1804

1: William Dunbar Journal

William Dunbar

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Wm. Dunbar, usually styled Sir Wm. Dunbar, a Scotchman of ancient family, who settled 12 miles from Haliburton, on an estate called Trentham, and founded a large Presbyterian family.

Sketch of Life and Character and one letter, addressed to A. Mitchine, enclosed.
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and Pounce Boxes, Tape, Blank Checks, Bills of
Exchange, Bills of Lading, &c. &c. &c.
Latitude of principal places

Mouth of Red river ... 31° 1' 31-15-48
St. of black river ... 31-37-57
St. of Washita river ... 32-29-57
Post of Washita ... 32-29-57

Journal of a voyage commencing at St. Catherine landing, on the East bank of the Mississippi, proceeding downwards to the mouth of the Red river, & from thence ascending that river, the black river and the Washita river, as high as the Hot springs in the proximity of the last mentioned river.

By

Sir Win. Drumbur

Riling Co

[Signature]
1804

Journal of a Voyage

October 16th

Sailed from St. Catherine's landing in the afternoon. The latitude of this place is

and longitude 6° west of Greenwich.
October 16th. Set out from St. Catherine's landing in the afternoon. Tuesday. While below are the white cliffs 5 leagues from Natchez. The face of the cliffs is chiefly white sand, surmounted by some white shale; the cliffs are about 100 to 200 feet high; when the water is low the bases of the cliffs are uncovered consisting of clay of different colours & some beds of ocher, covered here & there by a thin lamina of iron ore. Small springs from the clay & ocher. Large fragments of stone, many nearly logs & pieces of timber, converted into stone are strewn about the beach.

The river at night upon an island of 1 mile below 6 miles further, encamped at night upon an island of 1 mile below 4 miles further.

17th. Set off past Fort Adamson & the line of demarcation & arrived at the mouth of red river. sandbars about 4 miles below the line of demarcation encamped just within the red river; the waters of this river have a red appearance from a rich fat earth or marl of that colour borne down by the floods. The mouth of the river is about 520 yards wide; here we commenced taking the meanders of the river by courses time depending upon the log to inform us of our rate of going as well as the velocity of the Current; there is however no tide here at the mouth that is sensible. The Banks on both sides are here clothed with Willows, Sand, Glow.
The subject is inundation and the height of 30 or more feet above the present level of the water, the mouth of the red river is accounted to be 75 leagues from New Orleans. It 2 miles above the exit of the Chalalaga or opelousa river, which is supposed not improbably to have been the continuation of the red river, when perhaps its waters did not unite with those of the Mississippi excepting during the inundation. M. de Ferrer has settled the Lat. and Long. of this place the first at 31° 15' N., the East at 96° 7' 11" west of Greenwhich.

Thursday 18th. Set off up the river. Remark'd vegetation to be surprisingly luxuriant along the banks owing no doubt to the rich red manure yearly deposited by the flood of the river. Willow grown to a good size, but other forest trees are much smaller than those seen upon the back of the Mississippi, which may be owing to the newly formed soil or its surface rivulets. The river narrow gradually as we advance; at sunset it was about 200 yds. Got out the instruments, which requiring a good deal of adjustment we were unable to make perfect observations. The banks of the river and luxuriously clothed with grass.
of grasses yielding seed, of which geese and ducks are very greedy; got our log line prepared and divided into fitches:—hour the log found we went at the rate of 4 fitches in half a minute, i.e. 1 ½ mile in hour. Very slow. Soldiers do not exert themselves at the car, came to for the night having made nearly 13 miles. Hour the lead in the middle of the river & found 14 fathoms. There are generally willows growing on one side of the river, and on the other the same small groves of forest trees continued, consisting chiefly of black oak, peachawn, hickory, elm &c. The trees are so exceedingly grand & lofty upon the banks of the Mississippi, that by comparison those bordering on this river seem dwarfish, & appear to bear a kind of proportion to the magnitude of their own river.

The extremes of temperature were from 46 to 84° of Farhenheits thermometer, made Thursday 12 ½ miles.

Friday 19th. Continued our route up the river; having given the soldiers this morning a few words of advice & encouragement, they improved considerably in activity & cheerfulness, hour the log & found we went 4 fitches in half a minute.

Current yet continues so moderate as to offer no impediment to our now easy alongshore
Wed: therefore not worth estimating: landed before 19th 12 to observe & for dinner. Lat: 31°14.50' N after dinner caught a runaway negro proceeded on to the Confluence of red & black river which by our reckoning appear to be 26½ miles from the Misissippi, the contrast of the two rivers is great, the red river being charged with red marly earth & the other a clear river giving it by comparison a dark appearance, hence the name of Black river. Each river is about 150 yds. when united about 200 yds. round in the black river & found 20 feet black sand, little or no Current. Took specimens of the red mud of red river bank. The water of the black river is rather clearer than that of the Ohio, and of a warm temperature, probably owing to the water which flow into it from the valley of the Mississippi.

Saturday: Continue ascending the river. Thermometer 70°. Temperature of the water 73°. No spring issuing from the river bank. 66°. Forest trees on the banks, chiefly red & black oak, interspersed with ash, pawpaw, hickory, some elm, persimmon & several kinds of grapes & many
humble plants in flower, so that even at this season, our
country affords employment for the Botanist. Great
luxuriance of vegetation along the shore, grass very
rank, & a great deal of Shrubbery of a deep green,
the soil black marsh mixed with sand, resembling
the soil of the Mississippi banks, yet the forest
Trees are not lofty like those on the Mississippi,
but resembling the growth on the red river. I
forget to mention in its proper place, that the
last inundation of the red river appear to
have deposited on the high bank a stratum of
red marl above half an inch thick now
dry, of which a specimen was taken. Took
a meridian altitude of the Sun & found the latitude
to be 31° 22' 46.6; observed Cane growing on several
parts of the right bank, which is a proof that the
land is not deeply overflowed from 1 to 3 feet; the
banks appear to have stability; very little Willow
on either side but a solid bank covered by Vege-
tation nothing worthy of notice—encamped at
Sunset—rounded 5 fathoms black sand. Extreme of the
Thermometer 47° to 80°
Made this day 13 miles 40 Perches.
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Sunday 26 Thermometer before Sun rise 60°. Contined ascending no current to impede our progress, for although there be a feeble one yet as this is reflected from bend to bend by crossing under the points it is not felt; the river about 80 yards wide; the timber appears to become larger, the banks in some places 40 feet high, yet liable to inundation, the land declines rapidly from the bank into Cypress Swamps; the current of the river is yet so small seen in the thread of the stream & nothing on the sides below the points that we do not take it into account against our progress; at 8 o'clock the hour of breakfast we arrived at a small elevated Island, said to be the only one known in this river, at least for a hundred leagues up—a small settlement commences on the left bank by a man & his wife, a covered frame of rough boards without walls served for a house & a couple of acres of corn had been planted, which is enough to yield bread for the year, the forest supplies, Venison, Bear, Turkey &c, the river fowl & fish, the skin of the wild animals & an abundance of honey being carried to market An inch the new settler; in a year or two he becomes independent he purchases horses & cows & perhaps a Slave, how happy. The Contrast when we compare the fortune of the new Settler in the U.S. with the starving Peasant of Europe.
The bank here is about 140 feet above the level of the lowest waters, & but rarely overflowed, the nearest road to the high lands at the rapid settlement on Red River, West is said to be 40 miles, it is probable the direct distance does not exceed half; the numerous lakes in the overflowed land render the road very circuitous; considerable bodies of Cane on both banks, interrupted by many beades; saw many Cormorants & the Hately hooping Crane, geese & ducks not yet abundant they arrive in flocks with the Winter-cold. Landed before 12 o'clock to observe — we had been disappointed at breakfast by clouds in making observations for the magnetic variation, for regulating the time of the Watch, preparatory to the lunar observation, I now apprehended the same disappointment, the heavens being loaded with flying clouds — just before the Sun was expected on the meridian a dense cloud concealed him from view, after a short time he re-appeared & was already dipped, the Altitude gave a Lat: too far north, we therefore conclude that the Sun had not reached his meridian Alt. when he disappeared behind the Cloud: Lat: found 31° 39' 52.5' which is certainly too much. This afternoon found the thore favorable for tracking (i.e.) running along Shore & towing the boat; Rate of going 5 per 1 1/2 min: at 3 o'clock thermom. 83° — the bank sheltering upwards to the ridge covered with very luxuriant herbage; 5 or 6 kinds of strong grass in seed nearly mature, of which the Geese & Ducks are very fond & get surprisingly fat; hot some water fowl with the web foot divided with black plumage extremely fat & very delicious, resembling in taste the Canvas-back the black also fat and very fine. Wind S.S.E, and Cloudy. Encamped.

Extremes of the Thermometer 60° to 85° — made 14 miles 59 per.
October 22. Thermometer before Sun rise 69°. Wind S.S.E. Cloudy. — Few drops of rain before day; Set off as soon as we could the men ready on board. — Soldiers also to move — Continue cloudy & threaten rain. Green matter floating on the river supposed to come from the Calahooole & other lakes & bays of stagnant water, which when raised a little by rain flow into the black river. Saw also many patches of an aquatic plant resembling lake lilies, some floating on the surface of the river, and others adhering or resting partly on the shore; examined the plant, & found it to be a hollow jointed stem with roots of the same form extremely light, with very narrow willowy shaped leaves projecting from the joint, embracing however the whole of the tube extending to the next inferior joint, the top extremity of each branch terminated by a spike of very slender & narrow internal leaves from one to two inches in length & 1/4 or 1/5 of an inch in breadth, producing its seeds on the under side of the leaf in a double row, alternately placed in contact, the spines alternately placed.

I have not yet been able to see the character of the flower to determine the class & order of the plant; it is probably the same which is described by Bartram as occupying large portions of the surface of rivers in East Florida which he denominate

The day continued cloudy, it rained at noon. No observation for the East today. At 3 o'clock Thermometer 79°. The afternoon continued cloudy. The current is yet insensible as to any opposition made to our progress. Sounded in the evening found 3½ fathom, the river being now considered very low. Extremes of the thermometer 69°—79°. Wind S.S.E. Cloudy. Made 15 miles 76 perches.

Tuesday.
23rd. Thermometer 68°. The River for several nights past has fallen about 3 inches perpendicular each night. Observed
a great number of muscles and periwinkles along shore; the wind in the morning although a head not being strong we got along pretty well, but, towards 11 o'clock it became strong & we made little way, as will be seen by the account of courses and distances. Notwithstanding the cloudy state of the atmosphere, we were fortunate in getting a good meridian observation, by which it appears we were in lat. 31° 36' 29"; about 3 miles higher than the town of Natchez; after dinner proceeded on to the mouth of Catahoula on the left & landed to get information from a French man named Caddo who has made a small settlement there & keeps a store for the crossing of men & horses traveling to & from the Red River & Natchez, and occupied the only land not liable to inundation between these two places; his house is placed on an Indian mound about 12 feet higher than the level ground which surrounds it, and which is now rarely liable to inundation; the soil is of the richest quality equal to the best bottoms on the Mississippi; he informs us of an Indian Mount in his neighborhood 80 feet high, which we propose to see on our return. We obtained from him the following list of distances from the mouth of Red River to the Post on the Washita called Fort Miro.

To the mouth of the Black River........ 10 Leagues
To the mouth of Catahoula & Washita..... 22 Leagues
To the Bayou or River Itchka on the right.. 1
To the Prairie Villernont opposite pine point..... 5

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Brought over 38 leagues
To Bayu Louis on the right & rapid 1
To Bayu Beef on S° 4
To the bourned prairie 3
To pine point on the left 4½
To Bayu Calumet 3½
To the Coal mine on the right &
Gypsum on the left 12
To M. Ouwit of first settlement 22
To Fort Miro

Leagues 91

The accounts of the low state of the river wee
received here are rather discouraging, as it
appears that on the first rapid, we were dis-
sect, there are only 22 inches of water, &
we now draw at the Stern 30 inches or more.

Went on & encamped within the mouth of the river
Washita, The bayu Catahotola, the Washita & the Yensa,
are unite nearly together, the Catahotola being
a little below which serves for the discharge of a
lake at the distance of 12 leagues up, the lake is 8 leagues
in length & 2 in breadth generally, it communicates
with the red river in high water.
Small river called Little River which preserves a
channel with running water at all seasons mark-
ing its way into the bed of the lake, but all other
part of the lake during the dry season from
July to November, deprived of its water, and
becomes clothed in the most luxuriant herbage.

The bed of the lake is inhabited by
fishes, becomes the habitation of herds of deer
Wild Turkey, Geese, Ducks &c. feeding upon
the grass & grain, the latter frequenting chiefly
the banks of Little River. The baye Tensa
serve only to drain a part of the Mississippi
lowlands — Extremes of the thermometer 68°—79°
Sounder found 6 fathoms, muddy bottom. By reference
to our Lat. at noon we found the mouth of Washita to be: in
Lat: 31°39'57'' made 9 miles 77/4 perches.

Wednesday
24th Thermometer before sunrise 54° — Wind North Cloudy.
Temperature of the river water 71° — no current could
estimating along the Shores to impede our progress.
Made slow advancement as usual without our oars —
found the Shore favorable for tracking or towing, which
we continued nearly all day making at the rate of 5 per
½ mile, i.e. again of half a perch boar more than
by rowing. The wind was contrary all day, otherwise
we might have gone to 6 per, which is equal to 2½
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12 miles, 1/2 hour: thus it all that I fear, we are to expect from Soldiers - they are without vigour or ambition, I wish only to pass over the time with the least trouble to themselves: they profess a disposition to be insolent, I pretend to hunt, that they can work only in proportion as they are paid, yet when we went soliciting these men all began to pray for at New Orleans to be admitted upon the voyage. The highlands on both sides have now the appearance of being above the inundation; the timber is such as is generally produced on high lands, chiefly oak, red, white and black, interspersed with a variety of others; the Magnolia grandiflora is absent, which is an infallible sign of lands not subject to inundation. We observed to day along the banks, the strata of solid clay or mud, not recent but ancient, to lie in very oblique positions, some making an angle of nearly 30° with the horizon. I generally inclined with the descent of the river, altho' in a few Cases the position was contrary; timber was also seen projecting from under the solid bank, which has an appearance of great permanency & certainly is of very ancient formation, being much more solid than the
October} recently formed soil; the river is now about 80 yards wide. The bay of the river comes in unexpectedly from the right about a league above the mouth of the Wairita, and is one of the many passages through which the waters of the great inundation pass & serve to damme up & annihilate for a season the Current of the lesser rivers in the neighbourhood of the Mississippi. Vegetation is extremely vigorous along the banks. The twining vines entangle the branches of the trees & hang along the margin of the river in the richest & most luxuriant sections, & often present for a great extent an impenetrable curtain, variegated with all the shades of Color from yellow to green; bordering on blue, fashioned with lively red and russet brown. The richest Strawberry also adorn the fertile margin, composed of plants to which no name has yet been given; it here & there where the shade is not too deep the ground is enameled with thousands of humble plants in full blossom at this late season. The day has continued cloudy but begins to clear away about 11 a.m. & we therefore land before noon to observe and find our latitude to be 31° 42' 50" deduced from a
October 24. Double alt. of the Sun 92° 4' 50" Fr: er: +19'45"—the longi: from Greenwich being taken at 92° in estimating the difference of the Sun's declination.

The timber of the higher grounds is still remarked to be inferior in size & height to that on the Mississippie, but here it may be accounted for by a less fertile soil, not apparently at least rarely subject to inundation. The wind still continues in the N or N.W. but the clouds are cleared away from expect tomorrow favorable weather for making observations.

Extremes of the thermom. 54°-68°—Encamped after completing a poor days voyage of 14 miles. 48 search without any current to oppose us.

Wind northeasterly, thermom. 54°. Made 14 miles. 48 paces.


Continued our voyage—passed passed Villermont's prairie on the right & pine point on the left about 500 yards from the encampment; those prairies are a kind of Savannahs without trees producing a great abundance of herbage, very luxuriant but rather coarse; when once a piece of ground is an Indian country is got into that state it has no opportunity of producing timber, as the savages & even white hunters never fail to fire the dry grass in the fall or winter for the advantage of attracting game when the young tender grass begins to shoot, & thus destroy the young timber. Those prairies
on the Washita are chiefly on the East side, and are liable more or less to be inundated by the annual flood of the Mississippi, which often escapes over the banks into the Washita, or by many creeks, called bayus or rather Bajou (according to the English pronunciation) — we say a good deal of high land to-day on either bank, producing pine & such other timber as are not the growth of low or inundated lands.

About a league beyond pine point we arrived at Bajo Louis, on the right, being the commencement of the rapids, which we expected to be the commencement of difficulty: sent people into the water to search the best channel, and after being frequently aground & dragging the boat, we got up into a situation about a mile higher, where we were in a manner embayed, being shut in by a gravelly bar upon which there was scarcely in the deepest part a foot of water: finding the men much fatigued with being so long laboring hard in the water, we thought it best to rest for the remainder of the day, & consult upon what was best to be done. The bar being not of considerable breadth, and no rock in the bottom as we had expected, it was
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thought best to attempt to cut a channel sufficient for the passage of the boat, which we supposed would take much less time, than unloading the boat & transporting the cargo to a considerable distance, to be again loaded at a convenient station.

The weather continued cloudy, damp, chilly and disagreeably cold all day; we had no observation at noon. Extreme of the thermometer 49° — 60° — wind at North, clearing up, many stars to be seen. made 3 miles 120 yards.

Friday

26. Therm. 40° — Wind N.W. light clouds — temperature of the River 65°. — The morning being very cool, it was thought best for the people to take an early breakfast before they should begin to work in the water. After breakfast commenced digging the Canal which was required to be about a hundred feet long; this business went on slowly & heavily as usual, & it was not until noon that it was made nearly of the depth which it was supposed might

...pass the boat.

The day being fine, made some observations
for the regulation of the watch & the variation of the magnetic needle & at noon had a fine observation to ascertain the Lat. of this remarkable place, which we found to be $31^\circ 48' 57''$. A little above there is a considerable quantity of rock or stone, which seems to have been thrown up to the surface in a very irregular manner; it is soft & friable, has the appearance rather of indurated clay than real stone, it is blackish without, but when broken white within. After dinner the boat was moved into the channel where I expected she stuck fast. Cables, rope & pulleys were got across fitted to trees & hand spiles were used to raise & push her along & we made some way across the bar, but evening coming on we were obliged to desist in hopes of being able to get over in the morning. Extreme of the Therm. $40^\circ - 70^\circ$. Wind N.W. clear starlight. Discovered a Barge coming up behind us; she also grounded & sent her people out to search for the channel.
October 27

Thermometer 32°—Wind N. Temperature of the Saline River 64°—Clear above, a fog on the river, occasioned by the condensation of the vapor arising from the surface of the water of the river; the morning being extremely cold, the people were directed to get their breakfasts & prepare to get the boat over the shoal; the day proved very fine with an agreeable warm sunshine, but it was one o'clock p.m. before we got entirely clear of the shoal, the men having exerted themselves with perseverance, some hauling by ropes & pulleys on the opposite shore, and others casing & propelling the boat with hand-poles. The occupation of this day prevented the making of any astronomical observations. After dinner we pushed on and arrived at the last of the rapids, which consisted of a ledge of rocks across the channel, but having previously sounded & discovered the best passage; after grinding & rubbing two or three times we finally got into deep water, where
The river became again like a mill-pond, apparently without current, excepting a small motion along the banks or concave banks, but on the opposite shores aloft over the rapids in certain positions the velocity was very considerable. The whole extent of the shoals or rapids embraced an extent of 1½ miles; that is, the obstruction was felt at small intervals along this space. Rowed about 1½ miles & encamped. Extremity of the thermometer 92°-7°. The evening is fine & mild here; 62°. Wind North. High fine land on the right, breadth of the river 100 yards.

N.B. Thermometer 70°. Temperature of the river water 63°. Wind N.W. clear – fog on the river.

Continued our voyage & at the hour of breakfast, made some astronomical observations, to regulate the watch, to ascertain the magnetic variation and also the longitude by the lunar distance from the Sun. High lands & a large Savannah seen on the right in the morning, passed a rocky hill soon after & Bayou Beau about ½ leagues from the rapids. At Noon observed the semi-meridian altitude & found the latitude to be 31°-53′-36″; at 9½ the thermometer was 78° shaded; the day was warm & the Sun powerful. Saw some more Savannah to the left; the river made several curves; today to the Westward of West. Therm ° in the evening 56°. The Extremes, 40°-78°. Sounded – 3 fathoms mud & sand.

Made 12 miles; 116 fathoms.
Thermometer 47°. Temperature of the river water 62°. Wind N.W. began to blow.

Continued our voyage. The banks of the river retain now very little alluvial soil; on both opposite shores are frequently seen to the water's edge the high land Earth, which is a sandy loam of a grayish light color with streaks of red sand & clay; it is esteemed in this country thin & poor land, bearing great numbers of pines, intermixed with red oak, hickory & dogwood. The river is now from 60 to 100 yards wide; at the hour of breakfast made 3 lunar observations by taking the distances of the nearest limbs of the Sun and Moon, keeping my eye upon the Telescope of the Circle of reflection placed with its pedestal upon a temporary support; with the watch in my left hand, as the support was very imperfect, I was obliged to rest with one knee in the sand in an uneasy position; the contacts appeared to be good, but we shall not assert that they are perfect & shall prepare for better con- venience as we advance. At noon we found our Lat. to be 31° 58' 2". Having made some advantageous changes in the arrangement of our benches & oars, we advanced with a little better speed, going as far as 6 per. ft. half minute, which however does not exceed 2⁄12 hours in water without any sensible opposition from the current. The wind came about to S. W., in the evening; the temperature 62°, & the uppermost of the thermometers 41° 85'. Readings at night 3 fathoms mud.
30th. Thermometer 49°. Temper of the river water 60°. Wind N. W. N. W. fog on the river—clear above.

Continued our voyage; the land on either bank seems to be from 30 to 40 feet high & does not improve inequality. Jumis are seen in most situations—nothing remarkable occurred except a rapid we passed in the afternoon, formed by a ledge of rock which traversed the river, narrowing it to about 30 yards, although the whole extent from the high banks was more than a hundred. At noon found the Latitude to be 32° 5' 24". It would appear from the distances run by our dog and time when compared with the estimated distances now reckoned by the French people who are in the habit of ascending this river, that their league scarcely exceeds two miles.

