:** ½ lb. was purchased by Lewis for \$1, but there is no mention in the journals; and this may have been one of the medicines that was damaged and lost. Historically a decoction was made of this bitter tasting root and it was used as a tonic, for indigestion, and in higher concentrations as an emetic and cathartic. Herbalists still use *Frasera carolinensis* today for the same purposes.

Copaiba, Balsam of*; **Bals. Copaiboe:** ¼ lb. was purchased by Lewis for 37 cents. The only time this was mentioned was on 6 May 06; when after a bath, Clark anointed a little girl suffering from rheumatism. This is a dark aromatic resinous liquid from a South American tree, *Copaifera officinalis*; and contains various organic acids and terpenes.

Taken orally it stimulates the mucus membranes and it has been used to treat venereal diseases, particularly gonorrhea. It tastes so bad that sometimes it was mixed with magnesia into pills. Though not mentioned they may have been used together for treating gonorrhea. It has antibacterial properties and historically it was also used topically for dandruff, skin disorders, and ulcers. Today it is commonly added to perfumes and cosmetics.

Elderberry roots, stems & leaves: On 22 May 1806, Lewis had a strong decoction made of *Sambucus canadensis* to clean the vermin from the wounds of a castrated horse. Though it may have helped, the horse had to be put down later. Native Americans used the inner bark to induce vomiting; decoctions for treating skin diseases and colds, and poultices for bruises and arthritis. Recent studies suggest antiviral properties.

Elm Bark; Slippery Elm: Observed by Lewis several times along the lower Missouri, *Ulmus rubra* may have been used as a medicinal plant. It has been used as a survival food by Native Americans and early settlers. It soothes irritated tissues, has been used in poultices, and was believed to support the overall health of the gastrointestinal tract and respiratory system. These historic uses continue today.

Epispastic Unguent, (ointment)*: 1lb. was purchased by Lewis for \$1, but no mention was made in the journals. This ointment was made of Cantharid powder and mixed into grease and/or wax. The active substance is catharidin which is derived from blister beetles, typically *Cantharides* species. The beetle was originally imported from Spain and is also known as “Spanish Fly”.

It was used to produce blisters on the skin to draw “bad humors” from an adjacent painful or injured area such as tumors or inflamed ligaments and joints. It was usually applied as a “plaster”; spread on leather or linen, and then attached to the skin until blistering occurred. The blisters were drained of the offending fluids, usually allowed to heal, and if necessary it was reapplied. It was also used as a rubefacient, by using lower concentrations or applying it for shorter periods. Sometimes it was used internally as a diuretic and stimulant. Catharidin is rarely used today except in wart medicine.

Flannel; wool or cotton? “Flannel” in 1800 was usually wool, but may have been cotton. On 7 and 9 March 06, “*volatile liniment*” (see below) was applied to flannel and placed on Bratton’s sore back. Warm flannel was applied to the sore back of a Chief’s wife, 18 April 06; and another Chief’s wife was treated with a (purgative?) and wrapped in flannel, 29 April 06.

For health reasons Dr. Rush recommended “flannel” be worn against the skin especially in wet weather. The “*flannel*” here would logically be wool. Most of the cloth was worn out or rotted by the winter of 05, but some was apparently held in reserve for medical use. The soft fabric likely had a psychological benefit, especially to the Indians.

Ginger, Wild: On 18 June 06, Potts cut himself badly with a knife. On the 27th, a poultice of fresh *Asarum caudatum*, roots and leaves, was applied to Potts’ inflamed (but healing) leg. Wild ginger has been used to increase circulation, as a diaphoretic, and a carminative; and smells just like *Zingiber officinale*.

Z. officinale, the ginger commonly used medicine in the 1800ds, came from Asia and had been used for 5000 years. In addition to the uses above it has been used for colds, arthritis, pain and a fever reducer and motion sickness. It has a dozen or more therapeutic organic compounds.

Gum Elastic*: 2oz. were purchased by Lewis for 37 cents but it was not mentioned in the journals. This gum is from the buckhorn plant *Bumelia lanuginosa*, whose bark may have some medicinal qualities. It may have been used to seal containers or as a binder in pills.

“Gum Arabic”, which is very similar, has been substituted in the medicine chests Fisher produced because it was commonly used in the 1800s as a vehicle for medicine. Water added to the powder made a sticky paste or mucilaginous fluid that coated the throat. It was also used to bind medicines in pills and troches.

Horsemint: *Agastache urticifolia* was collected around Long Camp on 24 & 25 May 06; and boiled up in a tea to provide, “*in copious quantities*”, to Bratton while he was being given severe sweats to relieve back pain. The paralyzed chief was also given the same treatment at about the same time. This is likely another remedy learned by the captains from their mothers. Mint species were also commonly used by the Indians and they are still used today by herbalists as diaphoretics, carminatives, in respiratory problems and pain relief.

India Ink: 1/4lb. in solid or powder form was purchased by Lewis for \$1.50. It was listed with medical purchases and a portion was probably stored there due to the greater security in the medical chests.