Encamped near a sand beach favorable for hauling the Sene & caught a sufficiency of fish to serve all the people for supper and breakfast. Thermometer in the evening 60°. Extremes 47°—83°. Made this day 15 miles & 150 perches.
Thermometer 44°. River water 62°. Wind N.N.W. Clear. Sog on
the River. Continued our voyage. This morning met
with shallow water and strong current. Our rate of
going deducting the velocity of the stream was reduced
to 2 per. p. Log - got upon shoals about 8 o'clock a.m.
which detained us greatly. We impeded more or less
until the afternoon; at noon took the Sun's meri-
alt: & found our Latitude to be 32° 10' 13" at 2 h. got
over the last shoal for this day. We went on in good water
untill the evening; the channel however was very
narrow, the sand bars at every point extending so far
across as to leave in many places little more
than the breadth of the boat boats sufficiently
deep, altho' the water on the shoal might be 70 or
80 yards wide; in the afternoon passed a little plan-
tation or Settlement. On the right, & at night came up
with 3 others joining each other. The quality of the
Land continued the same, i.e. not of the first
try second rate; the timber being chiefly pine, with
Scrubby oaks & other timber usually found upon this
Soil: on the East side the annual inundation of
the Mississippi
approached within a small distance of the
bank of the river, at a medium perhaps a quarter of a mile, sometimes more & often much less, the Cypresses Swamps are just at hand, where the water overflows from 10 to 25 feet deep: on the West side the high land after getting beyond what may be termed the Valley of the Washita about 4 of a mile more or less, becomes considerably more elevated, and extends all along to the Settlements on the red river, the lands from report are very poor & badly watered; there is here a road & ferry 

the distance is computed at 150 miles to the rapid Settlement on the red river.

From the experience we have had of this river, and the information obtained, it appears that the present is the least favorable of any season of the year for the ascent of this river, on account of the very low state of its waters; the Spring of the year is the most advantageously, the Mississippi then commences to flow up into this & other inferior rivers, the waters become deeper & boats ascend with a flowing tide, in so much that the waters of the inundation reach within 3 or 4 feet of the top of the bank, i.e. 30 or more feet higher than at the present times. Boats were manned at such times make 12 leagues or more
October 31. Day, whereas our days voyage seldom equals 14 or 15 miles; from the reports we receive of the upper parts of this & other western rivers, it appears that at any season small boats or barges not drawing above 12 or 14 inches are much better suited to their navigation than large vessels, & that consequently 2 or 3 such boats are far preferable to one larger for an expedition of the nature of that we are now pursuing; and upon the whole, canoes of a good size dug out of the solid tree may be expected to resist better than barges built of plank; though liable to leak after being hauled over shoals &c. Those canoes are sometimes made of two or of three pieces, & Cypress trees are often found so enormously large that excellent boats 4 feet wide in the clear are made of a single piece. It has already been mentioned that here is a road or ferry; this road extends from Watcher by the Cala Hola & crossing here goes up to the post or Fort of the Washita called Fort Avilo; the distance by the river to the Fort is 20 leagues, but by land through the swampy low grounds on the East side not above 5 miles. Along this river is a very considerable grant of land said to have been ceded by the Spanish Gov. to the late Marquis de Maizon Rouge, a French emigrant, who lequeated it wit
all his other property to M. Bouligny son of the late Colonel of the Regiment of Louisiana, by him sold to Daniel Clark; it is said to extend from Fort Mississauga to the Baye Charlemont, which following the sinuosities of the river is computed by French reckoning to be 30 leagues.

Extremes of the thermometer 44°—84°

Made 6 miles 165 perchers.

November 14th

Therm. 48°—river water 62°—calm—clear above—a little fog on the river.

This morning we prepared to pass the rapid, upon which last evening, we found only 18 inches of water in the deepest place; we procured the use of two Canoes to transport a part of our loading, which enabled us after some time & trouble to drag over the shoals about noon; finding one of the Canoes so unserviceable being informed of other rapidis before we left, we bartered away a smaller canoe we had with us for the larger one giving a little cash to boot.

Dined & continued our voyage—met with several retardments from shoals & encamped in the evening having made only 4 miles 8—115 perchers.

Extremes of the thermometer 48°—85° at 8 p.m. 84°

Weather extremely fine & agreeable, the slow progress of the boat being the sole circumstance of regret, attending to disappoint our prospects.
November 23

Thermometer 68°. River water 62°. Light clouds.
Wind S.S.E. — a little fog on the river.

Continued our voyage with immense sand bars in
view at every point, which required the utmost care
and caution in steering round the banks, so as to keep
clear of the shoals which left frequently little
more than the breadth of the boat clear, but what
added to our embarrassment, the banks were
generally so choked up with logs fast in the
ground, some showing themselves above water
and others concealed below, so that our choice
frequently reminded us of the situation of the
Mariners between Scylla and Charybdis; either
to fall by the violence of the current upon a
shoal on the one hand, or on the other to one
danger the destruction of our bark by rolling
against numerous pointed logs & trees. We suffered
much detention this day from these causes;
we were twice fast upon a sunken log under water,
and our boat being heavy & unwieldy, we were
obliged to get a strong rope a shore made fast to the
stern & have her backwards off the log, by which we
lost each time ½ hour; and several times got
upon shoals, by which we were also retarded; small boats proper for the navigation of these inferior rivers, are not exposed to such inconveniences; drawing little water they seldom touch, & when they do they may with little loss of time be pushed off, & can be rowed along those thin narrow passages where a larger boat cannot venture; the bottoms of such boats ought to be perfectly flat, or at most with a very obtuse convexity; keels are extremely improper, as they risk the oversetting of a boat & are more difficult to push off from a log by increasing friction, & cannot by any means be pushed laterally.

Made this day only 8 miles and 1044 paces. Thermometer in the Evening 8 hours, 78° - the Extremes 48° - 84°. No Astronomical observation made this day, which was prevented by our embarrassments.

Saturday 3rd. Thermometer 52° - river water 64° Some light clouds. Continued our voyage with very little variety, a great sameness appears as to the river and its banks. Although we got several times aground we were not as unfortunate as yesterday; immense sand bars & steep banks with little or no alluvial loads, except...
This rule will be found general, and may therefore
serve as an excellent guide to the Naturalist
who directs his researches to the discovery of new
Drags for the use of the Dyer.

Made a good observation at Noon, from which
we found our Latitude to be 32° 17' 17"

Nothing remarkable occurred in the afternoon,
except a discovery made by Doctor Fisler, walking
along the river side, of a substance resembling
fossil coal, in its incipient state—some specimens were
saved, on being applied to the flame of a candle, it
did not readily burn, but seemed to increase the
flame & yielded a faint smell resembling the gum
lack of common sealing wax. passed over in the
evening some Rapids & shoals of stone & gravel.

Thermometer at 8° p.m. 92°—Extremes 52°—86°

made this day 11 miles & 140 perches.

Sunday

1st Thermometer 54°—River water 64°—Clear

This has been an unfortunate day; the morning and afternoon
were spent upon shoals and rapids with stoney & gravelly bot-
toms, the men having been a great part of the time in the
water; nothing new was seen—got a good observation
at Noon; Latitude found 32° 21' 10". made only 4 miles 293
perches. Thermometer at 8° in the evening 63°—Extremes 54°—83°.
1804
Nov.
Monday
5 N

Thermometer 52° - River water 62° - Heavy fog - Damp.

We were obliged this morning to take out part of our
loading to enable us to pass over a bar or gravel-shoal
carrying only 18 inches water, which detained us
until near 10 a.m. - In the course of the day
we got upon several shoals of inferior magnitude
but upon the whole we were more fortunate than
usual, the water being generally deeper & with little cur-
rent. We remarked a greater appearance of fertility as
we approach the Settlement; the trees are of larger size
& there is a due proportion of shrub or underwood,
which was absent in the poorer lands; some fields
of Cane (arundo gigantea) began to appear, which
are a sure indication of a fertile soil; we had
also leisure to admire the beautiful tints assumed
by the foliage of the vegetable world; no
longer receiving nourishment from the Parent Stock; it was
apparent that the external leaves most exposed to the
light exhibited the first changes of colour, while those
of the same plant under a thick shade still retain
their deep verdure. The Willow Trees growing along
the shore, present their external leaves hanging over the water of a deep yellow, from whence may be traced a gradation of colour, from the admired lemon colour to the summer-green, which last in the shade retains its full verdure: or other trees may be traced a deep blood colour inclining to black, descending by regular shades [nuances] down to the palest pink, mingled with green and from thence by similar gradation to the usual verdure of the plant. The river continues of the same breadth from bank to bank, i.e. from 80 to 100 yards, although the water course is sometimes confined to 30 yards. The atmosphere, had that day a smoky or misty appearance, the sun broke forth a little after noon, but shone with diminished lustre. This smoky or misty atmosphere, which is very common in the months of October & November, may probably be attributed to a common practice of the Indians and Hunters, of firing the Woods & Savannahs which frequently consumed the herbage & brushwood, some hundreds of miles of extent, and during this state of the atmosphere, the condensation
of the smoke sometimes occasions the fall of a fine rain, resembling rather a thick dew or fog, but I have never remarked at such times anything which might be called a shower of rain; if the weather immediately becomes fine again, preserving however something of its misty appearance, until an entire resolution of the weather or season takes place. We observe at various points the same kind of soft rock, with a great deal of large gravel & sand upon the beaches, we also remarked a stratum of argil of a reddish brown colour, considerably indurated which at first view gave it the appearance of stone; & wherever it was exposed to the air or light had become black. The water of this river is extremely agreeable to drink and rather more transparent than that of the Ohio. It possesses none of the brackish qualities of the red river, although it is reported that in its neighbourhood are some salt springs & salt-licks—there is reason to believe that the saline impregnation of these licks depends rather upon Nitre than Marine Salt. Nade.

This day 11 miles 276 perches. Therm. at 8 p.m. 58°. Extremes 82° - 68°. Wind at N. W.
Tuesday - Therm. 74°. River water 64°. Heavy fog - wind W.
Continued our voyage with better fortune; that is, we
escape any considerable obstructions from rapid
2 and bars. No variety was to be seen in
the appearance of the Country on either side
the river. Had a fine observation about a
league by water below the post of Washita.
Latitude found 32°28.58'. By the sinuosity of
the river it appears we were not much more
than 2 miles to the South of the Post; arrived
there about half an hour past 3 in the
afternoon; were very politely received by
lieutenant Boumaine, who immediately of-
fered us all the services in his power with the
hospitality of his dwelling. The Post
called Fort Mirio, being the property of a
private person who was formerly a Civil Comman-
dant under the Spanish Gov't who as he says built
the Stockade at his own expense; the lieuten-
ant has taken post about 400 yards lower and
has built himself some log houses & enclosed
them with a slight Stockade; this young
Officer, exclusive of the manner of a polite gentleman, appears to possess talents with solidity; he has formed a tolerably good chart of the river from its mouth to the Post, being the result of his own labors on his way up to take possession of the Post, thus he has continued upwards, from the best information he has been able to obtain, the whole gives a satisfactory idea of the River & Country; we have also obtained further information from the former Commandant & other persons here, if all which we have made note of formed a sketch which may be useful to us. Made 9 miles 257 perches.

Thermometer at 8½ in the evening 68°. Extreme 45°-79°. The distance from the mouth of red river being 96 miles and 256 perches.

Wednesday 52°. River water 64° — Clear.

Finding from past experience that the boat in which we have come up would be in proper for the con-
tination of our voyage; we began this morning to look about & enquire for other Craft, but we find there is no great choice of boats at this place - prepared also for Astronomical Observations - being interrupted in the morning by visitants, who came to offer Services &c. we were prevented from making any useful observation until noon when the Senior meridian altitude gave the latitude 32° 29' 52''. our position being about 450 feet to the South of the Garrison the Post of Washita will therefore be in Latitude 32° 29' 57''
The Therm. at 8½ p.m. 67°. Extremes 52° - 80°


This was a disagreeable, cold & damp day, made enquiring for smaller boats, with little Success, found only one which may be supposed to answer our purpose, with another of the same further no observations made this day, Therm. at 8½ p.m.
1804
Nov. 7
56°. Extremes 53°-61°.

Friday
9th. Therm. 42°. River water 61°. Cloudy—damp—
Cold. Continued our search for proper
vessels, heard of a flat-bottomed large—upon
examination found it very proper for our
purpose, it being supposed, that with the reduced
loading we propose to carry with us, the boat
would draw only 12 inches water; no obser-
vation this day. Extremes of the thermometer
42°—72°.

Saturday
This day having the appearance of being fine.
At seven, prepared for observation and made
an ample series for the regulation of the watch,
the magnetic variation, the Longitude and
at Noon found the Latitude by a fine obser-
vation to be 32-29-35; this differs from that of the
7th by 19" but I give the preference to the result of
this day, because on the 7th owing to interrup-
tion, I was in some doubt whether the Sun had
not dippe a small matter before I had ascertained the (Attitude).

Got the Barge brought alongside, destined for the continuation of our voyage; she is upwards of 50 feet in length & 8½ feet at the widest, built flat & well formed for running; I am now of opinion that this is the best form of boat for penetrating up shallow rivers; she will require more care being weaker & tenderer than boats built in the form of Canoes. We are to give ½ dock p. day for the use of her untill we return; got her loaded before the evening, with a view to set out early next morning — she made some water — found about bed time that she made a great deal of water, kept her baled all night.

Therm. in the evening 34°. Extreme 40°-72°.

Sunday Therm. 24°. Clear — Calm — river 53°

11th I got the Barge hauled a shore & caulked, which detained us untill afternoon; got another fine
observation at noon, by which the latitude appears to be 32° 29' 30.5"; that is 4.5" less than yesterday, and as these two observations were both very good, the mean of the two results may be taken for the truth, to which adding 4.5" for the distance of the place of observation below or to the south of the Garrison, we may therefore consider the true latitude of the Post of Washita as fixed at 32° 29' 37.5" - made this afternoon 3 miles.

Monday, 12th. Therm. 36°, river water 34°. Clear - Calm -

Got some fresh beef & other provisions which detained us a little this morning. Continued our voyage, having a pilot on board hired at 30 dollars per month. Met with several shoals -

The face of the Country continues the same, which is not very favorable, thin poor soil, much pine; to the right the settlement on the Bayus Barthelme & Sourd are said to be rich lands, at noon got an observation.
and made the Latitude to be 32° 34' 47".
Made this day 16 miles & 32 færches - ther.
most at 8½ p.m. 54°. Encamped on the night.
a little Cloudy this evening.
That the Baron should people this tract with a certain number of Inhabitants. It is said he introduced a few of the most worthless kind, who after receiving Spanish bounty, scattered themselves about the Country; it is understood that the conditions were remitted & that the grant became absolute, the amount was said to be 12 French leagues squared.

The banks of the river continue to be about 30 feet high, of which about 18 feet from the water are clay of a palish colour, upon which the river has deposited a stratum of 12 feet of light Sandy Soil, which in some places appears like rich Soil of a brownish dark colour; it seems that this species of land is of small breadth from a quarter to half a mile & may be called the Valley of the Watahita, beyond which there is very high land, chiefly Pines are found therein.

The evening is cloudy & dark. Encamped on the right hand. Made this day 16 miles 3/12 paces.

Thermometer at 8 p.m. 62° Extremes 33° - 66°

Wednesday 14th Thermometer 74°, Water 55° Clear, calm.

Continued our voyage, the Soil seems to be poor, the growth of timber is small. We made small progress, being opposed by a head wind. Passed the Bayou and entered
in the forenoon, this Creek derived its name from a vast num-
ber of Indian mounds found on a bank, along the Court, of
which have been discovered by the Hunters. We were
diverted an hour extraordinary at breakfast, from the necessity
of repairing our rudder-iron damaged going over a rocky flat.
The margin of the river is clothed with such timber as generally
grows on inundated lands; particularly a species of the White oak
called vulgarly the overcup oak; its timber is extremely hard,
solid, heavy & durable, and it produces a large acorn in very
great abundance; upon which the Bear feeds— it is a very
fattening food for Hogs.

At noon got a good meridian observation of the Sun.
Found the Latitude to be 32° 50'- 8.5 - after dinner passed
a long narrow Island - The face of the country begins to change,
the banks are low and steep & water generally deeper, and the
river much contracted being from 30 to 50 yards, the low country
is 2 or 3 leagues wide on each side of the river, liable to over-
flow 12 feet above the level of the land, the Soil is a mix-
ture of sand & loam, chiefly the former on the river banks;
the timber found here is such as is found upon the alluvial lands
of the Mississippi; in short this tract presents every appearance
of a newly created soil, very different from what we passed
below; it may be supposed that there existed a great Lake
within the space now occupied by this alluvial tract, which may have been emptied by the false Canals upon by the abrasion of the water. Now the bed of the river 1 that since that period the annual inundations have been replenishing this space with the alluvion of the water: 20 feet perpendicular of soil is yet wanting on the banks of the river, probably much more in the interior to render it habitable by man; it appears however to be well populated by the Beasts of the forest, some of which we saw, the hunters also are very successful in the chase of Deer, Bear &c. within this tract, from which never the less they must retire, during the period of the high waters: we now begin to see quantities of water fowl, which are not very numerous until the frost & Cold rains drive them to us from the Northward. This is not so abundant in this river as might be expected; at the post we were informed that the river had been extremely full of fish, until the year water of the 1799 when the inundation of the Mississippi last dammed up the Washita river some distance above the post, it produced a stagnation & corruption of the waters, which destroyed the whole of the fish within the influence of this camp. Nothing remarkable was seen in this alluvial Country, the rivers continue contracted seldom exceeding by yards & generally deep, no current is felt excepting here & there where it becomes more shallow. Encamped on the right shore. Thermometer at 8 a.m. 44°. Extremes 44° 58° clear.

Continued our voyage thro' a Country of the same appearance as yesterday - passed some rapids without difficulty - the banks still continue low, ten to fifteen above the present level of the river. The water marks on the trees from 15 to 20 feet. Landed to observe about 90 yards higher than the point of the Island of Mallet judging that we were not far from Lat. 33°. The division line between the Territories of Orleans & Louisiana; we found the latitude by a very good observation to be 32°. 59' 27" 8'. The Island Mallet is on the right of the main channel, & the place of observation being 90 yards N.

After making allowance for the breadth of the river, about 90 yards latitude 33° may be easily found at any time when the jurisdiction of the Territories require it, the Island of Mallet being well known. Should time permit on our return, we propose to observe a 2d time for the purpose of ascertaining the Lat. 33° 8' shall make a proper mark by which it may be recognised at any future time. In general, the river appears to be full from bank to bank with sand bars, but to day about 3 p.m. we passed 3 contiguous very elevated Banks or beaches, called from thence les trois battures at 31° the Bois de grands marais [great marsh Creek] on the right.Passed in the evening on the right, La Cyprisie Chastelain; a point of high land approaches within half a mile of the river on the right. Thermometer 56° at 8 p.m. 56°. Extremes 33° 60°.

Made this day 16 miles 42 perches. The days voyage was shortened by an indisposition which confined me to the tent until the hour of breakfast.
Friday 16th. Thermometer 38° - River water 54° - Cloudy - Calm.

Set out at 6:58 and continued our voyage, the wind rises a little northerly against us, nevertheless we make 7½ per 1' ½ minute, whereas with our former boat we should not have exceeded 4 per. No observation today, the weather being cloudy, damp & disagreeable. Between 11 & 12 o'clock passed on the right the Bayou de la Saline (Salt spring Creek) the Marais de la Saline (Salt marsh)

There is here a small marshy lake, but without any appearance of Salt or brackishness; the Bayou de la Saline forms a communication between it and the river, there is near this place on the same side a part of high land which approaches 1 mile, of the river, and to which Boats most during high water, the low Country being then completely inundated; a short league farther we came to the mouth of the Bayou de la Saline (Salt lick Creek) on the right - this is a Creek of Considerable extent; hunters use it to go up in their Canoes to reach their hunting grounds; they all agree that none of the Springs which feed this Creek are Salt, so that it must have obtained its name, from some Cattle / buffalo lakes observed near the head of the Creek, all of which the French hunters call indiscriminately by the name of Salines; but we have reason to believe from the accounts collected, that these earth or clay spouts which are scooped out into hollows by the feeding of the Beasts of the forest, are more frequently impregnated by some thin Common Salt. We now began to observe a Stratum of a dirty pale white coloured Clay under the alluvial Soil deposited by the river; this Clay is similar to what was observed before we entered the low alluvial tract; we have
Therefore, reason to expect, that we are gradually emerging from this Sunken tract & shall soon ascend into the high land country, made this day 17 miles, 185 parcels.

We shall probably find ourselves in the present low state of the river previous to fall, which is about 8 feet.

In the evening it began to rain. Encamped at 4 hours. 54 minutes. Thermometer at 8 p.m. 42° Extremes 38°-51°.


Continued our voyage, the low lands still continuing alluvial at least to a certain depth, an understratum of Clay appears in many places where the banks are broken down, we remark that since we entered the alluvial country about 32° 52′ Lat. we have seen no long moss / Thaddiesh, although this lowland country seems to be otherwise favorable for the production of this Curious herb. Upon enquiring of our Pilot he informs us we shall see no more of it, probably its limit of vegetation northerly may be fixed by Nature near to 33°. Saw a great quantity of the long leaf pine, which is frequently found in a rich soil and even where it is liable to be inundated as in this Country. The short leaf or pitch pine on the contrary is always found upon acid lands and generally in lofty situations where the soil is sandy and dry. Sitka Sitka, Sitka Sitka, generally in a sandy land.

But our Country furnishes it in a hard poor Clay.
99-109. In the afternoon, took a small ramage to the little lake near our standard. We were very early and the lake was very small. We found auu small fish in the lake. We also found a few insects and plants. It was a very pleasant day for a walk along the lake.

The evening was very quiet and we spent it by the fire. We had a good time and talked about the day's events. It was a very successful ramage.
we did not expect, having been told that they were not seen.
But for a few miles above the Post, passed a few rapids
today & saw some cane fields on both sides, the canes
of a small size; the river begins to widen & a number
of sand beaches are seen.
Thermometer at 8 A.M. 44° - Extreme 46-41.
Made this day 15 miles 308 paces.