Indian Meal, Corn Meal This author has not been able to relocate a reference of the use of this and **Elm Bark** in a poultice somewhere along the Missouri River???

Ipecacuan, Pulverized*: 4oz. were purchased by Lewis for \$1.25, but this powerful emetic, was not mentioned in the journals; and it may have been one of the medicines damaged or destroyed by water or laudanum. *Cephaelis ipecacuanha*, is a small shrub from Brazil, and the bark of the root was used by natives in the 17th century to treat dysentery. It became a popular herbal medicine and in low doses was used as a diaphoretic, and expectorant. In high doses it was effective in treating amoebic dysentery and was a popular emetic.

Its most recent use has been to treat cases of poisoning especially in children, and extracts were commonly found in homes during the 20th century. The FDA finally recently banned its use because vomiting can make some poisoning worse and overdoses of the herb which contains cephaeline and emetine can cause cardiac arrest.

Jalap, Pulverized; “Pils Galip”*: ½ lb. was purchased by Lewis for 67 cents. This powerful purgative from the Mexican vine *Exogonium jalapa*, (now *Ipomoea purga*), made up half of the medicine in Dr. Rush’s pills. “Pils Galap” is mentioned only once in the journals when Clark administered them for “lax and stomach heaviness”; 26 Sept. 05 at Canoe Camp. Introduced into Europe in the 17th century, it commonly replaced rhubarb root as a purgative and as such was used to treat a variety of illnesses. Used as a powder, or as a water or alcohol extract, it often caused griping.

Kinepox*; Smallpox Vaccine: Jefferson sent Lewis an unknown quantity to inoculate the Indians to protect them from smallpox. Lewis reported to Jefferson in a letter (3 Oct. 03) that it had “lost its virtue”. “Kine” is the archaic and dialect plural of cow. Using cow pox to vaccinate against smallpox had been recently discovered. It had been known for perhaps 2000 years that inoculating the pus from a victim with a light case of small pox could confirm a similar immunity; however there was a much larger risk of a serious case of smallpox or death than cowpox which replaced it as an innoculent.

Laudanum*: 4 oz. were purchased by Lewis for 50 cents. A very effective pain killer; it was given on 16 & 19 June 05 to Sacagawea; and on 24 & 27 May 06, to a paralyzed Indian. It is also very effective for diarrhea and intestinal problems; 4 May 05 & 24 Aug. 05. It was also added to “*volatile liniment*”, 7 March 06; and was mentioned in the treatment of hysteria, 19 May 06. It may also have been effective in these latter cases. This is a tincture of opium, and it is easier to control dosages of opium in this form. It could be formulated when needed by making a 10% opium solution using rectified spirits.

Widespread use of this in many formulations and patent medicines commonly led to addiction until it was made illegal in the early 20th century. Some of its many uses: colicky or teething infants, cholera, hysteria, headaches, plasters and liniments. This class II drug may still be available today, but it is usually in the formulation called paregoric which has the addition of camphor, and it is still one of the most effective remedies for diarrhea.

Mineral Water: On 16 June 05, Lewis sent some men across the Missouri River from the lower portage camp to a sulfur spring, to bring back a cask of mineral water for Sacagawea. She was seriously ill, probably suffering from a pelvic infection; and from deleterious medical treatments that caused dehydration and loss of electrolytes. Lewis was aware of the medical benefits ascribed to mineral waters in Virginia. This spring is rich in calcium, magnesium, sodium and potassium salts, however Dr Loge argues persuasively, that without a “sugar”, this may not have been an especially beneficial treatment.

Nutmegs*: 2 oz. were purchased by Lewis for 75 cents, but they were not mentioned in the journals except to enhance beaver bait at Ft. Clatsop. They were probably used to flavor foul tasting medicines. Over the last 2 millennia *Myristica fragrans* has been used to treat headaches and fever, as carminatives and aphrodisiacs, and to lessen the cramping action of purgatives,

Onion, Wild: From the 22nd of May 06 to the 5th of June, onion poultices were applied to the swelling below the ear of baby Pomp. Wayne Phillips suggests that the plant was Geyer’s Onion, *Allium geyeri*. *Allium* species contain “alliin” which after being crushed exposes an antibiotic allicin which has been used for millennia to treat cuts and burns. Taken internally, this odiferous substance lowers cholesterol, blood pressure and strengthens immune systems; some of many reputed cures.

Opium, Turkish; Opii Turk. Opt.*: ½ lb. was purchased by Lewis for \$2.50. This was probably used to replenish depleted supplies of **Laudanum**. This pain killer is only mentioned once on 3 July 06, when Potts’s previously injured leg was in pain from a hard trotting horse. He quickly revives after opium pills! Note that this is a lot of opium for so few journal entries and considering all the painful injuries it was probably used more often.