18th} Thermometer 32° - river water 52° - Serene - Calm.
river seems rather on the rise. - Set out at 7:20 & continued our
voyage, passed three in the morning, a narrow passage of about 70
feet wide; the width of the water of the river runs through this passage,
on the left the old channel of the usual width leaves an interval
which becomes an island when the water rises so as to lap along
the old channel. Came up to a place at the hour of breakfast
where there is an appearance of some clearing called Cache Pa
Julie's [Julie's hiding place] this is the name of a French hunter
who was said to conceal his money [property in this place]; the
banks of the river have now the appearance of the high
land soil with a stratum of from one to four feet of alluvial
clay deposited thereon by the river, this super-stratum is white
and sandy with a small admixture of loam, which saw
an indication of the poverty of the mountains & up
lands where the source of the river takes their rise.
At noon we found our Latitude to be 33° 17'-13". In the after
moon passed on the right the entrance of a Bay which within
harbors appearance of a considerable lake during high
water. We now see a considerable number of large pine
trees of the long leaf species - the Canes along the bank
have a better appearance, being larger thensere, indicate
either a better or more elevated soil: Canes subject to
be inundated to the depth of 3 or 4 feet are always
small & tough; they grow much finer where there
is little or no inundation provided the soil be rich.

passed a high hill on the left clothed with lofty
pine trees. Thermometer at 8 p.m 57°. Cloudy, weather
threatens rain. Have been much indisposed for
some days past, which may have probably diminished
the number of remarks which might have been
made - I still remain in the same situation.

Made this day 18 miles 75 perches.

19th Thursday 54° river water 54° - Cloudy - Calm - river at
stand. Set out at 6:56 and continued our voyage;
the banks present still the same the appearance of high
land; the understratum being a pale yellowish Clay & the
alluvial soil of a dirty Whitish Colour, with a very thin

Striation on the surface of brownish vegetable earth. The trees begin to be more stately growing to a considerable size of height, tho' much inferior to those of the alluvial banks of the Mississippi: passed on the left in the morning the Bayou de Kechis; points of higher land not subject to be overflowed frequently touch the river, as tho' the valley is said to be general a league or more in breadth on each side the river: passed some pine hills on the left, called 'Cote de Champignoble'; the river has been narrow during the course of this day's voyage, not exceeding on the average from 50 to 60 yards. Camped on the left. Made this day 18 miles 180 perches.

Thermometer at 8 p.m. 62° - Extreme 54° - 69°.

Tuesday.

20°. Therm. 59° - River water 54° Cloudy - calm. No change in the river.

Set off at 6h 48 and continued our voyage, the banks of the river becoming higher & the river wider, we meet with a number of sand bars & some rapids but good deep water between the rapids. At half past 7 passed a Creek which forms a deep ravine in the high land and has been called 'Chemin Converto,' covert way! - A little past 8 we passed a rapid and gravel beach where the water of the river was confined to a channel 40 yards wide, a little further we had to quit.
the main channel on account of its shallowness and rapidity. I passed along a narrow channel 60 feet wide; with out a guide a stranger would have taken this passage for a creek. Between 11 and 12 saw an alligator, which we did not expect so far north, particularly at this Season. The woods on the bank continue still difficult to penetrate on account of the Cane, briar, vines and where the Cane is absent, very thickly & thorny under brush, the timber changes also, many species of trees appearing not so common below, such as Birch, Maple, holly & two kinds of small growth, to which no name has yet been given by the French people but 'Bois de bord de l'eau' (waterside woods). Nut-timmons & small black grapes are plenty in some situations, which is the only edible fruit we have met with; the first are often very large & excellent, the last sweet with a mixture of tart. These are both common on the Mississippi. The weather being a little cloudy & uncertain we did not land to observe. In the afternoon observed some fenugreek earth on the right. The margin is frequently bordered
with a variety of plants & vines, of the later several species of the Convolvulaceae, which no doubt in their season ornament this river with their elegant flowers.

Thermometer at 8 a.m. 62°, Extreme 54° - 62°. Made this day 18 miles 304 paces.

Wednesday 21st. Therm. 48° River water 54° a little fog - calm.

Set off at 7.30, and continued our voyage, passed a hill & cliff 100 feet high, crowned with lofty pines called 'Cote de Feu.'

This hill, a chain of high land continues some distance on the left, the cliff presents an appearance of an ash coloured Clay.  Passed a strong rapid & a little farther a creek on the right called 'Bayou Accafius' / Sound Creek. The river varies here from 80 to 100 yards wide; we frequently see indications of iron along the banks, but nothing else hitherto but what is very common. A little cloudy this morning, but cleared up just before noon, got ashore at a very steep inconvenient place, having no better choice, it has just time to make a good observation & found our Latitude to be 33° 29' 29". The day proves mild warm & agreeable, this acted as a restorative to myself & others who had been indisposed for some days past; at 3 p.m. the Therm. was at 72°. All the Ducks, Geese and Turkeys are often seen, yet we cannot...
say, they are in that abundance, which, from report, we expected, and they are so shy, that we seldom can get a shot from our large boat; but by sending a canoe a head; some small game may be obtained; we are told that as we get higher up where the game is less frequented we shall be more successful. Killed a turkey and some Ducks in the course of the day.

Made this day 18 miles and 36 perches.

Therm. a.m. 58°. Extremes 43°–72°.

Thursday 22nd

Therm. 40° - river water 58° - light clouds - Calm.

Set out at 7. 6. & continued our voyage without any remarkable change in the appearance of the Country, the timber, being such as has already been mentioned, with an increasing proportion of Polly, birch, maple & handsome fir trees; at about 10½ a.m. came to the road of the Caddo Indians crossing the river & leading to the Arkansas Nation, a little beyond is the "Ecor a Fabri" / Fabri's cliff / 80 to 100 feet high; it is reported that Fabri, who was a Frenchman, buried lead upon the top of the hill, as a permanent mark of the passage of the French and Spanish line, but no authenticated account of such a circumstance can be obtained, and is therefore not generally believed; a little
further is a smaller cliff called 'Le petit ecor à Fabri'.

The little cliff of Fabri, those cliffs appear to be composed chiefly of ash colored sand with a stratum of clay at the base, such as reigns all along the banks of this river.

The day being heavy and cloudy we made no observations for the Latitude at Noon. In the afternoon we encountered a great many difficult rapids, the current of the river being frequently confined to a very small space where only water sufficiently deep can be found for the passage of the boat; the additional rapidity of the current proves also that we are ascending into a much more elevated Country. The water of the river now becomes extremely clear, and has always been found very agreeable to drink. The general breadth has been thirty yards, and in many places not above one half of this. We now find immense beaches of Gravel & Sand, over which the river appears to pass with the rapidity of a torrent, carrying with it vast quantities of drift wood, which are here and there piled up in precipitous masses, lying 20 feet above the present level of the water. It points out to us already the difficulty & danger of descending this stream in certain stages of its floods. The ascent is certainly less hazardous than the
descent. accidents are not frequent with the ferries or canoes of the Country, but ours is the first large of so large a size, that ever went up this river. I passed a very intricate rapid in the evening, which obliged us to get out and row to drag ahead & encamped upon an elevated gravel beach. Therm. at 8 p.m. 54° Extreme 40°-58°.

Made this day 14 miles. 317 fathoms. It must be expected that in perfection in our reckoning must arise from the retardments & difficulties met with in rapids & on shoals, the best compensations which circumstances admit are made by lost time & rate of going at the moment when the best judgement can be formed.

This day an untoward accident happened which was very near being a very lamentable one. Dr. Hunter was sitting in the cabin of the boat, holding one of his pistols, it went off upon half cock while he was in the act of pushing down the table with the rammer in his right hand, while the pistol stood upright between his feet with his head almost over the musket; the ball & rammer went between his fingers & thru' the flap of his hat within an inch of his forehead; two of his fingers & one thumb were much torn, his forehead & eye brows scorched with a great consumption of the head. The bottom of a new powder horn, was not well fixed, was by the shock forced out & the powder split in part on the table, the burning wadding of the pistol fell upon the same table, but providentially the powder did not catch. The Doctor's wounds were dried, he suffered great pain & disability, but after some repose felt better in the evening.
Friday. Therm. 48°- river water 54°- light clouds - calm. river seems rather falling. Set off at 7 a.m. & continued our voyage, thru a difficult navigation, the river broken into a number of small streams by Islands, short turning rapids, sunken logs, shallows, bars & every impediment to be expected in our situation. This continued at short intervals during the whole of the day, so that our courses & distances for taking the traverse of the river cannot be expected to be very correct, every allowance which could be judged necessary at the moment has been made. Fortunately obtained a good observation of the Sun's mer. altitude in the interval of some shifting clouds; latitude found 33° 41' 35". The banks of the river, as we ascend, are less elevated being only from 9 to 12 feet, it probably the fresher surmount them some feet.

We passed a great number of high & low Gravel & Sandy beaches, on these were to be seen fragments of stone of all colours and forms, some of them highly polished & rounded by friction, and may have belonged to the mountains, rivers and seas of a world, from the ruins of which the present may have been formed. The Banks of the river in this upper Country suffer greatly from Abrasion, one side & sometimes both being broken down by every fresh... we saw nothing today worthy of being
mentioned, no change being observable in the appearance of the land and timber along the hills and banks of the river; we found to day on one of the gravel-beaches some fragments of the same matter we found lower down, resembling pit-coal; it burns without blaze to a white ash, but will not consume, without other fuel, it is very light & friable, & does not seem to be penetrated by luminous matter, unless we suppose that a very slight odour of sealing-wax may be an evidence of its presence. Thermometer at 8:51 p.m. 54°. Extreme 48°—72°. Made that day 13 miles 28 perches.

24th. Thermometer 48°. River water 54°. Light clouds. Calm. River at a stand. Set off at 6:54, and continued our voyage through a Country in all respects similar to that of the preceding day, excepting that our obstacles from strong rapids & were considerably augmented at the place called 'Auges d'Arelon' (Arelon's Through), we observed some laminated iron ore, & a stratum of tenacious black sand shining with minute chrysalids. The river is now generally 80 yards wide, tho' in many places greatly
enlarged by Islands and bars and at other places contracts to 80 or 100 feet. The river is now in many places very rocky, the stone of a greyish Colour & rather soft and friable, such as we found lower down the river. observed a new species of Willow very different from that which grows along the banks of the Mississippi, which last is extremely brittle & little suited for the purpose of Bush-hoops; this on the contrary resembles the others & seems sufficiently supple and elastic, its leaves are now yellow and falling; we also found some of the greater Buckle-berry in fruit; the berry is of a sub-acid agreeable taste, the leaves not yet fallen were of a beautiful crimson. The weather being cloudy we had no observation at noon & went on to dine between one & two o'clock at the forks of the Washita and Missouri: the latter; the latter is a considerable branch coming in from the left, being about one fourth of the Washita: Hunters go sometimes up the little Missouri, but they are not fond of penetrating far up, because this branch reaches into the great Prairies upon the Red river, which are sometimes visited by the lesser Osage Tribe, who make war upon the Caddaus & upon all Nations whatever.
1804

Nov. 1

They are said never to come upon the head waters of this river, because the Country is so mountainous, that as to be very difficult to travel over, and there is no object to attract their attention to that quarter: The Cadaux may be considered as Span-lish Indians, and are said to boast, that they have never imbrued their hands in the blood of a White man. It is reported that they are excited to enmity by the Spanish Officers at Nacocklock against the Americans.

We are told that there is a mine up the Missouri; it is said that the stream runs over a bright splendid ore of a whiteish & yellowish colour; it may probably be Iron mineralised by Sulphur.

Made this day by a very uncertain reckoning 11 miles 152 perches - Therm. at 8 a.m. 39° Ex =

trèmes 48°-72°

Sunday

25th

This morning proved very rainy, having commenced be-fore day, we were therefore constrained to continue encamp-
ed; a suspension took place after breakfast, which gave us some hopes of being able to proceed, but this was not of long duration; the rain recommenced and we remained all day in our tents, we have the consolation however to expect that the river will rise a little in consequence of the rain, which will facilitate our ascent over the shoals that are to be expected above.

Therm. at 8 a.m. 62°. Extreme 84°-70°.

Monday, 26th

Therm. 50°. River water 57°. Clear above; calm; river risen 3½ inches in the night. Contrary to expectation the morning proved not only fine and serene, but of a mild agreeable temperature. In general after the winter season sets in, the changes in the weather are more by extremes, a day or two of rain is commonly succeeded by a cold and blowing northwester, and the day following a frost of some severity, which has not been the Course upon this last occasion; it appears also that the rain has raised the temperature of the river 8°. The water is now remarkably clear and fine, and it does not seem to have been discoloured by the last rain. There is still a great3 same reach in the appearance of the river banks, the islands are skirted with trees.
and immediately within on the bank grows a range of Birch trees & some willows; the more elevated banks of the river are clothed by a thick growth of Cane & the timber which rises above the Cane is such as has been already mentioned viz. Oak, White, Black and Red, many species of each, black maple, white maple, sycamore, Elm, several species, ash, hickory, many species, Dog-wood, Holly, Iron-wood.

Saw a number of yellow butterflies fluttering about the banks of the river. We continued to encounter the same obstacles from the shoals and rapids of the valley of the river, in its present low state is filled with islands, which dividing the current reduces the depth of the Channel; we find no great difficulty where the water is collected into a single Channel. Our Pilot informs us that there is a body of Excellent land upon the little Missouri & more especially on the Creek called the Bayou de terre noire. This falls into the little Missouri, this land is within a few miles of the Washita; it is said to extend to the Red river being connected with the great prairies above the Cadeux.
ion 4 in the proximity of the red river: this rich tract of Country is said to be of very considerable extent, and capable of covering a population of several thousand families: the prairies are the hunting grounds of the Cadeaux nation, consisting of about 200 warriors, they are warlike, but frequently unable to defend themselves against the tribe of Ojages who are settled upon the arcansa river, who passing round the mountains which give birth to the Washita, along the prairies which enclose those mountains on the west it separate them from the main chain of mountains, which furnish the water of the red & arcansa river, fall down the pafs down into the Cadeaux Country & rob & plunder them of their horses & other effects & not unfrequently take a few scalps, for it seems that this detached tribe of the Ojages is a leader's gang of robbers making war with the whole world.

Therm. at 8 p.m. 62° - Extremes 56° - 68°.

Made 12 miles 21 perches.
Tuesday 27th. Therm. 54° - River water 58° - Cloudy - River risen above the mark which was 12 inches out of water. Set off at 7:10 and continued our voyage with the same obstacles from rapses, which were very violent in particular points from the increased body of water descending from the higher position, but we obtained at the same time the advantage of approaching the willows & even passing thro' them to avoid the most difficult passages. During the hour of breakfast the river rose 1/2 inch per hour the general height of the main banks is now from 6 to 10 feet above the level of the water & the land is rather of a better quality. The Cane is showing a more luxuriant vegetation, the superficial soil subject to inundation is of brownish appearance greatly mixed with sand. At noon arrived at Cache à Macon/Maconn's hiding place on the right, stopped here for dinner. Having been informed of some bit coal reported to be in the neighborhood, we determined to explore its position. Doctor Hunter with the Pilot set out for this purpose, and at about 1/2 mile N. W. of the boat found in the bed of a Creek a substance similar to what we had formerly seen under
the name of Coal; some pieces of it were very black, solid, and of a homogeneous appearance greatly resembling bit coal; but it was deficient in p ponderosity, and did not seem to be penetrated by bituminous matter in a sufficient degree to constitute Coal; we may perhaps therefore be permitted to consider it as vegetable matter in a certain stage of its progress of transmutation into Coal, we were the more confirmed in this opinion by discovering other fragments, which still retained very evident ly the fibrous texture of wood; one piece in particular seemed to have been a large chip taken out by the setting ax; those last pieces were not so far advanced in the transmuting progress as the first mentioned; altho black, it was not so perfect, being rather a very dark brown black, retaining the exact form & shape of the wood as it had been separated from the log; as this incipient or imperfect Coal was found imbedded among clay & gravel, which appeared to have been washed down by the torrent, the clue could be traced to lead to a discovery of the process by which Nature effects so extraordinary a Change, an ingenious en-
quirer placed in favorable circumstances, will pro-
bably have the good fortune to make this discovery: the
same may arrive; when the Planter who shall be clear-
ing his plantation or farm of useless timbers, will be enabled
from the instructions of the Chemist to place the article
in a situation to be transmitted into an useful article capable of long preservation. This is
no doubt the Carbonate wood described by滨nabt and other Chemists:
We found along the banks a species of the White
thorn loaded with abundance of ripe fruit, being a small round
berry of a coromandel colour, and agreeable sweetish taste. the
whortle berry was also found in the same situation.
The White maple has now a beautiful appearance,
its leaves before their fall first assume a pale yellow, but
this soon fades, and they change into a splendid white & present at some distance the appearance of clusters of elegant flowers. Being cloudy at
noon we made no observation for the Latitude.
We suppose the river to have risen at least 30 inchy
and it now flows with great rapidity, which obliged
us to pass sometimes among the willows to avoid its impetuosity; this afternoon we passed some reaches of the river, which were very handsome, being of considerable length & at least 150 yards wide, and flowing with a full current from bank to bank. We found a considerable number of unknown low plants, some of them very handsome; but our very limited knowledge in practical botany, did not enable us to discover what they were, particularly as they were not in flower. Made that day 13 miles 39 perch. Therm. at 8 a.m. 66° Extremes 54° - 71°.

Wednesday
28th. Therm. 68° - River water 60°. Fallen 4 inches in the night - Cloudy - calm. Set off at 7° 15' and continued our voyage, meeting the same species of obstacles as yesterday - the river appears to increase in width being some times 170 yards broad, flowing at this time with a full tide from shore to shore, the current is in some places extremely rapid, that is where the depth of the Channel is diminished & the bed contracted, in such situations we are under the necessity of catching hold of the willows & hauling up along shore, our 8 poles being insufficient to stem the violence of the current; in other situations for miles together
the current is inconsiderable, in fact it is nothing under the
sea of that shelter of the points, this advantage is the result
of the enlargement & increased depth of the river.
Being cloudy we had no observation for the Latitude. Some
of our people who walked out with their Guns at the hour
of Dinner discovered some buffalo trails, we are therefore
forewarned of getting some fresh beef. We passed some
beautiful pine forests, the lands in many places appeared of
a pretty good quality, producing trees & a variety of vegetable
Subjects indicating a good Soil. Encamped in the evening
after making by our reckoning 12 miles 255 perches.

There we found an old Dutch Hunter with his party consisting
in all of 5 persons. This man has resided 40 years on the Waikite
before that period had been up the Arcansa river, the White river & the river St. Francis; the two last he in-
formed us are small rivers of difficult navigation similar to
that we are now upon, but the Arcansa river is a river
of great magnitude, a large & broad channel, & when
the river is low with long & great sand beaches like to the
Mississippi; so far as he had been up, the navigation is
safe & commodious, without any impediment from rapids
or shoals, upon all those rivers, the Soil is of the best rate
quality, the Countries are of easy access, being lofty open
forests, unembarrassed by Canes & other under growth.
The lands on the arcana are generally level & not subject to inundation, with here & there gently rising hills, the river is not embarrassed with rocks so far as this informant has ascended, but its bed is composed of mud & sand: the water of the river is extremely bad to drink, being of a disagreeable red colour and very brackish when low; a multitude of creeks which flow into the river furnish sweet water, which the voyager is obliged to carry in vessels onboard to supply his immediate wants, hence this inconvenience is not of much moment. This man confirms the frequent reports given of Silver being abundant up this river; he has not been so high as to see it himself, but says he has received a Silver pin from a hunter who assured him that he himself collected the virgin Silver from the rock, out of which he made the for Springlate by beating & hammering it out. The tribe of Osages live higher up than this position, but the hunters rarely go so high, being afraid of those Savages who are at war with the world & destroy all strangers they can meet with. It is reported that the Arcampa Nation with a part of the Cherokee, Chickasaws, Shawnee & have formed a league and are actually gone 800 strong against
These depredators, with a view to destroy or drive them entirely off, & profess themselves of their fine prairies which are the most abundant hunting grounds, being plentifully stocked with Buffalo, Elk, Bear, Bear and every other beast of the chase common to those Latitudes in America. Our old Dutch Hunter informs us of a Saline or salt spring from which he has frequently supplied himself with salt by evaporation; we shall visit it in the morning, being only half a league distant.

Therm. at 8 p.m. 73°. Extremes 68° - 78°.

Made 12 miles 255 perches.

Thursday, 29th.

Therm. 79°. river water 62° - Cloudy - Wind South, strong all night - This morning Doctor Hunter went with a party of the old Dutch hunter to visit the Saline, which was found in the bottom of the bed of a dry gully; after digging a few feet found the water which proved very brackish to the taste, the Saline lies about 1 1/2 mile northerly from our encampment, a creek falls into the river a little above our encampment, being the same which communicates with the Saline this called Baye de la Saline, a quantity of the water was brought into camp whose specific gravity was carefully ascertained by comparison with the river water & found to be as 1.02178 to 1.

Evaporated 10 quarts of the water which produced a saline sol

weighing when dry 8 ounces.
It began to rain about 9½ a.m. which obliged us to remain in camp until after dinner, when it cleared up, and we set out at 1½ 27 p.m. the water of the river had now become whiten & left transparent in consequence of the rain & appears to be rising again as tho it seemed to have stopped since last night; the water was tolerably favorable in the afternoon having met with only one bad rapid of some considerable length, since we have had so much difficulty to encounter from the violence of the Current & the Shoals, the Soldiery have exerted themselves with a considerable portion of vigour & perseverance & seem desirous that we should accomplish the end of our voyage.

Made 8 miles 2 herches. Therm. 7° at 8 p.m. 52° Extreme 52° - 76°. The weather clears up & begins to grow cold, we expect a north wester in the morning.

Friday

30½° Therm. 38° River water 60° river risen 19 inches since last evening clear, calms, set off at 7½, and continued our voyage against a strong current with some favorable during the greatest part of the day, although frequently we found favorable eddies or water without current where the bed of the river became enlarged. These sometimes extended to 150 to 170 yards in breadth. Saw a great many turkeys to day, two of which were killed.
At 10½ p.m. arrived at the large branch called 'Fonche des Cadoux' about 100 yards wide at its junction with the Washita on the left, immediately beyond which on the same side the land is of considerable height about 300 feet perpendicular. The wind from North & North West opposed us most of the day, so that our progress was not very rapid. At noon landed & observed the Sun's meridian altitude, in some measure, that the branches of trees, the place being inconvenient, the Latitude found was 34° 11' 37". As we advance northward we perceive the winter to be farther advanced; the trees appear now to be nearly stripped of their foliage which a week before seemed to be nearly entire although changed in colour. Being informed of a Salini or salt lick, we landed before 3 o'clock p.m. and Doctor Hunter with a party went to view it. Thermon. at 3½ 5½°. The Doctor and his party returned in the evening with a quantity of water from the Salini. Salt lick, which from taste appeared to be left impregnated than the former, and on trial its sp. gr. was found to be 1.017647. This salt pit was found in a low flat subject to be overflowed from the River, it was easy & muddy, the earth on the surface yellowish but on digging into the stratum which yielded the Salt water, it was found to be a bluish clay; probably the water was fresher in consequence of the rain of the day before, which had not fallen when the first water was collected. Ten quart evaporated produced six ounces of saline muck, which from taste was principally mineral salt.
The Bubble weighs in air $31 \frac{3}{2}$

in water $6 - 15\frac{3}{4}$

Water of $\frac{3}{4}$ Salt like $6 - 2\frac{3}{4}$ Specific Grav. 1.02116479

$6 - 4\frac{3}{8}$

- 1.017647

From the taste of the Saline, many after evaporation, it was evident that it contained besides marine salt, some soda and a bitter salt, which last was no doubt an anhydrite magnesia; the marine salt however greatly predominated.