Opium, *Papaver somniferum* has been known, grown and used as a medicine from about 3400 BC in the middle east; and was later spread across Asia and the Mediterranean by conquerors and traders. Used in Europe as early as 1300ds, opium trade from India to China by the British reached a zenith in the 1700ds. Large amounts began to be imported to Europe and North America where it was used as a pain killer and in many patent medicines.

It contains morphine, one of the most effective painkillers used today. It is very effective in relieving the effects of diarrhea, where it is commonly dissolved in alcohol (a tincture) or with the addition of camphor, as paregoric. It is also a narcotic and can be habit forming

Peppermint Oil; Ess. Menth. Pip.*: ¼ lb. was purchased by Lewis for 50 cents. This fragrant oil was probably used to flavor bad tasting medicine. It is also a very effective carminative as it will settle an upset stomach and expel gas from the digestive tract. The only mention was on 24 Aug 05, when

Weiser was very ill with a fit of colic. He was given the mint oil and laudanum, a very effective treatment.

Although mints, *Mentha* species containing the essential oils (terpenes), have graced the tables and some of the foods and drinks of the Greeks and Romans, the first notable medical use was in England in the 18th century where it was grown and distilled. It was and is still used today as a rubefacient, a local anesthetic, a treatment for diarrhea, worms, rheumatism, and respiration therapy. It is one of the most popular tonic herbs today.

Peruvian Bark; "Barks"; Pulv. Cort. Peru*: 15lb. were purchased by Lewis for \$30.00. This was far and away the largest amount of any medicine except for alcoholic beverages, and was one of the most commonly used. It was applied as poultice on Field's snakebite, 4 July 04; Sacagawea's abdomen, 15 June 05; and Lewis's gunshot rear, 12 Aug 06. More commonly it was given as a "tea" to Sacagawea, 16 June 05; for Clark's fever, 29 July 05; to Bratton for lower back pain, 16 & 17 Feb. 06, and to a feverish Gibson, 17 through 21 Feb 06.

Indigenous Americans in Peru discovered that the barks of the *Cinchona* species were effective in treating the fevers of malaria, a disease which had been introduced to the Americas by Europeans. The Jesuits carried that knowledge to Europe about 1640. It was used like aspirin is today to treat all fevers, though it was really most effective for malaria, which was not recognized as a distinct disease until the mid 19th century. No one appears to have had malaria on the expedition. (See Dr. Loge's article in WPO May 02). Although synthetics are used today, the tree is still grown in South America and the East Indies and the bark is harvested for the quinine alkaloid which is a much cheaper and more accessible substitute for native peoples. Herbalists claim it is good for other fevers, pain, and as a tonic.

Portable Soup*: 193lbs. were purchased by Lewis for \$298.50. It was made by taking a few animal hooves (for the gelatin) and various kinds of meat and simmering them for many hours; then skimming off the fat and clarifying with egg whites. Next it was strained through a cloth, salt was added and the bullion was reduced by gentle heat and drying to a hard rubbery mass. Ideally when reconstituted, the soup would have spices, vegetables or meat added; but when most of it was drunk on the Bitterroot crossing it was as starvation rations with few if any additions. Although it kept well for 2 years, it was not well liked by the men. On 24 & 26 May 06 it was one of medicines prescribed for the paralyzed Chief.

Rattlesnake Rattle: Jessome, a Frenchman living among the Indians at Ft. Mandan recommended it for Sacagawea's difficult birth. Lewis gave him a rattle and he crushed 2 segments with his fingers and gave it to her with water. Ten minutes later she delivered her son. It is possible that the psychological impact of this medicine may have aided the delivery. It has been said that it contains a medicine similar to pitocin or oxytocin which starts or improves uterine contractions. I could find no literature on this connection, and if true I believe it improbable that hand crushed fragments could act that fast.

Rectified Spirits; "Spr. of Wine": 30 gallons in 6 small kegs were purchased by Lewis for \$77.20. This is alcohol distilled from wine, and it may have been well over 100 proof. Despite the fact that the whiskey ran out on 4 July 05, it is evident that some of the "medicinal" spirits survived much longer. "sperits of wine" were one of the components of volatile liniment, used on Bratton on 7 March 06; and they were needed to make up some of the medicines such as laudanum.

Rhubarb Root; Pulv. Rhei*: ½ lb. was purchased by Lewis for \$1 before the expedition, but it was never mentioned in the journals. First used in China over 2000 years ago, the powdered root from various *Rheum* species was used as a laxative; and it is still used for that today. It has also been used to

treat for worms and in a poultice for boils, burns and wounds. Recent research shows it to have antibiotic properties and concentrated quantities of vitamins and minerals.

Sage: Probably carried as a spice, a tea was brewed up for Droulliard when he suffered from pleurisy, 31 Jan. 04; and to treat Gibson's violent cold, 15 Feb. 06. It was considered a healthful beverage in England. *Salvia officinalis* has been used as a spice and medicine for at least 2000 years and was thought to "quicken the nerve and the memory" thus a "sage man" was a man of wisdom. Recent tests have suggested improved short term memory. It was also thought to cure snake bites and infertility, while modern herbalists consider it useful for treating indigestion and inflammation.