Made 7 miles 28 perches.

December 14th

Saturday 7°.32' - river water 54° - Clear - calm - river

Sallen 18 inches during the night.

Set off at 7.15, the morning cold, we had a considerable Island on the right about 3 or 4 miles long called 'Ile du Bayu' remarks we were greatly impeded this day by rapids, it was with difficulty and some hazard that by great exertions of the men we ascended some of the rapids. We touched several times on hilly land full of rocks & stones, much harder & more solid than those we have seen below, the rocks were chiefly silicious. As we began to observe that their figures were penetrated by sparce matter, we made with appearance
in accordance of a beaten long course, we have to make
the latitude, we have a great opportunity of surprising
the climate, and have a great opportunity of

But after a great expedience, we have to make
the establishment of a large brewery in New York,
suffer this moisture is, if the country

itself, and find his account in it, the weather, if the weather

which, with a sneaking undergrowth of plants,

Bernaldo's productions were sufficiently barterable, con

and besides we have been so much in power

with a great proportion of green, while

Calcutta is, for the cultivation of the vines, the soil by

other species of metals, some of the bulkiest and

19
upon one of those hills about 150 feet high, commanding a fine view both up and down the river, & will at a future day become a rich Vigna.

Made this day 7 miles, 148 perches - Thermometer at 8½ p.m. 35°. Extremes 92° - 58°.

Sunday 2°.} Therm. 36°. River water 58° - Clear - calm - river fallen 4 inches - Set off and continued our voyage at 7 35; passed our a series of strong rapids which continued un-till that we landed for breakfast. The Country appears now to wear a new aspect; high lands and rocks frequently approach the river, the rocks (stones are) of a much harder kind than those seen below, and in the figures seen is to be frequently found, the stones & gravel beaches also exhibit a great variety of fragments, some of which are flint stones of the most solid kinds, the quality of the land also seems to improved, the superficial stratum of Vegetables earth being of considerable thickness & of a dark brown colour mixed with loam & some sand, at 2 ½ p.m. we pass a rock on the edge of the river consisting of excellent blue slate, more of the same is to
We soon higher up. About a league from the river a little above the state quarry is a prairie or plain of considerable extent where the Buffalo frequent, some Salt-licks are to be found near it, and in many situations on both sides of this river at small distances, we are informed that 'Saline' [Salt-licks] exist which might be made very productive. We were greatly impeded today by rapids, & were obliged to land in so unfavorable a situation, that we could make no observation for the Latitude. Encamped just below some rapids, we are to encounter in the morning, upon excellent level and rich land, being nearly all an oak forest, it seems probable from the beautiful level & richness of the land, that it may be subject to be overflowed, altho' it is at least 20 feet high; since three Swans to-day. Made only 6 miles & 112 [parches] — Therm. at 8 p.m. 38°; Extreme 30° 59'.
It is however well-known, notwithstanding the fancies of some writers, that the Bear does not confine himself to vegetable food: the planters have ample experience of his carnivorous disposition. He is particularly fond of Hog's flesh; but no animal escapes him that he is able to conquer, he frequently destroys the fawn, when he stumble upon it, Cattle & Sheep do not always escape him. Unlike to other beasts of prey, he does not kill the animal immediately upon watching it, but immediately begins to devour always to render it alike, as if he took pleasure in its cries and lamentations. Notwithstanding the inapplicance of his heart he cannot thereby discover the fawn. Nature has protected the help left young by denying it the power of leaving smell upon its track, which is so remarkable in the Old Bear; perhaps it may not be generally known to Naturalists, that between the hoofs of the Bear he is found a Sac with its mouth up inclined upward; this Sac always contains mom or left Must, which by being protruded to the mouth opening, gives to the foot the property of leaving on the ground a scent wherever it passes during the rutting season the Maker Musk is most abundant particularly in the males, which may some times smell at a considerable distance by the Hunters.
Surmounting a stone, of this kind was a promontory which came in from the left right hand a little before we arrived at the Chutes. Several masses of the same in the direction of the promontory were insulated across the river, a little after 4 p.m. we arrived at the Chutes' rapids or falls, which we found to be a chain of rock across the river, proceeding from a lofty rocky hill on the left side, and which appeared to have been cut down & worn away by the impetuous violence of the torrent. This chain of rock appeared to be of the same hard kind as above described, resembling the Turquoise stone, with spaces or openings at certain intervals, through which the water passed like a cascade.

In one of these openings, it was necessary we should pass, if we expected to get above the Chutes with our barge, and it was quite uncertain which was the best, & whether our barge which was 4 feet wide could find a passage sufficiently wide, & whether the point
Ed rocks which were visible in the passage would permit us to pass over them. We stopped at the chain of rocks and sent some men with a small canoe along shore with a good rope; they got above the fall and made fast the rope to a tree, and returned to us with the other end of the rope, by dropping down with the assistance of the same; we now prepared by poles to steady the boat, while others hauled upon the rope to ascend one of the rapid, but after severalfruitless efforts we found there was not water sufficient to float us; we dropped down again by the aid of our rope, and moved laterally by peling to another opening, where the water passed with an impetuosity not easy to describe; the fall seemed to be at least one foot perpendicular, but we determined to make the attempt. I entered the strait, in which our barge appeared to stick fast at the rocks; however, by moving from one side and another, it seemed...
to advance by very slow degrees, & got about halfway through when the stick stuck, and all our efforts to move here were ineffectual; the water then extremely rapid was not deep, and we got four of the boldest of our men to get into the water near her bows, as far as possible from the suction of the fall, who by raising her sides & feeling for the rocks on which the bank touched, enabled us to advance a step or two farther, beyond which it seemed impossible to get any farther; it was now night, the stars were visible, the water was cold, and although the weather did freeze, yet it was far from being mild, the thermometer being about 45°; we therefore now repeated that we had made the attempt to stop too late in the evening, & wished we had delayed it until morning, at the same time the river was falling above, & it seemed not proper to postpone the attempt
let we should not get above the falls until another rising of the river; in that situation, we determined to lighten the barge by sending all the men ashore to haul upon the rope, except four to stand by her bows in the water to raise her up while the others should drag the first man who went out discovered that by the violence of our exertions the rope had begun to give way & that one of the strands had parted; we were now in a most perilous situation, for if the rope had parted, no force on board could have prevented our being dashed to stones upon the rocks; we therefore immediately ordered every man to his hole on board to support the boat with all his might while the three-fourths of the men in the water did their best held on to the sides, and in the mean time a man was dispatched there the water with
the end of a rope from on board, which he fortunately got on shore & secured to a tree, by which we were again placed in a state of safety. We now sent the other men on shore, who by their exertions on the firm soil soon extricated us & drew us safely ashore where we encamped & are now tented under the perpetual roar of the rapids. Their course of the rocks about 6 W. and N.E. across the river.

Made this day 7 miles, 218 perches.

Therm. at 8½ p.m. 44°. Extreme 38°-59°.

4th. Therm. 36°. river water 48 - clear - calm - river fallen 2 inches. - Set off at 7½ 21' - good water until after breakfast; about 8½ a.m. passed a large of rocks, crowning the river of hard farseen stone, with very moderate Current, at the end of that reach which is spacious being 200 yards wide, is a high rocky hill about 350 feet, crowned with beautiful pine trees, a fine situation for building; at half past ten a bold hill on the left, being chiefly rock, we arrived at the foot of a tremendous rapid full of broken from the number of great rock
with which it was filled, the water descended along an in-
clined plane with an impetuous velocity; we stopped to view
it, & got out a good rope, which was carried along,
shore by a certain number of our party while others
remained on board to guide the boat with poles,
we were a long time upon this rapid, making
many fruitless strays to pass upwards, at length
we were obliged to pass the large nearly in the
middle of the Cataract, by great efforts got over
The rapid being nearly half a mile in the space of
an hour and a quarter, about 300 yards of the rapid
being extremely difficult & perilous without the
greatest care and attention. We learnt above this
rapid and by a good observation found the Latitude to be
34° 25' 48"; on our right stood a high rocky hill crowned by
handsome pine trees, the strata of this rock were inclin
30° to the horizon descending the river; this hill may be
from 300 to 350 feet high; we have now frequently the
hill on both sides; a list of green Cane skirts the margin of
the river growing out of the alluvial soil, above is a high
at sometime, barren hill. At 8 o'clock we raised on
the left a hill of blue slate, hanging over the river.

About a quarter past 2, came to another rapid which
appeared if possible more terrible than the last. The descent of the water was extremely precipitate. The channel seemed full of great rocks under water from side to side; we halted at the bottom of the rapids on one side, but after many fruitless and some dangerous attempts we could not pull up on that side, we were therefore obliged to let the large swaying by the rope & by the force of poles pushed over & got hold on the other shore, notwithstanding that the rope was caught by the rocks; we then hauled the rope on board & sent up the above when we lay & passed up through the most violent part of the rapid; we ascended up a second rapid of less importance & encamped, our people being almost exhausted with fatigue; on the right is the mouth of a Creek called 'Bayen de la Saline' about a league from the river up the Creek is a salt pond, yielding by digging water impregnated with salt. There is also quarries of this slate near the same situation. This afternoon our hunters shot twice at a (Buffalo) & wounded him, but he escaped. The wind flowing as he ran. Encamped on a gravel beach, our tent being completely paved with stones of great variety in kind & size. Made only 4 miles and 164 perches. Thermometer at 8 p.m. 36° - Extreme 36° - 50°.
Wednesday

Therm. 23° - river water 47° - very serene - calm.
river fallen 2 inches.

Set off at 7.25 - the morning the cold was agreeable, the air being very dry - all night we heard the roaring of a cataract which we were to encounter in the morning. We were presently at the foot of it, the violence of the rapid was about 100 yards long, and as I sat in the cabin of the barge, with my eye lowered to the level of the still water of the reach above the rapid, I found there was a fall of 4 1/2 feet; we sent our rope ahead along shore and began to haul up by the greater part of our party ashore, some on board with poles to guide. For some time we made small progress, the rope having caught round a rock, which endangered the cutting of it, the consequence of which might have been fatal to all on board the barge, with the entire destruction of the boat and everything contained in it, the rapids were full of breakers and studded all over with pointed rocks, so that it was necessary to guide with the utmost care to keep clear of those unfriendly objects. The men on shore startled themselves, but were frequently obliged to rest, and the boat seemed often at an entire stand still length, however the rope escaped from the rock which held it fast, which enabled us to pull in.
a more direct line, & by reiterated exertions and
rest at intervals, in an hour & a half we got a-
bove the rapid, being in the whole about 150
yards; a small island here divided the river into
two channels, we took the shortest, which tho' the
most rapid, was more favorable for hauling
because it was much more direct with out
this rapid exceeding all we had passed up to the cascades.
Besides below the rapid we had rocky hills on both sides,
the stone seemed to be generally hard freestone,
but that in the river appeared very frequently to
be of the nature of the 'Jackson stone'.

Being embarrassed upon the rapids, we did not lead
to observe, we were obliged to use the rope again to
get up a very impetuous rapid, almost much inferior
to that of the morning; at 1:45 p.m. passed on the right a
creek called 'fourche a Tigre', 'Tiger Creek' said to be
4 leagues from the Chutes; it appears that the Hunters
have calculated their leagues by the time required to
half up the stream, rather than by the direct distance,
as it appears from our Calculation, the distances are
frequently not much above half of that computed
by the early travelers; we now carry the rocky
hills, with no generally on both sides, at the frequently
There are handsome bottoms of rich land; the upland also is sometimes elevated, clear of great rocks, and of a very good quality: we are informed that up the fourche à Tigre & other creeks are large tracts of rich level land. The stones & rocks we now meet with are penetrated along their figures by a white flinty or sparry matter. Last night a band of Wolves hunted in our neighborhood a part of the night. Turkeys now are extremely abundant & live wild; than to once or twice generally kill some every day. The opposition from the strong rapids & rocks was so great to day, that we only made by our reckoning 3 miles 128 paces, altho' by the old computation our days voyage was little short of 3 leagues. Therm. at 8 a.m. 38° Extremes 23° 55°.

Thursday.
6th. Therm. 45°. River water 48°. Cloudy. Light wind S. W. river fallen 2 inches. We were encamped last night upon excellent land, totterably level, & of a good dark brown or blackish soil at the surface, about a foot deep, lying upon a yellowish loam. The growth of timber was large
and handsome, chiefly a forest of Oak with an
admixture of Ash, Hickory, Elm &c. a field of
Corn has been formerly cultivated here by one
of the hunters during the Summer recess from
hunting. We set off at 7:40, the weather be-
ing cloudy & threatening rain, we were in
hopes of arriving at the source of Calfat be-
fore the rain should set in, which is the
point that is to terminate our navigation up-
wards, the hot springs being about 3-3.5 leagues
from the right bank of the river at
that point. Proceeded on without material
interruption until breakfast, carrying with
us high hills on the left & good level lands
on the right, subject perhaps to overflow.
It's 9 o'clock we arrived at the foot of a long &
very precipitous rapid, it seemed to be divided in
to four steps, one of which was at least 15 inches
perpendicular exclusion of the inclined plane
above and below, the whole could not be
left than 5½ feet perp. from the beginning to the end. Which was about 400 yards, all to the swift water continued half a mile: the rope was carried along the bank as usual, and many stops were made upon the rocks before coming to the great fall; at last the barge entered between two high rocks, the men exerted them selves both on shore & aboard, the barge appeared to be ascending an inclined plane of at least 25° of altitude; she however passed without touching any obstacle but the precipitous torrent & in a few seconds was over to the great joy of the whole party: upon another part of the rapid higher up, we got upon a rock, which seemed to serve as a pivot, upon which the boat turned as a Center, after innumerable exertions, we could neither advance nor retreat, we therefore unloaded about 4 of the Cargo & drew her easily over, we imme-
...cately unloaded having spent 3 hours in getting up this rapid, it proceeded a quarter of a mile farther to Ellis' Camp a little below the 'fourde à Calfat' [Caulker's creek] here terminate, our voyage upwards upon this river for the present. Our pilot consider it the most convenient landing, from thence to transport by land our necessary baggage to the hot springs, the distance being 3 leagues up the computed course of this river, which will probably not exceed 7 miles. There is a Creek about 2 leagues higher up, called 'Bagu de l'Eau Chaude' near where the hot springs are placed, about 2½ leagues from its mouth, but the road is very hilly & therefore less eligible than the path from this landing or Camp, which is tolerably level. Upon ascending the hill to encamp, we found good land with several small plants in flower & some evergreen vines which were new to us, the forest is chiefly
oak, with an admixture of other timber as before mentioned. Soon after we arrived it began to rain, we were however.tented before it commenced. Therm.° at 8 p.m. was 56°. Petromel. 54°-67°. Our short voyage this day was only 2 miles 32 perches.

Friday 3d At Little Camp. Therm.° before Sun rise 38° river water 47°. Cloudy Wind N. W. river rise 4 inches.

In the morning Doctor Hunter with the Pilot went to view a salt lick about a mile to the West of our Camp, but found no salt water, the clay was extremely stiff & difficult to dig - after breakfast dispatched the Pilot with the greater part of our people with their own bagage and some provision to encamp at the hot springs, hoping to find Cabins there sufficient for our whole party, with orders to return in the morning to take out a load of bagage provisions instruments &c that we may proceed as soon as possible to our destination. Took the Sun's meridian altitude from which we found the Latitude of this place to be 34° 27' 31.5" - Therm.° at 3 p.m. 50° - the weather cleared up about 9 o'clock and became very serene & cool with wind at N. W. a dear & turkey were shot to day by our people; although we have frequently seen the tracks of other marks of buffalo we are hitherto disappointed in killing any of them.
Therm. before Sun-rise 10. river water 49. - very
Serene, light Wind N W. river risen 4 inches, we found
the weather this morning extremely cold, the therm. having
sunken lower than we expected in this Latitude, particular-
ly at the present early season, period of the winter season, it
must therefore be ascribed in great measure to the elevation
of the Country & neighbourhood of mountains, as we have
no barometer with us to indicate the pressure of the at-
mosphere, we shall when we get to the hot springs, as
certain the degree of the therm. at which water boils,
from which, scientific men may draw their own con-
clusions respecting the elevation of the land.

At 10 o'clock a.m. our people returned from the hot
springs, Each giving his own account of the wonderful
springs, they were unable to keep their fingers a
moment in the water as it issued from the rock, They
drank of it after cooling a little & found it very a-
agreeable, having a taste some thing like pine wood
tea. The people were after refreshment dispatched
with another load of necessary baggage.

Observed again today in the same place the
Sun's meridian altitude & found the Latitude re-
sulting there from to be 34° 27' 27" being 4° less
than yesterday; should the more observations for the Lat-
titude he made here, we may therefore consider it
as fixed at 34° 27.29". The therm. at 3 p.m. 19° were may prepare for another cold night: a flock of Swans, passed down & afterwards returned up the river. yesterday a Deer was killed & several turkeys these two days passed, by which the whole party is supplied with fresh provisions. Our people found at the Springs, a pretty good log Cabin & a number of huts, erected by persons who went there last summer for the benefit of their health, which will be a convenience to our party. The bank upon which we are encamped is at least 50 feet perp. above the present level of the river, & therefore I presume 30 feet clear of inundation. Some hills of considerable height clothed with pine trees are in view, but the lands around us extending farther than we can at present see, lie very handsomely for cultivation, the superstratum is of a darkish brown or blackish colour from 8 to 12 inches thick, lying upon a yellowish basis, the whole intermixed more or less with stone of various kinds, some extremely hard, while others seem to have weathered by exposure to the air, particularly, a lightish blue rock which divides into thin lamina, like slate, but crumbles. I think it would yield alumina. The therm. at 8 p.m. was 26° very serene & calm, the Stars shone with uncommon lustre; in an hour or more after the heavens became overspread by a general cloud & not a star was to be
1804

Sunday 9th

The temperature rose to 36°. It was beginning to expect snow on the
fleet, it has cleared away after midnight & the stars
recovered their splendor. Extremes of the Therm. 10° - 47°

Therm. before Sun-rise 19°; river water 41°. Very serene.

Wind moderate at N.W. River risen 2 inches.

The people returned between 9:30 a.m. and after some time
 gave for refreshment and repose, the party set out again
with moderate loads of the baggage immediately necessary
and Dr. Hunter and myself accompanied them; the
people complained of the length of the road & weight of
the loads, so that we diminished the latter; the sergeant
and one private remained in Care of the Barge
and her horses. We set out from the Camp at the
river about Noon, and by the delay of many stops
& rests we arrived at the hot springs at 4½ p.m.
the distance is estimated at 9 miles which we
shall verify by actual measurement before our
return; the first six miles were in a westerly
direction, & the last three northerly, in order to
avoid crossing of hills. We found on the way
five hills, frequented by Buffalo, Deer, &c, the soil
around consisted of a white, tenacious clay, probably fit for potter's ware; the French have denominated the salt lick by the term 'Glaize,' which signifies properly clay or potter's earth, but is here understood always to mean a lick frequented by the beasts of the forest, although salt is not always to be found in such places: we saw on the way recent tracks of the Buffleculo & several deer skipped along before us, we did not follow the game, being desirous of arriving at our headquarters before evening. The people were very much fatigued with this day's labor, although the road is by no means bad or dirty, but there is no doubt that a heavy load constantly bearing a man down, must be very fatiguing upon a long march: the time and difficulty of moving our small baggage & provisions, although nothing but what is essentially necessary, to so small distance, natural insects the inconveniences which must arise in transporting over unknown mountains below the sources of the red & arcansa rivers, the...
luggage & provisions indispensably necessary with the tools and implements for the construction of a boat or boats upon to descend the 2° river. Soldiers not being accustomed to carry but only moderate loads, think it a great hardship to carry a burden which would be thought light by a Canadian or other woodsman used to such fatigues: in this point of view, the baggage &c. which might be deemed indispensable for an expedition around the heads of the two rivers including nations, that is, what would remain at the head of one river to be carried to the head of the other for 15 persons would be under-rated at 3006 pounds; of the whole number cannot calculate upon more than 10 carrying some being necessary to watch the two camps while the scientific men would explore without attendance; these ten carriers from what we have seen, could not be expected day after day to carry more than 50 pounds, & ten miles to go loaded & return empty; it perhaps the extent of what we can flatter ourselves with; thus it
would require. Six days to transport the baggage ten miles, and the seventh would be demanded as a day of repose: hence it would appear, that if the rivers were only 50 miles apart, and the roads fast mountainous, rugged, but tolerably good, it would require 35 days at least to pass along the unknown region; if allowance be made for such difficulties as are to be expected, including bad weather, perhaps we shall still flatter ourselves, if we expect to complete this portage in 50 days: upon the whole then it may perhaps be more advantagous, if the expedition is to be carried on by the aid of soldiers, who cannot travel without their rations, tent, baggage & above all their whisky, to explore one river at a time, & when arrived at the head of the navigation, which constitutes a kind of headquarters and point of departure, the scientific men with a sufficient party may make with tolerable convenience excursions of 30, 40 or 50 miles in all directions, prolonging the time, according to the fortune of procuring game, which will save the
provisions taken from the Camp: another advantage resulting from this plan will be the facility of transporting objects of Natural History which may appear to merit attention either for future examination or which may be fit to occupy a place in a Museum; it is plain this must be entirely given up upon the other plan, excepting in the descent of the 2. River. I am not ignorant that the plan originally proposed may be carried into effect, but this must be done by persons chosen for the object: two young men of Science of robust constitutions attended by 4 Canadians or other experienced Hunters, who can depend altogether on their guns for subsistence may accomplish the object; they will be able to carry at once their blankets, their arms, a little packed meal, very light instruments, such as a Clinch Sextant, which may
be graduated to 10° of a degree, a portable pocket case containing a blow-pipes, 2 or 3 flasks of half a dozen small vials of reagents, & 3 or 4 days' provisions in case of disappointment in finding game. Spirituous liquors must be out of the question—Such a party each carrying a light ax &c., for the purpose of building canoes may accomplish the object proposed, upon suppositions that no hostility is to be apprehended from the Indians.