Tea*: 2 lbs. of Hyson Tea was purchased by Lewis for L1.8.6. Mentioned with medicinal supplies and used medicinally at least once when Clark ordered York to make stewed fruit and tea for one of Charbonneau's wives, 19 Jan 05. *Camellia sinensis* has been used as a beverage and stimulant for thousands of years in Asia. Caffeine, tannins and oils are some of the organic chemicals responsible for the many medicinal attributes such as an antioxidant, diuretic, expectorant and carminative.

Tragacanth Gum*: ¼ lb. was purchased by Lewis for 37 cents but there is no record of its use on the expedition. It is a water soluble gummy exudate from the plant *Astragalus gummifer*, which grows in Iran. It has been used for thousands of years as a laxative, to sooth a tickly throat and as an aphrodisiac. It is used today as an adhesive in making pills, as well as in lotions and emollients; and is being tested for anti cancer and AIDS properties.

Turlington's Balsam*: See "Balsam Traumaticum" above.

Volatile Liniment: This formulation was first described on 7 March 06, and consisted of wine, camphor, castile soap, and laudanum (apparently saturating) a flannel cloth and applied to Bratton's sore back. It was repeated, and was again mentioned on the 9th. On 5 May 06, Clark reported he had treated an Indian the previous year with "volatile liniment" who had knee and thigh pain and had been unable to walk. and that was one of the reasons he was so sought after for medical treatment during the return trip. On the 19th Clark treated 18 men and women, many with this liniment.

In period literature, this general formula was described for external application for rheumatism, arthritis, and sciatica. For toothache, saturated lint was placed in the tooth cavity for relief of pain. Similar painkilling liniments are used today.

Walnut Bark: Clark who was sick on 5 Feb. 04, sent Shields to get walnut bark for pills that he later took on the 6th. The bark has emetic and purgative properties. Lentz suggests it may have been used to get rid of worms, and it has been used for that purpose in Asia and by some Native American tribes, as well as against fungal and other parasitic infections. The tannic acid and other chemicals such as juglandin in *Juglans nigra* are likely the effective chemicals. It has also been used externally for skin diseases and parasites.

Whiskey: Clark reports that 18 kegs, (about 90 gallons) were loaded aboard the boat. After a day's severe work out on the river this was a powerful psychological boost for the weary men, and a recommendation of Dr. Rush. It was usually given out in "gill" amounts, which is about 4 ounces, and occasionally a double gill was given to men who had worked extra hard or had won the target shoot. Later as it was running out, rations were reduced to a dram which is barely a taste. It finally ran out on 4 July 05.

Wine, Brandy, Rum and Grog (diluted rum): Wine sent by Jefferson and served at banquets in St. Louis was more likely drunk by the captains, but the other spirits were given out at various times to the men as rations and rewards, great psychological medicines.

PREPARING HERBARIUM SPECIMENS

I. Before Gathering the Specimens:

- A. Go through stacks of newspaper and select 2 or 3 full sheets, fold and fold again until they are in quarters; about the size of the herbarium specimens that you have already.
- B. Cut corrugated cardboard rectangles to the approximate size of the newspaper. The corrugations should run across the short side of the rectangle to more easily vent air and moisture.
- C. Make up as many sets of each of the above as specimens that you expect to collect.
- D. Cut two sheets of plywood or particle board for outside presses, or nail together a latticework like the professionals. Get 2 lengths of strap or cord to tie the press together across the short sides.

II. Gathering Specimens:

- A. The most valuable specimens will be those in flower and those that are complete with stems, roots and leaves, and especially the flowers. It will be easier if you can choose plants that will fit within the parameters of the half-folded newspaper.
- B. Use a sharp pruning shears, and place the cutting carefully between at least 2 layers of folded newspaper immediately. Make sure it fits under the folds and trim if necessary; especially if it is woody and there are branches sticking straight up or down.
- C. If the specimen is too long, fold it as in the Bulrush/Tule specimen that is already in your collection.
- D. If you are collecting many specimens do not over-collect in any one area! Thin crowded populations.

III. Pressing the Specimen:

- A. Do not wait more than an hour to press and flatten, some plants will wilt and shrivel almost immediately and ruin your final specimens.
- B. Carefully arrange the leaves and flowers so as many as possible are laying flat within the parameters of the half folded newspaper and place a sheet of cardboard on top of the newspaper, and then a weight.
- C. Ideally you should have placed the corrugated cardboard between each specimen. Press down on the bundles until they are about 8 -12 inches thick or unstable, and tie together with straps or cord.
- D. Since you do not have expensive professional supplies you have more work to do. Failure to tend your specimens will likely cause them to rot and all your work will be wasted. Repack in a day or so with fresh dry newspaper and replace wet cardboard if necessary.
- E. Dry in a warm, low-humidity area and use a fan to blow over the specimens if available. Repack again and again if necessary until dry. They should be dry in a week to two depending on thickness. (Camas roots took several weeks.)

IV. Mounting the Specimen:

- A. Get the best white cardboard or thick paper that you can afford and cut if necessary to size.
- B. Get a tube of 100% (stinky vinegar) clear silicone caulk and a caulking gun and mount like the others. Use at least 6 light touches of caulk for most specimens.
- C. Place a piece of wax paper on top of the plant and white cardboard and press flat again. This is messy and a new tube will keep running if you don't let off the pressure. Have some paper towels ready and wipe up messes immediately.

Animal List Trunk # _____

Site _____

Antlers/Horns:

1. White tail 4 pt.
2. Mule deer 4 pt
3. Elk, spike and/or Branch antlered
4. Moose (1)
5. Bison
6. Antelope, Pronghorn
7. Mtn. Sheep/Bighorn Sheep
8. Mtn. Goat

Hair/Fur:

1. Deer: Mule/Whitetail
2. Elk
3. Antelope
4. Mtn. Sheep
5. Mtn. Goat (3)
6. Moose
7. Bison
8. Caribou (bonus, not seen by expedition, but found in Idaho historically & today) (8)
9. Coyote
10. Wolf
11. Fox, Red, or Kit
12. Black Bear (several colors) black, Brown (2), Blond(0)
13. Grizzly (3)
14. Mtn. Lion/Cougar (1)
15. Bobcat (1)
16. Beaver (1)
17. Muskrat
18. Raccoon
19. Mink (1)
20. Otter
21. Martin
22. Fisher
23. Weasel
24. Wolverine

Dung: (soaked in varnish & turpentine)

1. Whitetail
2. Antelope
3. Mule Deer
4. Elk
5. Moose
6. Bison
7. Mtn. Sheep/Bighorn Sheep
8. Mtn. Goat
9. Coyote, (three different specimens showing different diets)
10. Wolf
11. Black bear, (five different specimens showing different diets)
12. Grizzly
13. Stripped Skunk (2)
14. Beaver (1)
15. White Tailed Jackrabbit (4)

Birds:

1. Blue grouse tail spread (1)
2. Spruce grouse tail spread (1)
3. Ruffed grouse spread (2)

Other: (hooves soaked in varnish & turp.)

1. Oregon Rattler skin, (1)
2. Oregon Snake rattle, (1)
3. Bull/Gopher snake skin (1)
4. Hoof of Bison
5. Hoof of Elk (4)
6. Hoof of Deer
7. Hoof of Moose (1)
8. Skull of Black Bear (2)
9. Skull of Otter (1)
10. Skull of Beaver (2)
11. Skull of Raccoon (3)
12. Skull of Pine Marten (2)
13. Skull of Mink (4)
14. Skull of Skunk? (1)
15. Western Painted Turtle shell (1)

Hair and Fur Key for samples given in summer 2001

1. The parameters given are appropriate for the samples supplied to LCRP participants. There are wider variations in animal populations.
2. There is often variation in color of the dorsal (top layer), ventral (under layer), and rump (rear area of an animal). There are no rump specimens or colors supplied here.
3. Hair and fur thickness depends on the time of the year. In the winter the hair/fur is thicker and in the summer. The hair/fur is shed and thinner.
4. Most large herbivores have hair that has a hollow "foam" core, which makes the animal buoyant in water and is a great insulator, but the hair breaks easily and is not wear-resistant.
5. Most carnivores have long solid wear-resistant and protective outer guard hairs, with soft fuzzy wool-like under fur, which actually keeps them warm.

Animal	Color Dorsal	Color Ventral	Length	Guard Hair thickness hair	Under Fur	Other Factoids
Antelope	tan	white	4 cm	coarse hair, tiny zigzag waves, foam core	none	hair near skin gray and easily broken
Bear	black dark brown light brown	same	5-12 cm	coarse wavy guard hairs	fine softer under fur may be present	dorsal fur is much thicker than ventral fur
Cougar	tan	white	3-4 cm	softer fur than herbivores and bear	soft fine hair and curly	(sample in smallest ziploc)
Deer	tan in spring gray in fall	white	2-3 cm	coarse hair, tiny zigzag waves, foam core	none	tanned leather greenish, hair easily broken
Elk	tan, (light tan, brown, and gray)	dark brown	4-8 cm	coarse hair, tiny zigzag waves, foam core	gray brown fuzzy fur	hair near skin is gray and easily broken
Mt. Goat	white	white	5-20 cm	coarse long and flexible	fine wool like curly fleece	thickest and longest hair
Big Horn Sheep	gray	white	4-10 cm	coarse hair, tiny zigzag waves	sparse gray wool 1 cm	easily broken hair

ANIMALS AND MAJOR EVENTS OF THE LEWIS & CLARK EXPEDITION

Interpreted by J. Fisher from the "Moulton" Journals, updated Sept.03

MAMMALS: (red letters in front of the name indicates specimens in this trunk: "A" for antlers or horns, "B" for bones or skulls, "F" for feces, "S" for skin swatch, "H" is for hide, and "O" for other.)