From our departure at the river Camp for about two miles the lands are pretty level & of middling good quality, the timber chiefly Oak intermixed with others common to the Climate and a few scattering pine trees; further on the lands arose on either hand into gentle hills, covered chiefly by Pine trees; the road passed along a valley frequently wet by numerous springs & vials which broke from the hills: as we approached the Springs, the hills became more elevated & at a distance arose into what are here termed mountainous, although none of those yet in view exceed 40 or 500 feet. We found at the Springs a Summer log Cabin,
open on all sides, which, by the addition of a log
Chimney & a few pine, too split boards, to cover
the spaces between the logs we hoped to
make a little comfortable for the short time
we expected to remain here; we are how-
ever greatly discouraged by the dilatory
ways of the Soldiers: it is now evident that
they ought to be commanded by a Commis-
sioned officer whose manner & disposition
would tend to promote the views of Gov. & at
the same time render him an agreeable Companion
to his fellow laborers: it cannot be said that
the Soldiers are absolutely disobedient; but
as there is no person here who will sweat at
them, much less beat them, they are ex-
travagantly dilatory in their movements, grum-
ble at pretended hardships, and it is evident
from other circumstances that they wish
to prolong their return to New Orleans.
On our arrival we immediately tasted of
the springs, this water of which was too hot
tate. Frank after some minutes repose, but by sleeping; as I came here without prejudice, in favor of or against the springs, I did not discover any other taste except that of very good water rendered hot by Culinary fires. Some of the people pretended to have discovered cathartic effects which must be seble of not detected. The existence of some bad repute taints such a quality in the waters.

Therm. 7 a.m. 28° - Extremes 19°-42°.

Monday, 10th
Therm. 26. Very serene. Wind moderate N. W. We spent a cold night in our new lodgings, not being able to keep a large fire within the cabin, which is only 12 feet square. From the complaints of great fatigue by the people, we found it necessary to allow some repose, and ordered six of the people to go into the river Dymp. there to remain during the night and return the day following with more necessities, directing the loads to be made klly higher; all this already moderate enough. This day proved
very serene & fine, but as we were disappointed in getting out the instruments yesterday, no observation could be made for the Lat. or Longitude. We visited all the hot springs; we are situated upon the west bank of the Creek; on the east bank are four principal springs, which drop their waters almost into the Creek, one of which arises out of the gravel in the bed of the Creek; a fourth, which is the only hot spring on the west side, rises out of the declivity of the same magnitude of the western or eastern side of the descending bank of the Creek; all the more seems to be the only source near to our best which merit the name of springs, yet the hot water oozes out or drips from under the bank into the Creek in a great many places, which during the present Cool Season is very evident by the condensed vapor which floats along the edges of the Creek, where these Drippings are visible & even where they are not. a table shall be given of the temperatures of the different Springs, with the quantities of water delivered by each and references to their respective positions; from the small trials
1. to correct the time of observation. We have $13^h 47' + 13^h 26' - 4' 49'' = 13^h 33' 31''$ the true app. time of the beginning of total darkness.

The true time at Greenwich by the chart, was $19^h 40'$. The difference $6^h 6' 29''$ is the Long. West of Greenwich, to which $13^h 8' 4''$ as have $6^h 6' 40''$ for the Long. of the Post of Watervita, which is probably a good result, particularly for a Lunar Eclipse, which is generally supposed to involve an uncertainty of one minute in time, from the very fine, clear atmosphere we enjoyed. I was of opinion that the uncertainty did not exceed 4 minutes.
Continuation of the Survey of the hot spring

W 44° 30' W. 3° 44' W. 72' p. to the top of a high ridge, very narrow connected with the hot spring hill.

S 45° W. 60° p. descending the valley. Top of hill West of Camps in the direction of the Course, gap of the ridge on the left distant 4 mile.

S 31° W. 80° p. down the valley. Vein of the flinty rock nearly in the direction of the Course. 4 leagues at right on flint & hard silicious stone above, Shist at the base.

Course and distances from Hot spring cabin to river Camp.

S 15° E. 788 perch to 1st knob. 122 p. to 1st branch. 162 p.

2° branch. 282 p. to 3° d. 322 p. 5° 54° d. 502 p. Cropping Creek hot springs. 614 p. to branch at 1st station.

W 80° E. 70 p. to top of ridge.

N 6° E. 184 to 2° branch.

S 25° W. 160.

S 68° E. 80 Big lick.

W 55° E. 200 at 160 p. 3° branch. 2° lick at station.

W 82° E. 534 at 168 4° branch. 5° branch, at station.

S 84° E. 122 at 5° Cropping last branch. 10" 12" at station. Course of Cropping 83° E.

S 74° E. 178 to 3° lick.

S 54° E. 304 at 94 a branch 8° to Camp on Washita.

Monday 14th January. 2620 equal to 8 miles 60 perches.

Monday 14th January. Observed an Eclipse of the sun.

At 12° 40' p.m. watch uncertain the beginning of the Eclipse was

19° 37'.

At 10° 25° 27° p.m. eclipse ended. Alt of sun 6° 36° 45° Incl 12° 20' at 2 mile below the place of observing. The altitude of correcting y = 2 1/2. There is also a difference of long. between
Monday, January 14th. At a point on the bank of the river which we passed in ascending, corresponding to Nov. 14th. N 60° E. 5'6', observed an Eclipse of the Moon as follows.
At 12 h. 40 m. 18 s. Watch. Beginning of the Eclipse, uncertain.
13 h. 37 — Beginning of total darkness, good observation.

Tuesday 15th.
At a point of our voyage upwards corresponding to Nov. 14th. N 60° W. 8'8.5' took the Sun's altitude in
At 10 h. 56 m. 24 s. ap. dble. alt. low. limb. 66° 36' 45" Ind. err. +12' 20"

Thursday 17th.
At the foot of Washita the same station where we observed on our way up.
At 8 h. 53 m. 7 s. ap. dble. alt. low. limb. 36° 44' 45" Ind. err. +12' 30".

From the above observations, with reference to the Journal, the apparent times of the Eclipse may be ascertained and applied to the Meridian of Washita Post.

Calculation on the astronomical.
14th. At 22 h. 56 m. 24 s. watch, the ap. time was 22 h. 51 m. 47 s. east cor. by difference of meridian 6° 2' 35" the ap. time corresponding to the meridian of the place where the Eclipse was observed, the watch was therefore fast 4' 49".
Again on the astronomical.
16th. At 20 h. 53 m. 7 s. watch, the ap. time was 20 h. 47 m. 31 s. west cor. by diff. of meridian 6° 2' 35" gives 20 h. 41 m. 46 s. for the true ap. time under the meridian above, the watch was therefore fast 11' 22, hence the watch gained in 1 h. 56 m. 49 s. the quantity of 6° 33' 1". The time elapsed between the beginning of total darkness and the first observation of the Eclipse in order to find the ap. time was 9 h. 19 m. 24 s. watch, the gain of the watch corresponding to this last quantity may be found in 1 20 s.

Hence, in order
Washita River

Sunspots Observations continued

Dis of the D's West limit from Aldebaran
At y 18° 20' 48" Dc: 84°-52'-0" Ini: -1°-3'-10" Ini: 10°-0'-0"

Survey of the hot-spring hill

1st Station West side of the Creek opposite to the commencement of the calcareous matter.

Course up the Valley under of hot-spring hill N40°E
d° of the Creek upwards N15°W

S 25°E an immense bed of blackish Shistus, at 8 p.m., the middle of the natural hot-bed over the Creek, a small hot spring at its commencement; at 14 p., a hot spring N° 3 over the Creek; at 18 p. to the station on the bank of the Creek.

S 25°W At 2 p.m., Spring N° 1 over the Creek; at 14 p., Spring N° 2 over the Creek, distant 4 p.; at 14 p., Spring N° 4 on this side and station.

S 3°E At 7 p., the Center of the Cabin close on the right, at 20 p., several small springs over the Creek; at 22 p., lowest hot-spring N° 6; and at 34 p. to the station, all three Course, have been.

S 42°E, nearly parallel to the Creek, the continuation of which is S13°E.

S 44°E, At 4 p., the last calcareous map; at 20 p. to the Station.

N 60°E At 60 p. the Valley distant 20 p. to the right, an offset; At 106 p. to the Station.

S 66°E At 20 p. yellowish grey Shistus; to 30 p. Valley base of the hill

N 60°E At 60 p. NNE Corner of base of the hill & Station

N 23°E At 60 p. to the left, ridge parallel to the Course; at 170 p. Station

N 18°E 70 p. to a Rocky ridge perpendicular to the Course, a branch of the Creek below running to the right; the Creek above winds round a little to the left into the Course; the ridge on the left dividing the Calvat & hot-spring branch.

Act
January 5th Saturday – at Ellis’ Camp

Equal altitudes Double ap: Alt: +8 43° 18' 30"

Upper limb at 9° 43° 10
Center — 45° 12
Lower limb — 47° 19

Lower limb at 2° 39° 22
Center 3° 1° 27
Lower limb 3° 33

As the same instrument was to be used for various purposes on the same day, the index set for Equal altitudes could not be screwed up until the afternoon observation, and as the index error was liable to change in the course of the day, particularly when used much in the sunshine, it has accordingly been noted when any change took place as in the last example. It may account for any small irregularities, which notwithstanding, will not materially affect the result.

10° 42' 49° 21° 18'

At noon took the Double ap: Alt: lower limb 65° 8° 40" greater contact + In: ex: + 13° 15’

Sat: deduced from the above 34° 27° 28.8 which is within 0.2 of the mean of the former two observations.

Lunar Observations

Distance between the Double limbs

At 2° 22° 45’ Def: 54° 1° 0 In: ex: + 13° 5’

25° 50’
28° 45’

2° 0
3° 0
Hot Springs

Equal Altitudes

① Ap. Dble alt: 48° 32' 47" Incer: +15' 41.6

Contact of upper limb at 10' 12' 33"} \ A.M.
Lower limb ... 16' 55"

Clouds intervened in the afternoon.

Wednesday 26th

Set the watch back 1 hour so as to correspond nearly to the present time.

Equal Altitudes

② Ap. Dble alt: 32° 43' 25" Incer: +15' 37"
This observation having been made when the Sun was barely clear of the vapours of the hot springs & trees on the brow of the hill I give the precaution to the following observations for the correction of the Chronometric.

Apt. 9' 0' 50" Alt. of lower limb 39° 16' 40" Mag. Az: S 75° E Incer: +15' 2"

Lunar Observations Vol. 6 Cal: N 8° 40' E

on the Astronomical 25° Dec. took the following Distances of the Sun and Moon's limbs.

<table>
<thead>
<tr>
<th>Time</th>
<th>Distance</th>
<th>Alt. of lower limb by D° Hunter</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'22</td>
<td>58.14.2</td>
<td>53.57.30 Incer: -1' 27.5</td>
</tr>
<tr>
<td>8.5</td>
<td>13.0</td>
<td>55.27.10</td>
</tr>
<tr>
<td>11.10</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>19.0</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>22.5</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>25.0</td>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>32.7</td>
<td>8.4.0</td>
<td></td>
</tr>
<tr>
<td>42.0</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>44.35</td>
<td>2.0</td>
<td>59.12.10</td>
</tr>
<tr>
<td>48.40</td>
<td>1.0</td>
<td>43.15</td>
</tr>
<tr>
<td>54.37</td>
<td>57.59.0</td>
<td>69.25.20</td>
</tr>
<tr>
<td>57.47</td>
<td>58.0</td>
<td>46.20</td>
</tr>
</tbody>
</table>
Lunar Observations

Distance: Contacts of the 2nd East Limb with M. Arietis

<table>
<thead>
<tr>
<th>Times</th>
<th>Distances</th>
<th>Times</th>
<th>Distances</th>
<th>Times</th>
<th>Distances</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.57&quot;</td>
<td>39.10&quot;</td>
<td>41.53&quot;</td>
<td>42.40&quot;</td>
<td>50.12&quot;</td>
<td>45.55&quot;</td>
</tr>
<tr>
<td>36.46&quot;</td>
<td>40.10&quot;</td>
<td>44.49&quot;</td>
<td>43.45&quot;</td>
<td>53.48&quot;</td>
<td>47.20&quot;</td>
</tr>
</tbody>
</table>

The above may be divided into 2 or 3 sets as the pleasure of the Calcul.

Equal altitudes

<table>
<thead>
<tr>
<th>0 ap. dble alt: 45°49'0&quot;</th>
<th>In: 01:15:48&quot;</th>
<th>Mag: 0.82</th>
<th>54°30'0&quot; with the</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact upper limb at 9°44:56&quot;</td>
<td>47.12</td>
<td>A.M.</td>
<td></td>
</tr>
<tr>
<td>Center</td>
<td>47.12</td>
<td>A.M.</td>
<td></td>
</tr>
<tr>
<td>Lower limb</td>
<td>49.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact lower limb</td>
<td>2°27:57&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Center</td>
<td>30.13</td>
<td>P.M.</td>
<td></td>
</tr>
<tr>
<td>Upper limb</td>
<td>32.31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These Equal altitudes together with those of the preceding day will correct the watch & ascertain her rate of going, from which the Instant of the Contacts will be precisely known.

Equal altitudes

<table>
<thead>
<tr>
<th>0 ap. dble alt: 43°42'0&quot;</th>
<th>25&quot;</th>
<th>In: 00:15:27&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact upper limb at 10°8:2&quot;</td>
<td>10:13</td>
<td>A.M. watch supposed the foot 45</td>
</tr>
<tr>
<td>Center</td>
<td>10:13</td>
<td>A.M.</td>
</tr>
<tr>
<td>Lower limb</td>
<td>12:25</td>
<td></td>
</tr>
</tbody>
</table>

The Contacts A. M. lost by the intervention of Clouds

Altitudes of 0 lower limb with Mag: 0.82 | In: 00:15:27" |

{ At 10°24:12" altitude 46°31:5" Azim: 54°36' E
23:57 — 47:35:40  — 5:42 E

Sunday 23
Courses taken from the hill west of the hot springs on the 13th December 1804 with computed distances

1st Station
N 54° 3' mile to the cabin
S 61° E 0 miles to the river Campa.
S 36° E 8° is the mouth of hot spring fork.
S 18° E 0° is the mouth of Lake fork (west side).
S 10° W 9° to S 8° of Monticome (east side).
S 10° W 15° to the top of Monticome.
S 70° W 1 1/2 miles to the source of the hot spring Creek.
W 76° E 3 miles to a hill in the fork of Calhat Creek.
W 32° E Course of ridge looking back.
S 60° W to 2° Station being about 1 mile in a direct line making a curve to turn aside form of the ridge. Course from 2nd Station.

111° W to Mount-Corne.
W 04° W to the passage of the river between the hills about 1/2 miles.
S 38° W to the mouth of Bayeur Monticorne 1/2 mile S, E is a great rapid or Cascade.
S 48° E to the mouth of Hot Spring Creek.
S 12° E leads back to the River Campa.
N: 50 miles, ridge of hills of the area usa.
S, E 50 miles a level of great extent, supposed to be the prairies of the red river.

Sunday
16th I took the wan's magnetic 22 minute before it after noon with this same altitude of the
A.M. at 9° 50' 19" 0 lower limit dibalt 47° 36' mag 82° S 42° 20' E
P.M. time marked
\[
\begin{align*}
\text{A.M.:} & \quad 5° 525-40 W \\
\text{P.M.:} & \quad 5° 41-40 W
\end{align*}
\]
\[
\begin{align*}
\text{Var. E} & \quad 8-20
\end{align*}
\]
\[
\begin{align*}
\text{Equal altitudes} & \quad 0 \text{ upper limit at } 10° 18' 59' \\
\text{Center} & \quad 21' 56' \\
\text{lower limit} & \quad 24° 59' \\
\text{Correction for change of Declination} & \quad +15' 46''
\end{align*}
\]
\[
\begin{align*}
\text{Upper limit at } & \quad 1° 42-12' \\
\text{Center} & \quad 1° 45-15' \\
\text{Lower limit at } & \quad 1° 48-12'
\end{align*}
\]
Hot Springs

alternately the face of the Circle of reflection to the East and to the west, and reading off the angle from the three arms of the Index; but finding the Index error liable to change daily, I found it preferable to calculate each day's latitude independently by itself, to that of taking the mean of several days' altitudes, more especially as we were approaching the Solstice. But I have preserved the result of the face of the instrument as on series taken the mean of the two series for the true latitude.

Face of the Circle to the East. For: addit.

<table>
<thead>
<tr>
<th>Date</th>
<th>Ap: mer: alt.</th>
<th>Conv. and 1° Index</th>
<th>2° 3° 4°</th>
<th>5° 6° 7° 8°</th>
<th>9° 1° 2° 3°</th>
<th>4° 5° 6° 7° 8°</th>
<th>9° 1° 2° 3° 4°</th>
<th>Mean of Latitude of the above</th>
<th>Mean Longitude of the above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec. 15th</td>
<td>63° 35' 0&quot;</td>
<td>33 - 34 - 45</td>
<td>16.13</td>
<td>34° - 30° 36.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dec. 16th</td>
<td>63° 20' 0&quot;</td>
<td>63 - 25 - 10</td>
<td>15.48</td>
<td>34° - 30° 58.2</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Dec. 27th</td>
<td>63° 34' 0&quot;</td>
<td>63 - 23 - 35</td>
<td>15.39</td>
<td>34° - 30° 58.75</td>
<td></td>
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<tr>
<td>16th</td>
<td>64° 1 - 26</td>
<td>15 - 21.7</td>
<td>34° - 31° 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26th</td>
<td>63° 58' 38&quot;</td>
<td>15 - 28.3</td>
<td>34° - 31° 4.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean Latitude: 34° - 30° 58.75

Mean Longitude: 34° - 30° 58.94

Note: The Index error was every day taken for a double contact of the Sun with his image immediately after the observation. When the error was added, it was found by subtracting the Declination of the greatest contact, when subtracting, the lesser contact was reset. Calculation at the Hot Springs True Latitude... 34° - 30° 58.82.
December 8th, at Ellis's Camp.

Saturday, 5. Therm. before Sun-rise 10°; river water 43°; very serene, light wind N.W.; river risen 4 inches. The weather this morning is extremely cold, as may be supposed from the degree marked by the Thermometer; we had no reason to expect so great a depression of the thermometer at this early part of the winter from the latitude, we must therefore ascribe it to the elevation of the land and the neighborhood of mountains; we have no barometer with us to give an idea of the real degree of pressure of the atmosphere, but we shall ascertain the degree of the thermometer which water boils when we get to the hot springs, from which scientific men will draw their own conclusions of the elevation of the country. At about 10 o'clock a.m., our people returned from the springs, bringing wonderful accounts of what they had seen. The water being so hot, they could not keep their fingers in it a moment; they found it very agreeable to drink when cooled a little, thinking it had the taste of spice wood tea. The people were immediately dispatched again with a goods load of necessary baggage. Took the sun meridian at the hill 64° 46' 58" N.; 0° + 14' 19" Lat. found 34° 27' 27"; being a difference of 7" from the result of yesterday; if we should not make any more observations here for a day, it may be considered as fixed at 34° 27'.

Thermometer at 3 p.m. 37° at 8° 26°.

Hot Springs

Having determined to ascertain the latitude and longitude of this place with all due care and attention, the following Series of Observations was instituted for the Latitude, using
Set off at 4.54
W 45° W 4.59 rate 4 1/2 per
S 45° W 5.1 Encamped Made only 3 miles 128 paces.
Therm. at 8.40 p.m. 38°. Extreme 23° - 56°.

Thursday in air
6°.... Therm. 45° - River water 48° - Cloudy - Wind S. W. light -
river fallen 2 inches.
Set off at 7.40
W 45° W 7.52 rate 4 per
S 30° W 8.7 hills to the left, good land to the right.
S 55° W 8.20 lost 4'
W 80° W 8.37 lost 12'
W 30° W 8.52 lost 2'

Breakfast
W 20° W 1/2 mile a great rapid, very precipitous, 3 hours in
getting over.

Set off at 1.8
W 75° W 1.16 rate 1/2 log 5 per: arrived at Ellis' Camp
a little below the fourche a Calfat. Encamped.
Made 2 miles + 32 pches. Therm. at 9.40 p.m.

W 25° W the course up the river. Calfat's mouth a mile up on left.

Friday at Ellis' Camp.
7.45 Therm. 38° - River water 47° - Cloudy Wind N. W. river
risen 4 inches. Took the Sun's ap. meridian 36° alt. 64° - 59' 47"
Incl. + 14° 55' Lat. found 34° 21' 31". Therm. at 3 p.m. 55° at 8 p.m. 21°.
Courses and Distances of the Washita

W 60 W 1.55
W 85 W 2. 3 Rate P. Log 6 Per. Hills of blue slate to the left
S 80 W 2.17
N 40 W 72 Perches - Violent Rapid, long detention
S 80 W 112 Perches Enampered - Bayou de la Saline on the right.

Made 4 miles 164 Perches - Therm at 8 p.m. 36° Extreme 36° 58'.

Wednesday 5th
Therm 28° - River water 27° - Serene - Calm - River fallen 2 inches.

Set off at 7 A.M.
S 70 W 8.2 lost 25' - Rocky hills on both sides - Rate P. Log 8 Per.
S 55 W 30 Perches - A violent rapid or Cascade 4 1/2 feet fall [-in 80 yards.]

Breakfast 10.47'
S 70 W 11.15 Rate P. Log 6 Per.
W 11.20
N 50 W 11.29

N 40 W 144 Perches, a strong rapid - Rocky hills on the right -
High Fresher 25 feet perpen. Above the present
level of the river, at the end of this reach on the
right a Creek, called 'fourche an Tige' [Tiger
Creek], good land up this Creek.

Set off at 7.45
S 80 W 1.55 Rate P. Log 4 Per.
Dinner 3.50
W 3.55
N 40 W 4.23 Rate P. Log 3 Per.
N 45 W 3/4 mile Rapid.
Courses and distances of the Washita

\[ W20E \quad 3.18 \]
\[ E \quad 3.23 \text{ lost } 13' \]
\[ W45E \quad 3.32 \]
\[ N80E R W 3.36 \text{ rate } W \log 3 \text{ per:} \]
\[ W45E 3.46 \text{ rate } W \log 4 \text{ per:} \]
\[ N \quad 4.1 \quad \text{at } 3.57 \quad \text{rock prominent on the right with masses in front}\]
\[ N30W 4.18 \quad \text{arrived at the Chutes passed over handsome \( \sqrt{3} \)} \]

\[ \text{Made } 7 \text{ miles } 218 \text{ perches} \quad \text{"Therm." at } 8 \text{ p.m. } 49' \text{ Extreme } 38'59' \]

\[ \text{Tuesday} \]
\[ \text{Therm. } 36' \quad \text{river water } 48' \quad \text{Clear. Calm, river fallen 2 inches} \]
\[ \text{Set off at } 7.21' \]
\[ \rightarrow W45W 7.34 \text{ rate } W \log 4 \text{ per:} \]
\[ W25W 8.15 \text{ at } 8' \quad \text{passed a ledge of hard freestone rocks, rocky bottom, high rocky hill in front covered by prairies, a fine situation, 350 feet high} \]
\[ W20W 8.25 \]
\[ W 8.33 \]
\[ \text{Breakfast } 9.59 \]
\[ W .1019 \text{ rate } W \log 2 \text{ per:} \]
\[ W45W 10.12 \text{ rate } W \log 4 \text{ per:} \]
\[ W20W 10.15 \]
\[ W20W 10.24 \text{ at } 10.20 \text{ Bald hill on left, arrived at the rapid} \]
\[ W50E \frac{1}{2} \text{ mile a very violent rapid. Landed to observe} \]
\[ \text{cap. merid. Obs. alt: } 65'47'4'' \quad \text{Smer.: } +13'14' \]
\[ \text{Dinner } 1.45'' \]
\[ \text{Cat: found } 34'25'48'' \]
\[ N20W 1.52 \text{ rate } 5 \text{ per:} \]
Courses and distances of the Washita

N 55° E 2.33 miles Chevain { Deer Island } -
N 40° E 2.39 lost 3' - From Stone & Blue Shale left - de Champigneul
N 35° W 3.11 strong rapids rate 6' log 3 per - Bayou Prairie on the left
N 20° E 3.28 Therm. 59°.
N 15° E 3.46
N 25° E 3.57 lost 11' rate 1/2' log 3 1/2 per.
N 35° E 4.7 Encamped - Made 6 miles 118 fathoms
Therm. at 8 p.m. 38° - Extreme 30° - 59°.

Monday

Therm 38° in water 48° Clear - Calm - river fallen 8 inches
Set off at 7.12
N 35° W 7.20 rate 1/2' log 5 per.
N 20° W 7.31
N 10° E 8.4 lost 8'
N 30° W 8.26 - Bayou Plaine right on the left
N 30° E 8.45 lost 3'

Breakfast 9.50
N 30° E 10.38 rapid, rate 3 per.
N 75° E 10.20
W 10° E 10.42
N 10° E 11.4 lost 18' rate 1/2' log 6 per
S 15° E 11.28 rapid, 3 per, 1/2' log
E 11.40 rate 1/2' log 3 per. Landed to observe

Dinner 1.45 Latitude found 34° - 21° 25.5
W 35° E 2.16 rate 1/2' log 3 per.
N 25° E 2.15 rate 1/2' log 3 per.
N 25° E 2.42 lost 22'
W 60° E 2.48 rate 1/2' log 3 per.
W 40° E 2.53
N 10° W 3.18 lost 5' rate 1/2' log 5 per.
Courses and distances of the Washita.

**Dec.**

E. 12. 27

NW 2. 44

345°E 2. 53 lost 4'

W 45°E 2. 56

W 3. 36 lost 11' at 3. 30, a saline distant 2 miles to the left and Isle de Mollon on N right.

W10°W 4. 37 last 38 encamped.

W 7 miles 148: paces. Therm at 8 a.m. 35°. Extreme 32°-58°.

Sunday, Aug. 21.

Therm, 60°, River water 50°. Clear, Calm, river fallen 4 inches.

Set off at 7. 35

W10°W 7. 44 rate 5' log 3 per; rapids commence.

W45°E 7. 50

W 75°E 7. 55

S 30°E 8. 4

S 80°E 8. 13

W 40°E 8. 29

S 80°E 8. 32

W 55°E 8. 37

W 42°E 8. 40 rapids end

Breakfast 10. 17

W 42°E 10. 35 rate 5'. log 5 per.

W 28°E 10. 51

W 15°E 10. 58

W 8 W 11. 0

W 12°W 11. 12

W 10°W 11. 43 lost 15', rate 5' log 3 per.

W 20°E 11. 46 rate 5' log 5 per.

Dinner 2. 3

W 20°E 2. 30 at 2. 19 slate quarry on the left & a Creek.
Courses and distances of the Washita

Wednesday

N15° W 8.26 lost 3

Breakfast 9.45

N10° W 10.18 lost 6

N — 10.27 'Fourche des Cadaux' on the left 100 yards wide - a hill 300 feet high

N20° E 10.32

S 85° E 10.40

N70° E 11.5 lost 6

N40° W 11.45 lost 21' landed to determine, out precip. little alt. 59° 25' 30"

Dinner 2.0

Int. 13' 42" Lat. found 34° 11' 37"

N15° E 2.15

W50° E 2.18 Bayou de roches on the left / rocky Creek

E 2.34

W65° E 2.40

W35° E 2.44 Encamped - Therm. at 3° 57' went to visit saline

Made 7 miles 28 furlongs.

Saturday

in air in

Day, 14° Therm. 32° River water 54° Clear calm - river fallin

18 inches during the night.

Set off at 7.5' Isle de roches / rocky island 3 mile long on the north

N30° E 7.23 lost 10' rate 1.3 Log 6 per:

W75° E 7.31 lost 5'

S 70° E 7.42 lost 6'

W65° E 7.52

W45° E 8.0

W32° E 8.10

W15° E 8.34 lost 13'

Breakfast 10.12

W55° E 10.18

S 80° E 10.40

S 90° E 11.10 lost 20'

N15° E 11.25 lost 11'

W10° W 12.5 lost 35' on the rapids no observation

W 45° E 12.15 Bayou de l'Isle de l'Hellion on the right
Courses and distances of the Washita

Thursday 29th. Therm. 72°. - River water 62°. Cloudy - Wind South

rain; remained in Camp untill after dinner.
Set off at 1:27.
N 85° W 1.34 rate 7.4. log 7 per. Saline Bayou; about 3/4 league North
a salt spring.
N 65° W 1 58 cost 51
W 35° W 2.12
W 70° W 2.9
W 40° W 2.37
W 5° W 2.80
W 45° W 3.18 cost 11' at 3.4 Ecor a chicot
W 8° 3.39 cost 9
N 80° E 3.45
S 60° E 3.46
S 30° E 3.57
S 45° E 4.2 rapids
S 85° E 4.8
W 70° E 4.18 cost 3'
W 30° E 4.22 cost 2
W 60° W 4.31 cost 6' rapids
W 30° E 4.37
W 40° E 4.42
W 70° E 4.49
N 5.0 Encamped made 8 miles 2 perches

Therm. at 8 p.m. 52°. Extremes 52° - 76°.

Friday
30th. Therm. 38°. - River water 60°. Clear, calm. - River risen 19 inches since last evening.
Set off at 7:16.
W 72° W 2.32 rate 7.2 cost 7 per.
W 80° W 7.25
S 45° W 7.90
S 30° W 7.46 cost 10' rapids
S 60° W 7.49
W 75° W 7.53 cost 2
W 35° W 8.19 cost 6'
Courses and distances of the Washita

Breakfast 16.3 Beautiful pine woods, on the right.
W— 10.32 Lost 14' Bayou de C'oeu froide, on the right—Lost 400'.
W 10.36
S 45 W 10.42 Lost 3'
N 75 W 10.46
W 45 W 10.49
W —— 11.11 Lost 71'
W 40 W 11.15 Lost 2'
W —— 11.25 Lost 5'
W 75 W 11.30
S 70 W 11.36 Lost 7'
S 40 W 11.58
W 75 W 12.2 Cloudy—no observation.
W 45 W 12.7
W 25 W 12.20
W 40 W 12.30
W 25 W 12.57 Lost 3'
Dinner 3.9
S 70 W 3.22 Lost 4'
W 70 W 3.25
W 40 W 3.42 Lost 5'
W 80 W 3.44
S 45 W 3.54 Lost 3'
W 4.1 on left 2 miles list.
W 40 W 4.21 Lost ?—at 4.7 Grand Glaize Bayou de Cypre opposite
in the interior.
N —— 4.25
W 45 E 4.28
W 55 E 4.31
E 4.34—river 170 yards wide
S 75 E 4.44
E 4.54
W 45 E 4.58
W 10 E 5.4
N 20 W 5.8 Encamped. Made 12 miles 255 perches.

Therm. at 8:30 P.M. 78°—Extremes 68°—78°.
**Courses and distances of the Washita**

N 36° 12.4' at 12. Cache à Mazon & bayu on the right about 1/2 mile NW expl. the bank of a Creek in search of coal mines & found only some fragments of matter resembling coal.

**Diurnal**

- Formed Cache river risen 4 inches in 2 hours.
- N 60° W 3.0 rate of log 6½ per.
- W 3.25 lost 14'.
- N 45° W 3.34
- N 3.40
- W 4.0 lost 6' river 150 yards wide.
- N 70° W 4.9
- W 4.23 lost 7'.
- N 70° W 4.32 lost 6'.
- W 45° W 4.49
- W 5.52
- W 5.0 Encamped

Therm. at 8° p.m. 56°. Extremes 54° - 71°.

Made this day 12 miles 39 paces.

**Wednesday 26th**

Therm. 68°. River water 60°. Fallen 4 inches in the night. Cloudy - calm.

Set off at 7.05'.

<table>
<thead>
<tr>
<th>Course</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 65° W</td>
<td>7.13</td>
</tr>
<tr>
<td>S 80° W</td>
<td>7.22</td>
</tr>
<tr>
<td>S 65° W</td>
<td>7.29</td>
</tr>
<tr>
<td>E W 60°</td>
<td>7.37</td>
</tr>
<tr>
<td>E W 35°</td>
<td>7.42</td>
</tr>
<tr>
<td>E W 30°</td>
<td>8.16</td>
</tr>
<tr>
<td>E W 30°</td>
<td>8.30</td>
</tr>
<tr>
<td>E W 30°</td>
<td>8.39</td>
</tr>
<tr>
<td>E W 54°</td>
<td>8.54</td>
</tr>
<tr>
<td>W 5.7</td>
<td></td>
</tr>
</tbody>
</table>
Tuesday 27th. Therm. 54°. River water 58°. Cloudy—river risen above a foot.

\[\begin{array}{ll}
\text{S}80\text{W} & 7:11 \text{ rate 1/1 log 6 1/2 yer}.
\text{N}70\text{W} & 7:17
\text{W}45\text{W} & 7:21
\text{W}10\text{W} & 7:33
\text{W}20\text{E} & 7:38 \text{ rapids commence}
\text{W}80\text{E} & 7:46 \text{ last 6}
\text{NW}40\text{E} & 7:55
\text{N}30\text{W} & 8:0
\text{N}70\text{W} & 8:19 \text{ last 7' pirouge a Gallien}
\text{S}70\text{W} & 8:15 \text{ last 3' left the rapids}
\text{N}50\text{W} & 8:20
\text{W} & 8:33
\text{W}30\text{W} & 8:48
\end{array}\]

Breakfast 9:51 river rose 1/2 inch during the hour.

\[\begin{array}{ll}
\text{W} & 9:55
\text{S}30\text{W} & 10:10
\text{W} & 10:13
\text{W}45\text{W} & 10:17
\text{W}10\text{W} & 10:30
\text{W}45\text{W} & 10:32
\text{W}70\text{W} & 10:36
\text{S}30\text{W} & 10:40 \text{ last 2'}
\text{W}70\text{W} & 10:48
\text{W}40\text{W} & 10:52
\text{W} & 10:54
\text{W}45\text{E} & 11:12
\text{W}25\text{E} & \text{11:29 last 8' a large Island to up left}
\text{W}40\text{E} & 11:30
\text{W} & 11:35
\text{W}45\text{E} & 11:42
\text{W}25\text{E} & 11:46
\text{W} & 11:52 \text{ Cloudy—no observation}
\end{array}\]
Courses and distances of the Washita.

26 W...10.26

W 10.24

W40W 10.39 lost 6'

W-- 10.50

W80E 10.53 lost 1'

W-- 11.3

W45W 11.24 lost 2' - Jeti Island

W-- 11.27

W22E 11.33

W79E 11.41

W35E 11.46

W85E 11.50 Landed to observe. D appr. mer. dble alt: 69°-29'52"

Dinner 1.47 In ev: 13'-38" Lat: found 33°-54'6.5"

Con. W85E 1.50

W38E 1.57 lost 4'

W20E 2.3

W85W 2.15

W70W 2.20

W45W 2.29 many Islands

W25W 2.52 lost 16'

W70E 3.0

W25W 3.15 lost 9'

W65W 3.28

W30W 3.33 at 3.31 Baye de Cygne on the left. Birch & asir

W-- 3.40

E 3.46 lost 5'

W30E 3.55 lost 4'

W55E 4.40 lost 38' Cut away some asir

W20W 4.47

W75W 4.52

S 365W 4.55

S-- 5.1 Encamped - Thur. at 8 p.m. As Extremes 50-68°

Made 12 miles 21 perches
Courses and distances of the Washita

N40 W 3-37
N60 W 3-41 lost 3'
N45 W 3-46 lost 2'
N20 W 3-53 lost 4' petit Washita on the left, runs into the
N70 E 3-58 lost 1' little Washita
N45 E 4-18 lost 9'
E 4-22 - 'belle ance'
N35 E 4-25
N30 W 4-47 lost 15'
N25 E 4-54
N60 E 4-56
N85 E 5-7 lost 5'
N60 E 5-13 Encamped - Therm. at 8 p.m. 59°

Made 11 miles 152 perches

Monday, 15th
Therm. 75° - river water 77° - Clear - calm - river risen 3½ inches during the night.

Set off at 11 a.m.
W40 E 7-50 lost 30'. rate per log 6½ per:
W - 8. 5 white maple
W45 W 8-13 lost 2'
W20 W 8-25 Bear's head Camp
N60 W 8-30
N80 W 8-38 Cane land
S35 W 8-42
S75 W 8-47
W 8-58 lost 2'
N30 W 9-11
S35 E 9-15
Breakfast 10-8
E 10-18 lost 8'
Courses and distances of the Washita

Set off at G = 56'

\[ \begin{align*}
N70W & \quad 4 \text{ rate } \frac{1}{2} \text{ log 6 per} \\
S45W & \quad 8 \text{ Somore - black sand - ranges d'Arcon} \\
N25W & \quad 36 \text{ lost } 22' \\
W60E & \quad 53 \text{ river in gen. Boyds wide} \\
W25E & \quad 8 - 3 \\
W70E & \quad 8 - 6 \\
S50E & \quad 22 \text{ lost } 3' \text{ - rocky bottom - strong rapid} \\
W40E & \quad 8 - 30 \\
W & \quad 8 - 39 \\
\text{Breakfast} & \quad 9 - 49 \\
W35W & \quad 10 - 0 \\
W & \quad 10 - 3 \\
W40E & \quad 10.56 \text{ lost } 30' \text{ long & strong rapids} \\
W70E & \quad 11.20 \text{ lost } 18' \\
E & \quad 11.27 \\
S45E & \quad 11.30 \\
S15E & \quad 11.39 \text{ lost } 2' \\
S45E & \quad 11.48 \text{ lost } 3' \text{ - a desertic corn patch} \\
W15E & \quad 12.8 \text{ Cloudy - no observation} \\
W41W & \quad 12.18 \text{ Cottons or hoop Willows} \\
W65W & \quad 12.25 \\
W & \quad 12.34 \text{ Boys Tallion on the left} \\
W60W & \quad 1.0 \text{ lost } 6' \text{ on a Rapid} \\
W55W & \quad 1.14 \text{ Forks of the Washita & little Missouri, the latter coming in from left in the direction of the last course} \\
\text{Dinner} & \quad 3.10 \\
N20W & \quad 3.20 \\
N30E & \quad 3.25 \text{ lost } 3' \\
W & \quad 3.33 \text{ lost } 5' \\
\end{align*} \]
Courses and distances of the Wathita

S70W 1-56
W45W 2-6
Sor 2-20 Hope to cut willows
W45E 2-22
W15W 2-30
W30W 2-43
W10E 2-53
W35E 2-56
N60E 3-7
Woth 3-9
N45W 3-12 Therm. 92°
N80W 3-17
S75W 3-24
S35W 3-37 Lost 6'
S 3-40
S45W 3-45
W 3-51
N50W 4-2
N30E 4-5
E 4-13
N25E 4-17
W 4-30 Lost 2'
N45E 4-33
W 4-38
N75W 4-46 Rapid
N20W 5-00
N 5-5 Encamped

Made 13 miles 28 perches

Thermometer at 8 p.m. 54°
Courses and distances of the Washita

Nov. 23


Set off at 7-4

N15W 7-8 1.667
W 7-11
N55W 7-15
W 7-19
N45E 7-34 lost 5' rapid
W 7-39
N -- 7-43
N60W 7-47
W 7-53
S45W 8-2 lost 2' rapid
W 8-5
N60W 8-8
W 8-12
N20W 8-26 lost 2' on rapids
W 8-28 lost 1'
S45W 8-35

Breakfast 9-54 Downard's Islands

W45W 10-1
W15E 10-5
W25E 10-12
W45E 10-17
W45W 10-25 lost 5'
S -- 10-37 lost 5'
W45W 10-34 lost 5'
W85W 11-0
W45W 11-5
W10E 11-9 'Cete' a Sofrion' Sofrion's hilly...
W15W 11-15 banks from 9 to 12 feet high; yellowish clay,
W65W 11-20 lost 4'
W45W 11-43 landed to observe. Chart: deck: Ber. alt. 70-59-13"

Dinner 1-43 Freq gr. +14-8" Salis found 35° 41'-35"
W45E 1-51 'pointe Coupe' old channel to the East.
W -- 1-54 lost 2'
W 1-56
Courses and distances of the Washita.

\[ N30W \, 11.25 \]
\[ N70W \, 11.31 \]
\[ N25W \, 11.33 \]
\[ W \, 11.36 \]
\[ N65E \, 11.41 \]
\[ W20E \, 11.43 \]
\[ N10W \, 11.45 \]
\[ N45W \, 11.56 \text{ Cloudy no observation} \]
\[ N75W \, 12.2 \]
\[ S85W \, 12.17 \text{ lost 8 at 12-15, petit ecor at Fabri, small cliff of Fabri} \]
\[ N45W \, 12.23 \]
\[ W10W \, 12.26 \]
\[ W30W \, 12.34 \]

Dinner \, 2.34
\[ W \, 2.37 \]
\[ E \, 2.44 \]
\[ S \, 2.45 \text{ a rapid} \]
\[ S45E \, 2.47 \]
\[ E \, 2.50 \]
\[ N40W \, 2.53 \]
\[ N15W \, 3.8 \]
\[ N45W \, 3.10 \]
\[ W \, 3.13 \text{ river 30 yd wide only here enclosed by bars etc.} \]
\[ S45W \, 3.16 \]
\[ S15E \, 3.20 \]
\[ S45W \, 3.23 \]
\[ W \, 3.27 \]
\[ S70W \, 3.28 \]
\[ W \, 3.31 \]
\[ N75W \, 3.31 \]
\[ N20W \, 3.34 \]
\[ W \, 3.56 \text{ lost 9} \]
\[ N60E \, 4.6 \]
\[ W \, 4.8 \]
\[ W \, 4.11 \]
\[ W \, 4.15 \text{ rapid} \]
\[ S50W \, 4.25 \text{ d} \]
\[ W \, 4.33 \text{ lost 18, strong rapids \\& shoals} \]
\[ N10E \, 5.00 \text{ Encamped} \]

Made this day 14 miles, 317 perches.

Therm. at 8 p.m. 54° Extreme 40°-68°.

Set off at 7-6
S62W 7-15 nautical miles - log 6½ per h.
W 7-20
N56W 7-36
N32E 7-42
N-- 7-51
N45W 7-58
N20W 8-2
N20E 8-9
N25W 8-12
N55W 8-18
W 8-31
N45W 8-33
N20W 8-41
N40W 8-45
W-- 8-53
N45W 8-58

Breakfast 10-7
S80W 10-16
W85W 10-21
S70W 10-25

S20 10-33 at 10-28 the Cadouaux path crosses the river leading to the Ucransas.

W48 at 10-43 'Cor de Fabri' Fabri's cliff 80 to 100 feet high - said to be named after Cadouaux, by Fabri in the division of the French & Spanish line.

N60W 10-52
N70W 10-55
W-- 10-59
N45E 11-21
N45E 11-20
S80E 11-20
W45E 11-21
W-- 11-23
Courses and distances of the Washita

S 40° 5 - 12
S 2° 2 - 15
S 40° W 2 - 25
W 80° W 2 - 33
S 80° W 2 - 47 lost 8'
West 2 - 52 a creek to the left
W 10° W 2 - 57
W 75° W 3 - 22 lost 7' Thermometer 72°
W 15° E 3 - 33
W 55° E 3 - 35
W 80° E 3 - 46
W 45° W 3 - 51
S 82° W 4 - 3
W 60° W 4 - 9
W 52° W 4 - 14
W 70° W 4 - 20 points couple /a cutoff/ all channel in continuation with
this course, the boat Channel to the right
W 50° E 4 - 24
W 68° E 4 - 28
W 35° E 4 - 33
W 58° E 4 - 40
W - 4 - 43
W 45° W 4 - 48
W 15° W 4 - 51
W 90° E 5 - 00
W - 5 - 5
W 45° W 5 - 9 Encamped on the right. Made 18 Miles, 36 fathoms
Therm. at 8 p. m. Exterior 49° - 78°.
Courts and distances of the Washita

WSW 2-3
WS-- 2-18
W55W 2-27
N35W 2-30 lost 8', at 3-6 an Island begins, main channel on the left. at 3-13 end of the Island and Bayou on the left.
N10W 3-40 rate P. log 7 per, Low Country commenced.
N15E 3-53
N35E 3-59
N45E
N45W 4-4 river from 50 to 100 yards wide
N75W 4-7
W-- 4-15 small timber - overtop Wh. Oak along the banks sub-
N35E 4-19 feet to be overflowed.
W-- 4-22
S0W 4-26
W60W 4-28
W-- 4-29
W50E 4-33
W20W 4-35
W45W 4-39
W-- 4-42
N45E 4-44
S85E 4-50
N15E 4-53
N60W 4-55
N80W 4-58
N40W 5-2
N40E 5-6
W80E 5-10 Wind West - river 35 to 40 yards wide
N-- 5-13
W30W 5-17 Encamped on the left.
Made this day 12 miles 303 perches

*Note on our return down the Washita, on the 17th Jan, we observed an Eclipse of the moon at this place, from whence the Longitude was deduced.
Wednesday

Therm. 43° in air in

21°

River water 54° fog - calm -

Set off at 7:30

Course con. SSW 7-15 rate 7/10 log 7 per:

N35W 7-17 Fin's hill a cliff 100 feet perpendicular.