BADGER On 30 July 1804, J. Fields kills a badger and Clark accurately describes the specimen, food and its habits. It is skinned and stuffed and is sent back to Jefferson next spring. It is mentioned about 20 times in the Journals. On 5 Sept. 1805 a Flathead chief gives the expedition a number of animal skins including a badger.

BEAR, BLACK Mentioned over a hundred times in the Journals, this animal caused considerable confusion to the pioneering naturalists. Black in the east and on the Pacific coast, (also rare bluish and white color phases in British Columbia); the men thought each of the several colors found (Idaho) were different species until the Nez Perce explained that they all were the same animal. Lewis writes of this on 31 May 1806 while they were waiting for the snows in the Bitterroot Mountains to melt. (This author has seen a black sow with a light brown {cinnamon}, dark brown and black cub.) The expedition collected a number of skins to carry back to the United States.

BEAR, GRIZZLY Long before they met this bear, and arrogant with their superior firepower, the Captains dismissed the Indians' accounts of the grizzly's danger. Later almost every encounter with this bear resulted in great danger to the men of the expedition, and created fear and respect for this animal. Lewis issued orders that no man should go out alone in the Great Falls area. Drouillard nestled in a tree killed one with one shot, but all the others needed several and as many as a dozen shots to kill. On 14 June 1805 Lewis wrote of shooting a buffalo and while watching it die forgot to reload his rifle when he realized that a grizzly was stalking him. He was chased into the river where he faced off the bear with his esponentoon and lucky for Lewis the bear elected to run off. They describe the bear a number of times in the Journals. On 5 May 1805 Lewis describes a large male that took 10 shots to kill. Estimated at 500 to 600 pounds, he directed the men to render the fat and store the oil in a cask.

BEAVER SP. This animal was perhaps the most commercially valuable wild animal in North America at that time and locking up the fur trade in the west was one of the major purposes of the expedition. It is mentioned more than a hundred times in the Journals. One of the most interesting accounts was at Fort Clatsop when Lewis described the preparation of beaver scent used to attract the beaver to a trap. Drouillard took the castors (scent glands) of a beaver; ground nutmeg, cinnamon and cloves; and created a paste which was then stored in an air proof container. It was said to be able to attract beaver from a mile away.

BIGHORN SHEEP SP. Called argali and ibex by the expedition, these are mentioned about a hundred times in the Journals, noted mostly in Montana and southeastern Idaho. On 25 May 1805, Lewis wrote a long account of the description, food and habits of this animal, and noted that the Indians made bows and drinking vessels from the horns. He even speculated that the horn might be of commercial value for "*civilized man*" as hair combs, horn being the "plastic" of the day. They collected a number of skins and skeletons of the animals including a male and female on 30 July 1806.

BISON It was partly due to the accounts of bison by the expedition members that have enabled modern ecologists to calculate the original numbers of this animal, probably the most important animal in postglacial North American history. It was an essential component of the lives of perhaps a million pre-Columbian Native Americans, and possibly the most important wild animal to the survival of the expedition. On several occasions vast herds and individuals threatened the expedition members. They used the flesh for food; dung for fire and mosquito protection; grease for pemmican; long bones for marrow soup; skins for shelter, warmth, and boats; brains for tanning; and tongue, hump meat, and offal for food delicacies. Like the Indians the members probably used the horns for drinking containers and storage containers.

One of the most interesting accounts is of the buffalo swimming across the Missouri above the various cascades of the Great Falls and being swept over the falls. Injured or dead, they washed up along the banks of the river, where they were fed upon by large numbers of grizzlies, wolves and other predators and scavengers. This animal was mentioned hundreds of other times in the Journals.

BLACK-FOOTED FERRET Probably seen but not specifically mentioned in the Journals.

BOBCAT SP. Bobcats are mentioned about 20 times in the Journals. On 18 Feb. 1806 Clark wrote a detailed description of the Oregon Bobcat, which is similar, but larger compared to the eastern relatives. Whitehouse had brought Clark a robe that he had purchased from the coastal Indians made of 3 or 4 skins of these animals.

CANADA LYNX This animal was already familiar in the fur trade and is mentioned incidentally in the Journals about a dozen times.

CARABOU, WOODLAND This animal was probably found in the Bitterroot Mountains but was uncommon and is now extirpated in all but the Selkirks of north Idaho. It was not mentioned in the Journals.

CHIPMUNK, TOWNSEND'S On Feb 24 and 25, 1806 both Lewis and Clark mention this animal but do not recognize that it is a different and new species to Euroamericans.

COTTONTAIL SP While at Fort Clatsop on Feb. 15 Lewis writes of many "*Native Wild Animals*" of the west and mentions the "*rabbit*". He assumes that it is the same as eastern species. It is noted in passing about twenty times in the Journals.

COYOTE First mentioned on Aug 12, 1804 this animal was mentioned about fifty times in the journals but no detailed description was made. As Lewis and his hungry men were making their way towards the Weippe Prairie on 21 Sept. 1805, they ate the rest of their horsemeat, a few grouse, crayfish and a coyote that Lewis killed.

DEER, COLUMBIA BLACK-TAILED On 19 Feb 1806 Lewis writes a detailed description of this deer, recognizing that it is a different species from the whitetail and mule deer. Seen only around Fort Clatsop, Lewis found this deer inferior food probably due to the fact they were eating it during the winter and early spring.

DEER, MULE Perhaps the first to describe this deer, Lewis and Clark were the first to use "mule" in this deer's name. Lewis described it in great detail, on 10 May 1804 and again by Clark on 11 March 1806. They also pointed out differences in habitat, characteristics and behavior between it and the whitetail.

DEER, WHITE-TAILED The "common deer" was the one most familiar to the expedition members and there are several hundred references in the Journals. On 11 March 1806 Clark described this species and compared all three species of deer while at Fort Clatsop. It was also one of the expedition's most important food sources and the source of much of the buckskin clothing.

ELK SP. The elk was probably one of the 2 or 3 most important food sources of the expedition and there are many hundreds of references to this animal in the Journals. Many were shot along the Missouri and its tributaries, and 28 elk skins and 4 buffalo skins were used to cover the metal framed boat above the Great Falls of the Missouri. With no pine pitch to seal the seams, this boat sank, probably Lewis's biggest failure of the expedition. Elk tallow was used unsuccessfully to seal the boat, it was used to make candles and the fat in the marrow was a desperate source of calories in the lean times of winter and early spring.

The dressed and brain tanned skins became the primary hide source of their moccasins and dress as their woven clothes wore out and rotted off their bodies. The hide clothing eventually rotted off their bodies and was continually replaced, especially on the Pacific coast. Meat was eaten fresh and spoiled, smoked and dried over fires, dried in the sun and also turned into pemmican. It has been estimated that the men ate 6 to 9 pounds of meat a day especially during the winter.

The Indians of the Pacific coast hunted elk using deep pits along game trails. Their undersized bows and arrows apparently rarely killed elk, and the expedition hunters reported that many of the elk that they killed had multiple healed wounds from the detachable darts of the Indians' arrows.

FISHER The fisher was known in the northwest fur trade and is mentioned a few times in the Journals. On 19 Feb 1806 Clark gives a short description and comments on the inappropriate name, as it does not normally eat fish.

FOX, RED The Journals have about a dozen references to this species. The Captains did not know at the time that the red, silver and cross fox are all different color phases of the same species, red being the most common color. On 19 Feb. 1806 Clark wrote a short commentary on the silver fox and remarked on its rarity.

FOX, SWIFT Also known as the kit fox, this animal was briefly described by Lewis on 6 July, 1805 while they were portaging The Great Falls. It was mentioned about a dozen times in the Journals and one was shot on 8 July 1805.

GOPHER, NORTHERN POCKET On April 9, 1805 Lewis made the first of two observations of the dirt pile workings of this gopher. He was never able to see the little rodent that made them.

GRAY WOLF There are well over a hundred references to wolves in the Journals. This animal often dogged the expedition, stole its stored meat on a number of occasions, and one of the men was bitten in the hand one night. On 29 April 1805 Lewis wrote a short account of the number and hunting methods of wolves. Hunting in groups of 6 to 10 they cut one antelope from a herd and then take turns running it down. On 29 May 1805, Clark while walking on shore, finds a bison pishkin (buffalo jump), buffalo carcasses and many fat tame wolves. He kills one of them with his espartoon. On 20 Feb 1806 at Fort Clatsop, Lewis briefly described the "gray wolf" noting that the animal of the Pacific forest was brown and less common compared to the plains animal, (a yellowish animal of a different now extinct subspecies). In other places in the Journals the animal is described as being white, gray and black.

GROUND SQUIRREL, THIRTEEN-LINED On 8 July 1805 Lewis wrote the first detailed description of this animal and its habitat.

HARBOR SEAL When the expedition first saw these animals below the last falls on the Columbia they thought they were sea otters. On 23 Feb. 1806 Lewis corrected his mistake and wrote a more detailed description of the animal. Later on the 25th of March the Indians give them some meat of this seal, which they find superior to elk. (Probably because of the fat which they were lacking in the elk.)

JACK RABBIT, WHITE-TAILED On 14 Sept. 1804, the expedition shot and stuffed one. Lewis wrote a detailed description of this animal, its behavior and habitat, the first observation by a Euroamericans. There are about forty references of this animal in the Journals.

MARMOT, YELLOW-BELLIED Briefly noted along the Columbia River in 1806, but though new to science was not described in detail. Lewis had earlier noted that some Shoshone robes were made of the hides of this animal.