North 7-44 lost 6' by a rapid

W25W 7-52

W10W 7-57

W25E 8-19

W35W 8-29

- W 8-32

S - 8-35

S40E 8-43

S55W 8-53

river 80 to 90 yards wide

W25W 9-5

Breakfast 10-12 Cote à Ross (Ross' hill or Camp)

W10E 10-20

W45W 10-26

S75W 10-32

W45W 10-35

W15W 10-47

W45E 10-55

S55E

S45E 11-11

W45E

W45W 11-20

W10W 11-26

N35E 11-34

N - 11-46 landed to observe tide, able alt. 72° 14', 48" 1' 13' 31"

Dinner 1-30

W55W 1-39 rate 7 per:

S80W 1-45

N75W 1-51

N60W 1-55

W85W 1-59

S45W 2-2

S - 2-4
Courses & distances of Washita

N 60° W 12.14
W 70° W 12.15
N 25° E 12.22
S 75° E 12.32
W 40° E 12.36
N 10° W 12.50
S 80° W 12.54

Dinner 3.0 Thermon 76.62°

W 10° E 3.16 ferocious earth

N 45° W 3.18
S 50° W 3.31
W 3.36
N 3.38
N 50° E 3.44
N 3.50
N 45° W 3.58
N 75° W 4.0
S 70° W 4.10
S 50° W 4.32 last 7'
S 85° W 5.3 at 4.54 a hill of power on the left at 5' an island

we passed a small channel to the right.

Made this day 18 miles 308 fathoms.

Thermometer at 8 p.m. 54°. Extremes 59° - 62°.
Tuesday 26th. Therm. 59° in.

Courses and distances of Washita

S 58 E. 48'.

North 6.56

West 6.58

S 59 W 7.14

S 59 W 7.30

W 7.39 a deep Creek on the left called 'Chemin couvert'

W 7.48

W 50 W 7.52

S 75 W 7.56

S 10 W 8.4

S 75 W 8.13 a rapid and gravel beach, water 40 yards wide.

W 50 W 8.20

W 20 W 8.37 a narrow passage to the left 60 feet wide, a small narrow Island

W 45 W 8.44

W 25 W 8.50

W 25 E 9.4

W 30 W 9.20 lost 10'

W 55 W 9.32

Breakfast 10.50

S 80 W 11.7 rate 1/4 log 7 1/2 per.

W 75 W 11.14

W 45 W 11.23

S 80 W 11.27

S 35 W 11.29

S 28 W 11.39

S 58 W 11.48 saw an Alligator-they seldom go so far north in this

S 50 W 11.53 Birch, Birch, Maple, Holly

S 75 W 12.2 Cloudy and uncertain, did not go ashore to observe
W 30° 7 – 31
W 70° 7 – 40
W 82° 7 – 49
W 7 – 52

W 7 – 58

W 45° E 8 – 17
W 8 – 25
W 8 – 26
S 55° W 8 – 37
W 80° W 8 – 40
N 50° W 8 – 45
N 50° E 8 – 52
W 80° E 8 – 53

Breakfast 10 – 6

W 30° E 10 – 15
W 30° W 10 – 28
S 25° W 10 – 42
W 10 – 44
N 50° W 10 – 46
N 15° W 10 – 53
W 40° W 11 – 8
W 11 – 10
S 25° W 11 – 26
S 10° E 11 – 29
S 35° E 11 – 34
S 50° W 11 – 38
W 11 – 48
N 20° W 11 – 53

W 60° W 11 – 58
W 40° W 12 – 4
N 80° W 12 – 8
S 60° W 12 – 16
S 40° W 12 – 22
S 55° W 12 – 32
S 45° W 1 – 4 lost 20
N 50° W 1 – 11
N 30° W 1 – 30

Dinner 3 – 24 cloudy

W 50° W 3 – 33
W 3 – 36
S 55° W 3 – 44
N 70° W 3 – 45
N 15° W 4 – 00
W 1 – 4 7
N 60° W 4 – 15
W 20° W 4 – 20
W 25° E 4 – 30
W 80° W 4 – 34
S 80° W 4 – 42
N 35° W 4 – 45 Cabana Champaigne
N 60° W 4 – 52 rain
N 10° W 4 – 55 Encamped. Thmr. at 6 p.m. 62°

Made their day 18 miles 120 parajes
Nov. 3
18

N30E 2-9
W 2-14 Bay Moran, a large inlet on the right, which swells
into a considerable lake during rain. 

W 2-26
South 2-43
S45W 2-46 Large pine trees
S65W 2-56
S15W 3-10
S50W 3-27 Cost 14
S75W 4-19 Hill on the left called 'Cost de hache.'
S55W 4-30
S85W 4-32
W30W 4-34
W 4-39
W35W 4-41
W60W 4-44
S30W 4-52
S70W 4-57
W70W 5-00

W40W 5-2
W 5-5 Camped. Therm. 57°. Cloudy

Made this day 18 miles 75 parcels.

Monday, 19th


Set off 6 56

Cont. N 7-00 rate ½ log 7 ½ per:
W60W 7-15
W35W 7-78
S15W 7-23
S70W 7-24
Courses and distances of the Washita

Sunday 18th

Therm. 32° - River water 52° - Serene - Calm. River rises a little.

Set out at 7:20

Course W 7-23 rate 1/2 log 1/2 per:

10 W 7-34

S 1/2 W 7-41 on Island and passage round to the right, the old channel shut up by a sand bar; the whole river runs thru the narrow channel of about 90 feet wide.

Lost by the rapid.

N 15 E 8-2
N 15 W 8-6
N 40 W 8-20
S 80 W 8-23
S 35 W 8-27
S 10 W 8-40
W 80 W 8-48
S 25 W 8-51

S 45 E 9-2
S - 9-7 Cache la Tulipe [Tulipe's hiding place]

Breakfast 10-11

Course S - 10-22 rate 1/2 log 1/2 per:

W 10-34
W 20 E 10-40
N 15 W 10-44
N 45 W 10-52
N 10 W 11-7
W - 11-13

S 25 W 11-20 lost by a rapid
S 60 W 11-25
W 50 W 11-30
W 50 W 11-41 landed to observe Qapi. Pass. 126° 25′ alt. 74° 1′ 25″

Dinner 1-33 Latitude found 35° 17′ 13″

S 75 W 1-46 rate 1/2 log 1/2 per
W - 1-55
Courses and distances of the Washita

W - 10'52
S45W 11-1 Pitsimmons & small black grapes
W45W 11-18
S75W 11-25 Small Cane - Sun breaks out - Serene
W55W 11-30 - no longer mist/ Iclandia/ Seen since we
entered the low alluvial lands
W - 11-42 Landed to observe Os mer; ap; dble altitude
74°37'52" Ini; er; +18'57'5 Set; 33°19'16'5

Dinner 1-42

Atr. W - 1-49 rate 8 per
W45E 1-50
E 2-5
W - 2-9 a rapid
W 2-21 Cane, Pines
W70W 2-39
W45E 2-52 Saw an Alligator
W - 3-10
W80W 3-30 The Eagle
S45E 3-31
S30E 3-48 lost 10'
S15W 3-52
S70W 3-57
W80W 4-4
W60W 4-17
S80W 4-19 Therm at 8 p.m. 44' Extremes 40°C 51°C
S80W 4-19 Made thursday 15 miles 308 perches
Directions of Washita:

N20E 4'-0"
N45E 4'-14"
N20W 4'-23" the 3 pine trees
N55W 4'-46" lost 8'
N-- 4'-50"
W-- 4'-52"
S-- 4'-54" Encamped; Therm. at 8 p.m. 42°, Extreme 38-51°.

Made this day 17 miles 185 perches.

Saturday, 17th)

Thermometer 40°, river water 54°, fog on the river; Calm
River rose 2 ½ inches in the night.

Set off at 7-19

Course: S. 7-29 rate per? Log 6 per:

875E 7-27
N-- 7-40
W 7-42
S45W 7-55
W45W 8-0
W20E 8-9
W60E 8-17
W30W 8-18
W80W 8-27
N20W 8-30
N5W 8-56
W 8-58 Marais de Canned / Cane marsh / on the right

Breakfast 10-7
S15W 10-23 rate per? Log 7 per:
S65W 10-42 long leaf pine
W45W 10-49 saw the first Swan, shot by one of the hunters.
Courses and distances of Waskita

N10 W 8 - 10
N45 E 8 - 22
N 8 - 27
Breakfast 9 - 35

Go N 9 - 42 rate $1.00 log 7½ per:
N65 E 9 - 45
S60 E 9 - 50
N45 E 9 - 53
W - 10 - 8
N20 E 10 - 18
N20 W 10 - 24
N45 W 10 - 37
W - 10 - 40
E 10 - 53
N30 E 10 - 56
N15 W 11 - 10
N30 W 11 - 19 on the right marais de La Saline - a large lake &
point of highland about a mile distant. Tulip Creek
on the right

N80 W 12 - 2 last 24
S70 W 12 - 22
N45 W 12 - 29
S45 W 12 - 33 Saline Bague on the right

Dinner 2 - 34
S45 W 2 - 39 rate $1.00 log 7½ per:
Courses and distances of the Washita

S45W 5-24 Therm. 60
W 3-33 rate ½ Log 8 per: Bayou grand marais on the left
S45W 3-95
N 3-47
W 3-57
W50W 4-15
W 4-7
W60E 4-12
W 4-15
W40W 4-34
W 4-42 Cyprine Chatterwave on the right - apt of high land approaches within half a mile of the river on the same side
W45W 4-46
S80W 4-50
S75W 5-2
W45W 5-5 Encamped on the left - Therm. at 8 p.m. 50°F Extremes: 33°F
Made this day 16 miles 42 perches.

Friday
Thermometer 38°F River water 54°F Cloudy - Calm.

Set out at 6h 58

Cont. W45W 7-10 rate ½ Log ½ per:
W10W 7-16
W45W 7-23
W15W 7-26 a creek on the left
W5E 7-35
W45E
W45W 7-39
W 7-40
S70W 7-43
S80W 7-49
W45W 7-51
W45E 7-54
W65E 7-58
W25E 8-2

37
Thursday 15th
Temperater 33° River water 55° hoarfrost some cloud.

Set off at 9-14

Continued N 30° W 9-35 rate per log 7/4 per.

W 10 W 9-44
W 40 W 9-50
W -- 10-3
W 30 W 10-10
W 70 W 10-24 boat 8'
W -- 10-50 boat 5' a rapid
W 70 E 11-00 Bank low overflows 20 feet per sec.
W 20 E 11-4
W 20 W 11-7
W 45 W 11-23
W 30 E 11-24 No more long neck (Illansia) seen above this.
W 45 E 11-35 at 11-35 Island Mallet landed to observe & placed the instrument on the left shore 90 yards higher than the point of the island. Cap d'Blanc: alt: 76° 51 28
Incln: 13° 30" Latitude found 32° 59' 27" 5 south. The division line between the Territory of Orleans & that of Louisianna will traverse the river 32 1/2 a degree north of the place of observation. It may be found at any time by following the above remarks respecting the situation of the No. E. end of the Island of Mallet.

Dinner at 1-28

W 10 W 1-46
W 35 E 1-55
W 25 W 1-58
W 90 W 2-10 rate: log 7 per.
W 80 W 2-17
W 25 W 2-30
W -- 2-35
W 60 W 2-42 3 Sand beaches
W 10 W 2-51
W 3-19
N 40° E 2-3
W - - 2-13
W 55° W 2-27
N 35° W 2-30
lost 8' at 3'-6' an Island begins, main channel on the left at 3'-15' end of the Island and Bayou on the left.
N 10° W 3-40 rate P. Log 7 per. Low Country commenced.
N 15° E 3-53
N 35° E 3-59
N 45° E 4-4
river from 50 to 60 yards wide
N 75° W 4-7
W - 4-15 small timber - overtop Whit Oak along the bank of-
N 35° E 4-19
just to be overflowed.
N - - 4-22
S 10° W 4-26
W 80° W 4-28
W - - 4-29
N 50° E 4-33
N 20° W 4-35
N 45° W 4-39
W - - 4-42
N 45° E 4-44
S 85° E 4-50
N 15° E 4-53
N 60° W 4-55
N 80° W 4-58
N 40° W 5-2
N 40° E 5-6
N 80° E 5-10 Wind West - river 35 to 40 yards wide
W - - 5-13
N 30° W 5-17 Encamped on the left.
Made this day 12 miles 303 perches.
*Note on our return down the Washita on the 16th Jan., we observed an Eclipse of the moon at this place, from whence the longitude was deduced.

1805
1804
Nov 7

N 10 E 12.36 a shower of rain - landed to dine.
Set off 3:3. Thermometer 66°.
N 35 E 3:30
N 15 E 3:50
N 40 E 4:0 at 3:54 Bayu Bartelomi - 12 computed leagues from the Post.
N 85 W 4:11 Crake p. log 6½ per.
S 75 W 4:25 last 8.
N 45 W 4:27
N 25 E 4:29
N 65 E 4:38
E 4:46
N 30 E 4:51
N 20 W 5:00
N 60 W 5:10 Bayu Paupa
N 20 W 5:20 Encamped on the right

Made this day 16 miles 312 perches.

At 8½ p.m. Thermometer 62°.

Wednesday

14th

Thermometer 44° - River water 55° - Clear - Calm.

Set off at 7½ rate p. log 5½.
N 20 W 7:24 Bayu Mercier on the left.
N 10 E 7:50 last 2

+ N 10 W 8:12 land to repair the rudder iron & to breakfast.

Set off 10:24.
Cont. N 40 W 10:35 Wind N W.
N 40 W 11:19 at 11:3 Bayu Butter on the right.
N 11:21
N 65 E 11:25 rate p. log 6 per.
N 11:30

N 70 W 11:40 Landed to observe Oaip: mer: dd: half: 76° 54' 35" In: con 3° 47.5

After dinner latitude found 32° 50' 8.5

Set off 1:40

Cont. N 70 W 1:47

Note on correction we landed 37 perches below & end of this course i.e. at 7:35 on the 14th Jan.

Note on correction we landed 37 perches below & end of this course i.e. at 8:35 on the 15th Jan.
1804

Nov.

Courses and distances of the Washita

after dinner 2
Set-Off 1.48
Cont. E 1.53
N - 2.0
W70°W 2.10
N - 2.15
W45°E 3.3 at 2.30 a rapid at 2.45 another rapid Shoal.
S70°W 3.17 lost 5' upon a shoal
Stop until 4.27 upon a shoal
W53°W 5.30 lost 25' Encamped. Therm. at 8 p.m. 54°
Made this day 16 miles. 92 perches.

Tuesday

13½ hrs. Therm. 33°, River water 55° - fog - calm
Set off at 6h. 57' W. Log 8 per. N.B. from this watch forward 12'
Cont. W80°W 6.55
N - 7.2
E 7.23
W45°E 7.40
N45°W 7.44
S85°W 8.0
S55°W 8.40 lost 10' at 8½ on Island at 8½ a strong rapid landed in Breach
Set off 9 - 42 - 9.42 computed leagues 1st Postman Island on the right rocks called Rogue now.
N - 9.46 rate per log 7 per.
W45°E 9.53 Wind South
W45°W 10.31. River 150 yards wide - banks about 25 feet high

Bayou
N - 11.10 lost 17 on Shoals - at 11½ gravelly rapids to a house on the right. Otter Island left at the end of the Course an island at the mouth of the Bayou.
S78°E 11.30 lost 18. The river has a more spacious appearance than before.
N88°E 11.55
Statement at the end of this Course in the right called Eco or Wagner's. 30 feet bank. 4 feet clear at high water. Some Cypress grow along the Bank.

N80°E 12.10
N70°E 12.30 at 12.26 a house on the right.
Nov. 1804.

12th

Thermometer 36°, River water 34°. Clear, Calm.

Set off at 8:26. Took in some fresh beef before

W55E 8.35 rate 11.5 Log 8 per.
W 8.39
W20W 9.15 last 24' upon shoals
W10W 9.20
W 25E 9.40
W 9.46 Bayu Scard, computed 2 leagues 9' fast
W70W 10.15 river 100 yards wide
W30W 10.25 at 10:20 Bayu d'Arbonne, Enter a narrow passage to the left which contains the

whole river, being shut up on the right, except

during freshes; the course of the old river upwards in East.; if the new channel with high banks is

100 to 40 yards wide.

N30E 10.25
N60E 10.31
E 10.33
N45E 10.45 at 10:39 return to the great river
N60E 10.55
N30E 11.20

E 11:50 Landed to observe; Ominous; alt. 78-28-52
In 37°31'31" Latitude 32°34'42"
Courses and distances of the Waskita

Distances between the sun & moon's nearest limits are as follows:

<table>
<thead>
<tr>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 2° 28' 49&quot; - 9° 34' 06&quot;</td>
</tr>
<tr>
<td>3 - 33 - 43 - 92 - 35 - 55</td>
</tr>
<tr>
<td>3 - 39 - 56 - 92 - 38 - 25</td>
</tr>
<tr>
<td>3 - 42 - 36 - 92 - 39 - 00</td>
</tr>
<tr>
<td>3 - 46 - 14 - 92 - 40 - 00</td>
</tr>
<tr>
<td>3 - 50 - 14 - 92 - 41 - 50</td>
</tr>
</tbody>
</table>

[more text]

These contacts of the moon's are not to be considered as perfect as similar contacts of the sun, on account of the glare of her disk in the presence of the Sun, the illuminated part being also but a small proportion of the whole disk. The following mer: alt. of the moon taken in the evening was very correct: Cap. mer: dble alt: 89° 17' 20" Sin. or: +13 - 49.5. These were taken because the moon's alt. could not be taken at the same instant with the distance between the sun & moon's limits, it may be used as a check on the following:

Differences of the moon's upper limit from a trial:

<table>
<thead>
<tr>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 2° 4 - 2° 0 43' 59.99' From: +19' 49.99</td>
</tr>
</tbody>
</table>

Differences of the moon's upper limit from a trial:

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<tbody>
<tr>
<td>At 2° 4 - 2° 0 43' 59.99' From: +19' 49.99</td>
</tr>
</tbody>
</table>

These values are to be added to the Sun's mean E. Ceti:

Sunday, Thurm 11th: 7' 42' - 57' 42' - 45' - 0 Longitude 6° 7' - 53''

Mean Longitude: 6° 7' - 39 3/4''

At the post of Waskita took the Sun: mer: alt. dble: 79° 12' 7" In: or: +32.5 - Sat: 92 - 29 - 38.5.

Scorpi at 3° 54' from the post of Waskita

[more text]
Courses and distance of the Washita

Nov.

No. E 2.52
N 2.55
N 3.25 arrived at the Post of Washita

Made this day 20 miles, 257 perches, amount in the whole 612 3/4 months of this river 196 miles and 256 perches.

Wednesday

9th. Took the O ap: mer: d. alt. 81° 28' 00'' Inc: er: +13° 33'.5

Latitude found 32° 29' 52''.5

The place where the observation was made is about 450 feet to the South of the Post, where Lieut. Bannerman & his garrison are stationed, the Latitude of the Post is therefore 32° 29' 57''.

8 and 9th both cloudy days - remained at the Post. 9th. therm. 42° 72''

Saturday. Therm. 40°

10th. Made the following observations

AM

\[
\begin{array}{c|c|c|c|c|c|c}
\text{O ap: mer: d. alt.} & 79° 45' 3'' & 80° 24' 36''.5 & 80° 53' 53'' & 80° 50' 34'' & 80° 12' 2'' & 80° 14' 58''.
\end{array}
\]

Time of triple contact APP: d. alt. 63° 59' 48''.

AM

Upper limit at 10° 21' 11''
Center 10° 23' 44''
Lower limit 10° 26' 16''

O ap: mer: d. alt. 79° 45' 3'' Inc: er: +13° 47'.5 Lat: found 32° 29' 55''.

There is a difference of 17'' between the lat: found this day and on the 9th. Give the preference to the observation of this day, because of the 9th. Some interruption from visitors occasion a moment's inattention, if it is believed the sun might have dipped a little before the altitude was taken.

O Triple contact as follows

Upper limit at 3° 1' 56''
Center 3° 2' 30'' O ap. 3. Alt. 49° 45' 30'' Inc: er: +13° 47'.6
Upper limit 3° 4' 36''

Note the center contact was uncertain from interruption thereof.
Course & distance of Washita

Set out at 3:00

W 75° W 3.12 rate per log 6 per.

W 50° W 3.55 Thermometer 68° Sun shines dimly thro' a black

W 4.2

W 60° W 4.25 last 2'

W 30° W 4.39

W 4.55

W 35° W 5.8

W 15° W 5.25 Encamped on a sand bar on the right.

Made this day 11 miles 276 perches.

Tuesday

6:45 Thermometer 45° river water 64° heavy fog wind west

Set out at 6:45

W 30° E 6.48 rate per log 5½ per

S 7.10 last 1'

S 45° E 7.30

E 7.40

W 65° E 7.55

Breakfast at 8.55

W 65° E 9.42 rate per log 4½ per

W 35° E 9.55

W 45° W 10.28 last 5'

W 11.13 last 3'

W 40° W 11.18

S 65° W 11.30 landed observed OAP 2 all. 32° 28' 53" in west 30°

Dinner 1.30 latitude found 32° 28' 53"

W 65° W 1.52 rate per log 3 per

W 50° W 2.00

W 10° W 2.6

W 15° E 2.20

E 2.25

S 35° E 2.47
1804
Nov.

Sunday
Therm. 54° - River water 64° - Clear.

Set off at 9:18' got aground in the morning.
N145E 9:26 rate p. log 4 per.
N25E 9:36
N20W 9:44
N45W 10:26 lost 16' upon a shoal.
S75W 10:50 lost 3'
N65W 11:0

W50W 11:29 landed and observed the day: mar. alt. double
Driner
Set out at 1:36 83°-33'45" In er: 19'32" Lat: 32°-21'10"
N20W 3:25 lost 37' upon a shoal rate p. log 2 per.
same course N20W 4:00 lost 12'. got out the tow-line to track - p. log 5½ per.
N20E ½ mile. This course being over shoals and rapids could only be estimated by sight.
Made this day 4 miles 293 perches.