MARTEN The Journals do not indicate that they saw any live specimens on the expedition, although considering the amount of time the men spent hunting that seems unlikely. They sent a hide specimen acquired from the Mandans or Hidatsas back to Jefferson in the spring of 1805.

MINK This animal was mentioned briefly at Fort Clatsop. It was thought to be identical to the eastern species. Later as they went up the Columbia the skin was seen on some of the breechcloths of the Indians.

MOLE, TOWNSEND'S On 26 Feb 1806 Clark wrote that this animal was the same as the one back east. Similar yes, but recognized as a different species today.

MOOSE This animal was known to the men of the expedition and the Nez Perce told them that they were found in the Salmon River country; but the only one seen was wounded by Ruben Fields on 7 July 1806 in western Montana.

MOUNTAIN GOAT This animal may only have been seen by Clark when he explored the possibility of descending the Salmon River in the fall of 1805; but it was mentioned over twenty times in the Journals. The Captains looked at the hides and listened to the Indians descriptions and made notes at least 3 times. Lewis at Fort Clatsop wrote the best description on 22 Feb 1806.

MOUNTAIN LION The expedition had a few contacts with this animal. At least one was shot at; several stole meat and skins, and they saw or traded for their hides. Clark wrote the best description on 26 Feb. 1806, when he described it as the same as the "*panther*" of the east; not technically correct, but close enough.

OTTER, RIVER There are about eighty references in the Journals of this animal, a very valuable fur-bearer. It was found in all of the rivers that they traveled and they occasionally traded the Indians for its fur. One of the more interesting accounts is the description of the tippet; (a fur stole that hangs over the shoulder), that was worn by the Shoshone Indians. On 20 Aug. 1805 Lewis writes that it "*is the most elegant piece of Indian dress I ever saw*". It was cut from a full-length otter skin and lined with one hundred or more strips of ermine hide that included the black tipped tails. The center of the otter skin was decorated with pearl shells.

OTTER, SEA Mentioned over 50 times in the Journals Lewis describes this animal in detail on 23 Feb 1806 at Fort Clatsop. He describes the fur as the richest he has seen among any animal and goes on to describe the immature animal, as being so different that he thought it was a different species. The Indians along the coast often offered sea otter skins for trade but frequently asked more than the expedition members could afford.

PORCUPINE This animal was already familiar to the expedition and was mentioned over twenty times. On 13 Sept. 1804 Lewis gave the most complete description, and wrote: "*the flesh of this animal is a pleasant and wholesome food*". The Journals noted a number of times that the moccasins and clothing of the Indians were often adorned in porcupine quills.

PRONGHORN SP. On 14 Sept. 1804 Clark shot a buck and both Lewis and Clark write a detailed description of the animal. There are hundreds of references in the Journals, but perhaps the most interesting was Lewis's description of a Shoshone antelope hunt on 14 Aug. 1805. As many as 20 Indians on horseback position themselves in several groups miles apart on high points around a herd. A few horsemen then start pursuing the herd and after a few miles another group of hunters replaces them, trading off until the animals are exhausted and killed with arrows. Lewis witnessed one such hunt that was unsuccessful after 2 hours.

PRAIRIE DOG, BLACK TAILED This animal was mentioned over 50 times in the Journals. On 1 July 1806, Lewis wrote a detailed description of the animal and its habits. He even dug 10 feet down trying to see how deep their burrows were. Corporal Warfington who was in charge of returning specimens to Jefferson in 1805 even managed to keep one alive along with 4 magpies.

RACCOON Although this animal was probably as common as it is today it was mentioned only about twenty times in the Journals. Most were written while the expedition was stuck at Fort Clatsop. The Indians had little value for the fur though they made robes of it, and Lewis noted that it was a food of the fisher.

SKUNK, STRIPED On 26 Feb 1806 Clark wrote a short commentary on the "*polecat*", common across the country, particularly along the Columbia where they ate the offal from Indian fishing activities. Another interesting observation was that the young Shoshone men often decorated their moccasins with the fur of this animal, the tail dragging behind.

SQUIRREL, DOUGLAS'S or CHICKAREE This animal and its habits were described in detail by Clark on 24 Feb. 1806.

SQUIRREL, GRAY This animal and its habits were described in detail by Clark on 24 Feb. 1806

SQUIRREL, RICHARDSON'S RED This animal and its habits were described in detail by Clark on 24 Feb. 1806.

WEASEL SP. Mentioned about a dozen times in the Journals as decorations on Indian clothing. See the account above on river otter.

WOOD RAT SP. On 2 July 1804 Lewis gave the first scientific description of the western woodrat also known as a packrat, and went on to describe its food and habitat. Later at Fort Clatsop Clark wrote of it again comparing it to the eastern, but unknown to them, different species.

WOLVERINE On 14 June 1805, a day that Lewis had to protect himself from bear and bison attacks, he apparently confronts a wolverine at its burrow. Sensing that the animal is about to spring on him, Lewis fires but the animal escapes to its burrow.