Monday

Therm. 52° - River water 62° - heavy fog. had to un-
load two turns of our Currie to get over a shoal.

Set off at 9:55'
Continued 10:4 rate p. log 5 per:
N20W 11:15
N45W 11:21 lost 3'
W 11:32 dark, misty & cloudy
N45W 12:0 lost 5'
W45E 12:13
N25E 12:42 lost 2'
N45E 1:34 lost 10'
W10W 1:43

Diener Wind N. W.
Courses and distances of the Washite

S50E 9.4
S50E 9.42
S70E 9.47
S10E 10.00 lost 3
S30E 10. 5 rate 5½ log 5½ per:
S75E 10.11 Wind E.S.E.
W10E 10.34 Lost 5
W50E 10.47

E 11.00
S45E 11.8

Stop 11.15 by a shoal
S10E 11.23 went ashore prepared to observe

Dinner 1.31 Op: do: Alt: 84° 18′ 40″ Sm: or: +13′ 30″ Lat: 32° 17′ 17″
S10E 1.38
S60E 1.45 towing the boat rate 5½ per:
W60E 1.55
W30E 2.4
W-- 2.17

Stop 2.32 upon a shoal
N20W 2.45
N-- 3.5 lost 3′ therm. 86°
N45W 3.25 lost 10′ - rate 5½ log 5½ per:
S65W 3.57 lost 14′ upon a shoal
W45W 4.3

W20E 4.20 lost 8′ towing - rate 5½ log 5½ per:
W45E 4.35 current - rate 4 per:
W-- 5.5 lost 9′
W45E 5.15 Encamped on the left. Therm. at 8½ p.m. 72°

made this day 11 miles 140 perches
Courses and distances of the Washita continued

Friday

"Therm. 48° - River water 62° - light clouds - Wind S.S.E.
2° - a little fog on the river.

Set off at 6:50

N45E 7. 16 - rate 1½ - log 4½ per.
W 7. 23
N65W 7. 30
S55W 8. 26 - lost 3'

Breakfast 9. 19

W 10. 00 - lost 20' on a shoal
N55W 11. 54 - lost 1½ hour on a log underwater
W10E 12. 30 - lost 7' on a shoal
W15W 12. 53

Dinner set off 2. 25 - got immediately upon a log & after getting off
set out again 4. 00 - Thermometer 84°

N75W 4. 14
W25W 4. 30
N 4. 37 - a cliff and some hill on the left.
N85E 4. 50
S80E 5. 23
N30E 5. 39 - lost 4'
N45W 5. 50 - Encamped at a sand bar on the right

Made this day 8 miles 1. 04 perches

Saturday

"Therm. 52° - River water 64° - light clouds

Set out at 6:19

N45W 6. 34 - by log 4½ per:
W22W 7. 12
N40E 7. 22
S70E 8. 10 - lost 25' on a shoal

Breakfast
Courses and distances of y. Workita continued

October

W10°E W11°18'
W25° E 11° 35' p.; log 4½ per. Landed and took the Sun's ap: mer.
Dinner
Double alt.: 86° 27' 10" In: or: +18° 40" Lat.: found 32° 19' 18")
at setting out got upon a bar which detained us.

Set out again at 2.00 got over the bar
W25° E 3.00 lost 6' ½ p. Log 4 per.
W74° W 3.10 a small plantation on the right
S25° W 3.35 Thermometer 84°
W 3.40
W5°W 4.8
W35°W 4.45 to a small plantation - another joining below.
This day made 6 miles 165 perches.

November

Thursday 1st
Thermometer 48° - River water 62°- Calm - clear

W - - the first part of this course could only be estimated by the Eye, as a great part of the morning was employed in getting over a rapid, which are effected about 12 noon - it may be

Set off after Dinner 2.20
Continued W 2.33 rate by log 3 per against a Current
N40°W 3.12 a cliff 100 feet covered by pines, lost 14' this course
upon a shoal
N30°E 3.14
E 3.42 lost 2'
N30°E 3.44 rate p.; log 4½ per
N15°E 3.54 - Thermometer 85°
N45°E 3.36 lost 22' upon a shoal
W25°E 4.40
W 5.24 sand bar half way across - River 5 yards wide
N70°W 5.44
N 5.50
N45°E 5.55 At 8: Therm 71° 64° - Extremes 48° 35°

made this day 4 miles 115 perches
Courses and distance of Washita continued

October

\[ \begin{align*}
\text{N} & \text{50W} \quad 11^\circ 7' \\
\text{N} & \quad 11^\circ 14' \\
\text{N} & \text{60E} \quad 11^\circ 34' - \text{landed and took the Sun's mer. diff. Altitude} \\
& \quad 87^\circ 16' 10" \text{ Sp. gr. } +18' 26" \text{ Some uncertainty at}
& \quad \text{tended this observation; the all observed may have}
& \quad \text{been a minute too small, which would place}
& \quad \text{the Lat. } 1' \text{ minute too far north; it is however}
& \quad \text{recorded with this remark - Lat. found } 32^\circ 5' 26" \\
\text{Set off at} & \quad 1^\circ 20' \\
\text{N} & \text{50W} \quad 2^\circ 8' \text{ rate } p. \log 5 \text{ per} \text{.} \\
\text{N} & \text{30E} \quad 2^\circ 35' \\
\text{N} & \text{45W} \quad 2^\circ 42' \text{ Wind W} \\
& \quad 2^\circ 48' \\
\text{N} & \text{60W} \quad 3^\circ 37' \text{ lost } 9' \\
\text{N} & \text{45W} \quad 2^\circ 42' \\
\text{N} & \text{55W} \quad 4^\circ 7' \text{ lost } 4' \text{ a rapid river } 30 \text{ yrs\ wide} \\
\text{N} & \text{60E} \quad 4^\circ 28' \\
& \quad 4^\circ 34' \\
& \quad 5^\circ 15' \text{ lost } 14' \text{ Creek on the left, perhaps Bayou Calumet} \\
& \quad 5^\circ 25' \text{ to the left - Encamped} \\
& \quad \text{Extremes of the Therm. } 47^\circ - 83^\circ \\
& \quad \text{Made } 15 \text{ miles } 150 \text{ perches}
\end{align*} \]

\[ \begin{align*}
\text{Wednesday } 31^{\text{st}}: \text{Thermom. } 44^\circ \text{ - River water } 6^\circ - \text{ Wind N.N.W. Clear.} \\
\text{Set out at } 6^\circ 30' \\
\text{Current} \\
\text{N} & \text{45E} \quad 6^\circ 50' \text{ strong - rate } p. \log \text{ reduced } 2 \text{ per} \text{.} \\
\text{N} & \text{20W} \quad 6^\circ 55' \\
\text{S} & \text{65W} \quad 7^\circ 46' \text{ lost } 5' \\
\text{N} & \text{40W} \quad 8^\circ 10' \text{ got upon a Shoal} \\
\text{Breakfast set off} \quad 9^\circ 58' \\
\text{N} & \text{40W} \quad 10^\circ 44' \text{ lost } 10' \\
\end{align*} \]
Course & distances of the Wachita continued

N 85° W 3° 15' rate p. Log 6 per; them 85°

W - 3° 25
W 85° E 3° 58 lost 4'. Cliff and pine woods, soil thin greyish sand
W 80° W 4° 14
W 45° W 4° 32
S 55° W 4° 55 Wind S.W. Log 5 per;
W 5° 13

W 35° W 5° 28
W 55° E 5° 35 to the right. Encamped. Soundings 3 fathoms. Them 62°

Note. The watch having been suffered to run down last night, the times of the altitudes of this day have consequently no connection with the former.

This day made 14 miles 65 perches

Tuesday
36° Thermometer 40°. Temp of W. river water 60°. Fog on g. river. Wind W.N.W. - clear.

Set off at 6° 5'
W 75° E 6° 26 rate p. Log 5 per:
W 20° E 6° 34
W 70° W 7° 10
S 50° W 7° 35 lost 2'
W 7° 50

Breakfast 8° 47
N 10° W 9° 12
N 40° E 9° 25
W 82° E 9° 47
W 68° W 10° 25
S 50° W 10° 55 Wind W.
Course & distance of the Washita continued
1804
October
Monday

Thermometer 41° Temp. of River water 62° Wind N.W.
29½" fog on the river.

Set out at 6½ 22' rate M. log 5½ per:
S32W 6. 31
N35W 6. 40
W65W 7. 8
W 7. 20 to the right bank
N45W 7. 30 to the left
N35E 7. 48 a Creek on my left landed & made the following observations of the distance between the nearest limb of the Sun & Moon.

\[
\begin{align*}
\text{At} & \quad 8^h 57' 10" \quad \text{dist:} & \quad 41^\circ 58' 20" \\
\text{AM} & \quad 9 - 6 - 10 & \quad 41 - 55 - 40
\end{align*}
\]

\[
\begin{align*}
9 - 26 - 18 & \quad 41 - 50 - 10
\end{align*}
\]

Told the following D. Ht's of the Sun & azimuth magnetic
\[
\begin{align*}
\text{At} & \quad 9^h 47' 46" \quad \text{D. Ht:} & \quad 68^\circ 44' 30" \quad \text{Sun's az:} & \quad 545^\circ E
\end{align*}
\]

\[
\begin{align*}
\text{In:} & \quad \text{E:} & \quad \text{the same} & \quad +13' 45"
\end{align*}
\]

Set off 10.4

W65E 10. 20 rate M. log 5½ per:
N30W 10. 31
W15E 10. 43
W 11. 1
N 11. 7
W45E 11. 41
W 11. 47 took the 0 mer. ap: D. Ht: 88° 16' 00" In: E: +13' 45"

Dinner 1.12 p.m.
continued W 1. 19
N25W 1. 42
W65W 2. 4 to the left
N 2. 95
W45W 2. 46
**Courses and distances of the Washita continued**

October 28

N.W. - Clear, fog on the river.

N. W. 0^\circ - 17' rate by Log 4 1/6 per.
N. - 0. 17 at 8', a prairie or flat, meadow on the left, top left.
W. 15 W. 0. 13 Bayou Brant on the right - at 8', rocky hill on the right.
W. 45 W. 0. 17
W. 15 E. 0. 18
W. 70 W. 0. 20
S. 55 W. 0. 10 my right - Here we made the following observations:

- Latitude 31° 53' 3" N. 20' 20' 41"
- Altitude 53° 19' 00" at 9 h. 5' 16' - Mag: 12: S. 60° E.
- 0° - 58° 14' 10" at 9 h. 20' 28' - d° - S. 57° E.
- 0° - 58° 24' 50" S. 87° + 13° 58' at 9 h. 47' 28' - S. 60° E.
- Var. 8° 19' 2"

By calculation:
55° 24' 50" S. 87° + 13° 58' at 9 h. 47' 28' - S. 60° E. var. 8° 19' 2"
Mean var. 8° 22' 2"

June course continued - 5. 14 on the right - tracking 4 g. boat - by Log 5 per.
S. 57° E. - 8° 25' 2"
S. 57° E. - 8° 25' 2"

**Note:** The rate of going of the watch to be ascertained from the morning altitudes of the sun of yesterday and of the 26th -

In future I have determined to take down the distances by the hour 8 minute as first placed upon the slate or blotter, being less liable to error, the differences as above stated may be taken afterwords at leisure.
1804

October 25 Thursday - Therm. 49° - Temperature of the River 68° Wind North
Cloudy

Last Course continued N 15° W 0° 20 at 81' pine point & Villenont's farm; riv. N Log 4 per.
W 45 SE 0° 3 to ept. next right - high land
E 0° 43 at 3' bayou on the left
N 20° E 0° 29 to Bayou Louis on the right - here commences the rapids

Breakfast N

so many shoals in this course that no time or log could be kept - by estimation we went one mile &
then were completely embarrassed being enclosed by
a bar of gravel & sand with only 8 inches of water
Cloudy no observation.

This day we made only 3 miles 120 perches

Friday Therm. 48° Wind N.W. Light Clouds
26° Took the @ 9 a.m. at 82° 2' 10" In: or: +13' 48" at 10' 42" a.m. mag:
o - d° 7 10 - 5 --- at 11' 20' 45' - 3 28" E
Ut noon took of Commander: alt: of double 90° 36' 10" In: or: +13' 48" 105; 31' 48' 57 1/2"

Therm. 57 in the ensuing at 3 o'clock 70°

Saturday
27° Thermometer 32° - Temperature of the river 64° Wind North

Clear above - a fog on the river. No observation, all our
Course continued N.
The rapids continuing occasional frequent stops
so that we could only estimate the remainder
of this course at 3 1/2 of a mile, the rocky bars which
completed the rapids being 200 yards from this
end of this last course.

W. 0° 15 to ept. on the right - N Log 4 1/2 per.
N. 0° 30 at 11' a bayou on the left - upon left. Encamp

Extremes of the Thermometer 32° - 73°

This day made 2 miles 77 perches
October 24th

Thermometer before Sun rise 54°. Wind North - cloudy.

Temperature of the river 71°. No Current worth estimate.
N 65° W 6°. G° Continued to the right shore - rate of going 1. Log 4½ per.
W 35° E. 0.23 along shore.
W. 0.20 d° high land on the right.

Track - W 0.12 d°. by Log 5 per. Bayou Ha-ha on right S.East.
N - 0.12 d°. Oblique strata of Clay, some dipping to 30° in the direction of the river.

W 60° E. 0.11 to the left shore.

W 30° E. 0.27 along shore by Log 5 per. Cloudy.
N 45° W. 0.13 d°. River 80 yds. wide.
W. 0.18 top on right - luxuriant vegetation, grapevines in rich dark festoons.
N 30° W. 0.6 along shore.
W 30° E. 0.3 clearing up - wind North.
W 30° E. 0.19.
N. - 0.49 land is on d° right to observe.

Dinner

Doubt alt: 92° 4' 50" Int. er: +13 45"
land high no appearance of overflowing, oak forest, white, red, black, rich strawberry.

continued N. 0.42 to the right shore
W 55° E. 0.31 rich herbage along shore.
W 40° E. 0.41 along shore - small trees upon the high.
N 70° E. 0.17 E 0.17 5° continue tracking all day.
N 45° E. 0.5 E 0.8 5° rate h. Log 5 per.
W. - 0.8 5°.
W 60° W. 0.23 5°.
W. 0.9 5°.
S 72° W 0.26° to the left - a large bayou going to S.W.
W 15° W. 0.39.

7. 38 made this day 14 miles 48 per.
1804

October 22

Thermometer before Sun rise 65°. Wind S.S.E. Cloudy, rain before day.

continued W.N.W.E 0° 20' to ap. on the right
S 65° E 0° 35' along shore - by Log 5 per. P. - - - min.
E 1° 14' to ap. on the left - cloudy
W 0° 30'

before W 0° 18' to ap. on the left - by Log 8 per. P. - - - min.

wind N 2° 12' to ap. on right - by Log 4 per. long reach

W 0° 35' along shore Thermometer 72°
N 40° E 1° 3' to ap. on left - by Log 5 per. P. 72°
W 0° 19' along shore
N 45° W 0° 20' to ap. along shore - Sounded 3 fathoms 6'-7'-

7.26 Extremes of the Thermometer 65° to 79°

Tuesday

made this day 13 miles 276 perches.

25 Thermometer 68° before Sun rise. Wind W.N.W. The river free.

3 inches in the night.

W 65° W 2° 5' along shore - by Log 5 2' per.
W 10° W 0° 50' to ap. on the left - right
W 10° E 0° 98' along shore Contrary wind - by Log 3 2' per.

Summer Lat 31° 42' observed 2Guns Alt. 92° 58 45" In Er: + 13° 45" 5

continued N 10° E 0° 50' along shore
N 30° E 0° 15' to the left there, wind N. N. W. arrived at

the mouth of Catahola - Thermometer 70°

N 10° E 0° 8' the mouth of Washita - Bayou Sena Forks

with Washita N 88° E Log 5 2' per.

W 65° W 0° 7' Shore on the right Encamped

4.33 Extremes of the Thermometer 68° - 75°

took information at the mouth of the Catahola

which obtained us 2 1/2 hours, Sounded 6 fathoms.

mea the day 9 miles 77' perches.

By our reckoning the mouth of Washita is distant 1/10 of mouth of red

river 77 miles 57 perches; and by the old estimation 32 French leagues.
October 1804. Courses & distances of the Black river continued.

Saturday 20th. Thermometer before Sunrise 47°.

W 0° 30' along shore - saw the Log 4 perches p. ½ min.
N 45 W 0° 45' to a.p. on the right - Temperature of the river 79°.
N 10 W 0° 28' to a.p. on the left - Callicrate springs temp. 66°.
W 0° 15' along shore.
W 45 N 0° 42' to a.p. on the right, lost 6½ perches p. Log
W 28 N 0° 30' along shore rate of going 4 per p. Log
N 30 W 0° 30 d. - River 80 yds wide - Canoe on the right.
E 0° 10' to the left shore, landed to observe at noon & dine.

Fair to Last Lat. S 1° 22' 46.6 N 2° 35' 5 E 0° 53' to the right & continue to the left - Log 4½ per; p. ½ min.
W 65 E 0° 47' to a.p. on the right & continue to a.p. on a left. Therm. at 98°.
W 25 E 0° 40' along shore - Canoe on the right.
N 45 N 0° 27' d. - Encamped for the night, securing stations.

Th is day's voyage makes 13 miles 40 perches.

---

Sunday 21st. Thermometer before sunrise 60° a little cloudy near the horizon.

W 0° 48' along shore.
N 45 W 0° 31' to an Island - rate 1 ½ Log 4½ per.
N 12 W 1° 3½ hoist sail rate ½ Log 8 per. Came broke, little fuel.
W 30 W 0° 25' to a pine left, rate ½ Log 4½ per.
W 25 W 0° 14' to a.p. on right.
W 40 W 1° 6' to the left, landed to observe and dine. Clouds came over just the moment before the Sun came upon the
medicine would off in a little time, he had dipped, but
the double Alt. is 98° 27' 90' (Ser. +15° 34') which is too
small, the latitude is too far north.

N 75 E 0° 40' along shore.
W 40 E 0° 22' d. - Thermometer 83°.
S 30 E 0° 23'

Saw a crew. went to tackle T 6 d. Rate ½ Log 5 per.
S 13 E 0° 48' continue towing and 4000 ft. on to a.p. on left.
N 75 E 0° 35' to the right, encamped for the night.

7 19 Extremes of the Therm. 69° to 83° Cloudy Wind
SSW.

Made this day 18 miles 189 perches.
The meanders of the Red River up to the mouth of the Black river taken by course and time, the value of the time to be ascertained by the Log-line.

Commenced on Thursday the 18th October 1804.

From the mouth of the river a point on the right bank.
Then N 45° E 6' 23" the river 570 yards wide to a point same side.
N 8 W - 47 to a point left side (no current)
W 20 W - 23 to a point right side
N 5 E - 5 along shore - river 300 yards wide
W 22 E - 12 to a point left side - a Creek on the right
W 10 W - 9 along shore - rate of going 1 1/2 miles per hour
W 25 W - 6 a point
W 45 W - 11 a lake on the right side
W 80 W - 22 to point right side
W 40 W - 4 - river 250 yards wide
N 10 W - 4 - no sensible Current
W 32 E - 17 to a point left - 200 yards wide Lat. 38° 32' 54.6"
W 25 W - 11 to a point on the right
N 10 W - 16 to a point on the left
W 15 W - 6 to a point on the right
W 25 W - 127 to a point same side a bend to the right
W 38 W - 7 along shore
W 48 E - 20 a point
S 75 E - 42 to a point left
W 40 E - 1 1/2 along shore
W 5 E - 41 to a point on the right
W 40 E - 6 to a point on the left - a large Creek on the right
W 80 W - 24 to a point on the right
S 75 W - 29
N 10 E - 4 3/4 along shore
October 21

Meander by course 6° 53'

W75W — 123 along shore

S85W —— 16 60

W75W —— 19 50

S50W —— 46 to a pt. on the right

made their day 14 miles, 276 perch.

Friday 19th, thermometer before sun rise 14° 60

W75W — 0.19 to a pt. on left rate 7 perch. per min.

Same course 0.27 to 27° on the right

W90W 0.30 along shore

W 0.27 27°

W NW 0.14 a pt. on left rate of going 7 perches per half minute

W 0.23 along shore

W NW — 0.26 a pt. on right

W NW 0.33 along shore

W NW 0.26 to a pt. on left at S a creek on the left

W NW 0.22 pt. on right wind contrary home the log rate of going 4 perch

W35W 0.22 along shore

W10E 0.13 a pt. on left landed to observe and dine

Sat. 30° 14' 50.1

W60W 0.40 a pt. on right rate 5 perch

W50W 0.20 along shore to mouth of bl. river 150 yds wide

red river the same width, out? bl. river

W35E 0.25 a pt. on left

W10E 0.31 along shore

W40W 0.18, D° riv. 100 yds wide

S75W 0.20 to a pt. on right sounded 20 feet, bl. sand

by van general only 28 miles

W35E 0.15 a pt. on left

W10E 0.31 along shore

W40W 0.18, D° riv. 100 yds wide

S75W 0.20 to a pt. on right sounded 20 feet, bl. sand

made this day 16 miles 276 perch.
Courses and distances of the Red River, black river and Washita, taken from the Mississippi, on a voyage up the river Washita, with a view to reach the hot springs, undertaken by order of the President of the United States.

The distances are taken by time from a portable chronometer, and proportioned by a log-line divided into furlongs. They are understood to be run out for half a minute unless otherwise expressed; consideration is had for the velocity of the cur, by deducting it from the rate by log when it meets its attention; and when the rate by log is noted it is understood to continue the same until it be again noted with change. In all the meridian altitudes or other altitudes of the Sun above the horizon, it is taken understood of the lower limb, unless otherwise expressed in the following observations.

An excellent Circle of reflection made by Troughton & Sons graduated to ten seconds of a degree was used for taking altitudes & lunar distances; this Circle was supported on a pedestal, which gave it a stability & perfection never to be expected from any instrument held in the hand, the index error was regularly ascertained immediately after taking a meridian altitude, by observing the contacts of Sun with his reflected image on both sides of Zero; from this also I took the Sun's semidiameter, but finding it more convenient to use the whole diameter; to be added to the double apparent altitude, I shortened my work by taking the greater angle of contact when the Index error is addition & the less when subtractive; which being added to the ap. 2d alt. of the lower limb, gives at once the true ap. alt. of the Sun's center班长 of the Index error, all the rest was my method I have agreeably to custom given always the Index error; some small differences will be found in calculating the latitudes arising from my practice of preparing the Sun's semidiameter taken from my own instrument is that bend in the Nauti Almanac.